LANGUAGE SAMPLING IN VERY YOUNG CHILDREN: SEMANTIC AND PRAGMATIC ANALYSIS OF HOME AND CLINIC SETTINGS

By

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CHAPTER I

THE RESEARCH PROBLEM

Introduction

A standard part of most speech and language evaluations is the collection and analysis of a language sample. Language samples have been used extensively in recent years for identifying children with language disorders, determining treatment strategies, and measuring progress in therapy. For many years, speech-language pathologists employed a standard sampling technique outlined by Johnson, Darley, and Spriestersbach (1963) with little expressed concern for the representativeness of the resulting linguistic data. A more recent method of obtaining and analyzing language samples which has gained widespread use was presented by Lee in 1971.

Concern about the representativeness of clinic language sampling intensified in the early 1970's following two major developments. A growing body of sociolinguistic literature provided evidence that situational variables such as the topic, listener, and formality of the situation influenced the quantity and quality of verbal behavior elicited from children. All of these factors would seem to especially affect the child's verbal output in a clinical setting. Muma (1973) and Longhurst and Schrandt (1973), recognizing the importance of this sociolinguistic evidence as it applied to clinical language sampling, called for a

reexamination of the validity of the language sampling procedures which were currently employed by speech-language pathologists.

Resulting research (Longhurst and File, 1975; Toronto and Toronto, 1975; Scott and Taylor, 1978) demonstrated significant differences between language samples obtained in a variety of different sampling situations. This research focused on children who were functioning at fairly advanced linguistic levels (beyond two to three word utterances). It should also be noted that these studies were conducted during a time in which syntactic descriptions of child language dominated the literature.

Syntax is no longer the sole concern in accounts describing child language. Bloom's (1970) landmark study generated an interest in semantic descriptions of the language of very young children whose utterances cannot be adequately analyzed in a purely structural manner. This increased emphasis on the younger child also renewed interest in pragmatic accounts of language development. While the body of literature dealing with semantic and pragmatic descriptions of child language has grown rapidly, less emphasis has been placed on the clinical application of the various findings. There is virtually no information available concerning the validity of either traditional language gathering and analyzing methods or newer procedures based on semantic and/or pragmatic descriptions of child language for the child functioning at or below a linguistic level of two to three word utterances. The present investigation is primarily concerned with the semantic and pragmatic representativeness of language samples collected from this age group in a variety of situations.

Statement of Problem

It is the purpose of this study to compare utterances produced by very young children in a number of different language sampling situations. This study will extend a growing literature on language sampling by (1) investigating sampling representativeness in a group of children producing only two to three word utterances and (2) describing similarities and differences across sampling situations from a semantic and pragmatic viewpoint. It is hoped that results obtained will be useful in recommending more productive clinical procedures for gathering information on spontaneous language production in very young children.

CHAPTER II

REVIEW OF THE LITERATURE

Traditional Language Sampling Procedures

In their widely used book, Diagnostic Methods in Speech Pathology, Johnson, Darley, and Spriestersbach (1963) outlined a general procedure for obtaining a standard language sample in a clinical setting. The examiner is instructed to present "pictures, picture books, and toys" (p. 165) to the child for the purpose of stimulating spontaneous speech. The examiner is also instructed to keep his/her own remarks to a minimum and to avoid asking closed questions. It is recommended that the examiner elicit the language sample while alone with the child. If it is necessary for a parent to be present, he or she should be instructed to be "as quiet and unobtrusive as possible" (Johnson, Darley, and Spriestersbach, 1963, p. 165). Fifty utterances are to be collected in this manner. This sampling procedure is similar to that used by McCarthy (1930) and Templin (1957) in their classic developmental studies.

Johnson, Darley, and Spriestersbach (1963) recommended that the 50-utterance sample be analyzed in terms of three dimensions: (1) length of response including mean length of response (MLR), the mean of the five longest responses (M5L), and the number of one word responses (N1W); (2) structural complexity (SCS); and (3) size of vocabulary. A more descriptive form of syntactic analysis which has been used extensively in recent years was outlined by Lee in 1971, and expanded in her book,

Developmental Sentence Analysis (1974). Developmental sentence analysis consists of two separate procedures: Developmental Sentence Types (DST) for the classification of presentence utterances and Developmental Sentence Scoring (DSS) for the classification of complete sentences. It is recommended that the language sample contain 100 consecutive utterances for analysis by DST and 50 consecutive utterances for DSS. Normative data, derived from 200 normally developing white children between the ages of 2-0 and 6-11 years, are presented in the text. The procedures specified by Johnson, Darley, and Spriestersbach (1963) for obtaining a language sample and by Lee (1974) for analyzing the sample were standard methods for a number of years.

Results of Research on the Validity and Reliability of Traditional Language Sampling Procedures

Muma (1973) and Longhurst and Schrandt (1973), recognizing the importance of sociolinguistic evidence as it applied to clinical language sampling, called for a reexamination of the language sampling procedures which were currently employed by speech pathologists. These concerns were precipitated by a growing body of sociolinguistic literature regarding various experimenter and situational variables inherent to verbal interactions. While a complete review of sociolinguistic literature is beyond the scope of this study, a few selected examples are included.

Williams and Mattson (1942) found that the larger the group, the greater the quantity of speech and the more social the speech exhibited by nursery school children. Ervin-Tripp (1964) found that people adapt their speech to the social status of the person to whom they are

speaking. Cazden (1970) reported findings from a study in which a three year old female varied the length of her utterances depending on her listener; the longest utterances were noted when speaking to her mother and the shortest to her younger sister. Labov (1970) noted a difference in lower class children's language in two situations. A low level of verbalization was noted when the child was interviewed alone by an examiner from the same neighborhood, while a high level of verbalization as well as competition for attention when speaking were noted when the child conversed with the same examiner in the presence of another child.

The speech-language pathology literature in recent years contains numerous studies bearing on the validity and reliability of and the various elicitation variables related to traditional language sampling procedures. A few selected illustrations are included here. Longhurst and Grubb (1974) demonstrated that differences exist in the language samples of retarded children collected in four clinical elicitation situations including object elicitation, picture elicitation, adult-child conversation, and child-child conversation. Generally, language of greater quantity and quality are evident during the less structured conversational settings than during the more structured picture or object oriented setting.

Longhurst and Grubb (1975) compared DSS scores derived from language samples of preschoolers collected in four different elicitation conditions including single-object picture, toy, multi-object picture, and adult-child conversation. It was dmonstrated that DSS scores varied by as much as 80 percentile points depending on the elicitation condition employed. The conversation condition resulted in the highest DSS scores

while the other three conditions were not significantly different from one another.

Toronto and Toronto (1975) compared the spontaneous speech of a group of language disordered children in two very different settings. In one setting, the children conversed with an adult about toys, pictures, and stories. The second setting was structured according to the procedure outlined by Labov (1970). In this setting, the children were left alone in groups of three with a live, white rabbit. Although DSS scores were similar across the two sampling situations, utterance length was significantly longer in the adult-child session. The types of utterances produced in the two settings were different; the adult-child session was dominated by declarative statements while the white rabbit session stimulated a preponderance of negatives and questions.

Scott and Taylor (1978) gathered language samples for 12 normal children in two different settings. One sample was collected in a clinical setting designed to simulate as closely as possible the sampling procedures employed during a typical diagnostic evaluation. Unstructured examiner-child interactions centering around toys were utilized. A second sample, composed of mother-child interactions, was collected in the child's home using wireless recording equipment. Comparison of the samples revealed that children with an average utterance length of 4.0 to 5.0 morphemes produced significantly longer utterances in the home setting. Frequency of occurrence of some syntactic structures also varied significantly in the two settings. Clinic sampling emphasized the description of ongoing or imminent activity, using progressive aspect and locatives, while home sampling stimulated higher frequencies of past tense and modal verb forms, complex utterances, and questions. A second

investigation comparing home and clinic language samples was reported by Cramer, James, and Saxman (1977). The subjects were 10 children who had been referred for speech and language evaluations and ranged in age from 3 years, 11 months to 4 years, 11 months. Significant differences in MLU and DSS scores were found between the clinic and the home samples, with the home samples yielding the higher scores.

It should be noted that these studies were conducted during a time in which syntactic descriptions of child language dominated the literature and focused on descriptions of syntactic differences in the various sampling settings. The subjects of these studies were typically children who were fairly advanced linguistically with an utterance length of 4.00 or above.

Semantic Descriptions of Early Child Language

As mentioned previously, descriptions of young children's utterances in terms of the syntactic rules utilized dominated the literature for many years. An interest in semantic descriptions was generated by Bloom's (1970) landmark study. Three to five samples of spontaneous speech were collected for three children from the age of 19 to 25 months. During this period, the children's MLU ranged from 1.1 to 2.5 morphemes. In this study, Bloom's analysis of the sampled utterances included an interpretation of the meaning of the utterance as determined by observing the context in which it occurred. Bloom observed that the description of children's utterances in terms of their surface structural rules resulted in an incomplete account of these utterances. For example, she recorded two separate occurrences of the utterance "mommy sock" from one of her subjects, Kathryn. Bloom pointed out that both of these utterances would

be described identically by surface structure rules. She noted, however, that the utterance occurred in two different contexts and meant two different things. In one context, Kathryn was picking up her mother's stockings (i.e., gloss: this is mommy's sock) while in the other context, her mother was putting Kathryn's sock on her (i.e., gloss: mommy put on my sock). The semantic relationship present in Kathryn's utterance "mommy sock" was judged to be possessive in one case and agent-object of action in the other. Although Bloom's investigation emphasized a structural approach to child language, she noted the importance of the environmental context in determining the child's meaning and began to formulate a semantic taxonomy appropriate for child language.

Bloom (1973) extended the semantic description of child language to even younger children in a longitudinal study of her daughter, Allison, during the single word stage. In addition, Bloom, Lightbown, and Hood (1975) reanalyzed data from the three children studied in 1970 and added data from a fourth child. Specifically, this study focused on the order in which the various semantic categories are acquired. Utterances of two or more words were classified according to 18 categories. Absolute and proportional frequency of occurrence was computed for utterances classified within each category. It was found that the children learned to code semantic relations in a similar sequence. Utterances expressing existence, recurrence, and negation were noted to develop first. Next to develop were categories describing a variety of verb relations including action, locative action, locative state, state, and notice. Within this grouping, action relations preceded state relations. Utterances coding possession and attribution developed later and were more variable

in general. Emerging last were various relations involving specification, datives, wh-questions, complements, and intention.

Beginning with Bloom then, descriptions of early child language emphasized the child's intent to "mean" something. This trend was continued by Brown (1973) and Greenfield and Smith (1976) among others. Brown aptly described semantic descriptions of child language as the method of "rich" interpretation as contrasted with "lean" descriptions based solely on surface grammatical structure. These and other studies (Bowerman, 1973; Schlesinger, 1974) were instrumental not only in focusing attention on semantic perspectives of child language but also in shifting the age emphasis from the older to the younger child. Thus, semantics rather than syntax and the young child's one to three word utterances rather than the older child's complex structure became the primary concerns in the field of child language development.

Pragmatic Descriptions of Early Child Language

The young child's utterances can be analyzed from any one of a number of viewpoints. The utterance "doggie bark" can be described as (1) S + V (a syntactic description) or (2) agent-action (a semantic description). However, we still have not said all that we could about this utterance. How did the child intend his utterance to be interpreted by a listener? Was it a report concerning the child's observation, or was it a frantic plea for a parent's assistance in unlocking the door to let in the dog? This example serves to illustrate the evolution of emphasis in child language literature from purely syntactic to semantic, and most recently, to pragmatic accounts.

Bruner (1975, p. 283) defined pragmatics as the "directive function of speech through which speakers affect the behavior of others in trying to carry out their intentions." It seems likely that children acquire language as a more effective means for achieving their social and communicative objectives. This concept is reflected in Miller and Yoder's (1972) statement that in order for a child to use language, he must not only have something to say (semantic meaning) and a way to say it (syntactic structure), but also a reason to say it (pragmatic intention).

Bates (1976) provides an introduction to pragmatic accounts of language in her description of three kinds of pragmatic structures: performatives, presuppositions, and conversational postulates. The speaker's goal in using a proposition has been termed as the "performative," "speech act," or "illocutionary force" aspect of the sentence. It refers to the speaker's intention to ask a question, make a statement, register displeasure, etc. Bates suggests that all utterances may be divided into three distinct types of speech acts or performatives: locutions, illocutions, and perlocutions. Locutionary acts are "the procedures or acts that underlie the pragmatics of reference" (p. 427). For example, the use of a sound as a referent in a particular context constitutes a locution. All illocutionary speech act is "a conventional social act that takes place when a sentence is uttered" (p. 427). Any conventional social act such as promising or urging is an illocution. The effects of the use of a sentence are termed perlocutionary acts. Annoyance or persuasion, for example, are perlocutions. The term presupposition is employed to describe the background information (information that may or may not be contained in the sentence itself) that is necessary for the utterance to make sense. Finally, conversational postulates are

described as rules about the nature of conversation as a cooperative enterprise. The conveyance of subtle messages to the listener and polite speech are examples of conversational postulates.

During the past three years, researchers have begun to examine the pragmatics of child language and the relevant body of literature has grown rapidly. This literature can be divided into three major areas. First, a large portion of the research has centered on the delineation of the specific communicative functions served by language over the course of development. Second, much of the research has focused on descriptions of early conversational skills. Finally, a limited amount of research has focused on pragmatics and the language disordered child.

Descriptions of the Social Functions Served by Language Over the Course of Development

In 1927, deLaguna (1963, p. 20) argued that "men do not speak simply to relieve their feelings or to air their views, but to awaken a response in their fellows and to influence their attitudes and acts." Bruner (1975, p. 2) stated that "language is acquired as an instrument for regulating joint activity and joint attention." The broad classes of communicative functions are identified in both of these accounts. Both specify (1) the regulation or influencing of a listener's actions and (2) influencing attitudes and/or regulating joint attention.

Two in-depth descriptions of the pragmatics of early child language appeared in 1975. Halliday (1975) observed the linguistic development of his son, Nigel, from the age of nine months through two years. He proposed three phases of language development on the basis of these observations. Phase I, covering the period from nine months through

16 1/2 months, was characterized by the development of consistent sounds used to serve seven functions of language. The functions and glossed examples are listed in Table I. During Phase II, the period from 16 1/2 to 24 months, the child acquired standard lexical items as well as an ability to participate in a dialogue. Two broad functions of language which extend the specific functions of Phase I were also identified by Halliday. A pragmatic function is derived from the Phase I instrumental and regulatory functions. This function is defined as "language as doing." A mathetic function, described as "language as learning," is derived from the earlier personal and heuristic functions. Two abstract components of adult language, ideational and interpersonal, as well as a framework of options derived from these two basic functions are developed in Phase III. Halliday proposes that the ideational component arises from the use of language to learn while the interpersonal component arises from the use of language to act. In summary, he specifies the ways in which the child's early uses of language gradually evolve into the generalized social contexts of adult language use.

Dore (1975) analyzed the utterances produced by two children in the one word stage of language development within a framework of the speaker's underlying intention or illocutionary force. On the basis of these data, he identified nine functions of one word utterances, which he termed Primitive Speech Acts. Dore's classification system for one word speech acts is listed in Table II.

McLean and Snyder-McLean (1978) reviewed the accounts on language function by Bruner, deLaguna, Halliday, and Dore and identified two broad types of functions realized by language. These two functions are designated as Type I and Type II. Type I functions are defined as the

functions of requesting or demanding some overt behavioral response from the listener while Type II functions are described as the functions of establishing joint reference with a listener where the ultimate intent is not specified by the content of the communicative act. A listing of the functions discussed in these accounts is juxtaposed in Table III and designated as being either Type I or Type II.

TABLE I

SUMMARY OF HALLIDAY'S PHASE I FUNCTIONS OF LANGUAGE

Function	Glossed Example
Instrumental	I want
Regulatory	Do as I tell you
Interactional	Me and you
Personal	Here I come
Heuristic	Tell me why
Imaginative	Let's pretend
Informative	I've got something to tell you

Source: Adapted from Halliday (1975).

Prutting (1977) reviewed the body of pragmatic literature and formulated a six stage system for the acquisition of pragmatics based on pertinent findings. A summary of Prutting's first four stages for the acquisition of pragmatics is listed in Table IV. The last two stages

TABLE II

DORE'S CLASSIFICATION SYSTEM FOR PRIMITIVE SPEECH ACTS

Primitive Speech Act	Example
Labeling	eyes (after touching doll's eyes
Repeating	dat (after hearing mother say doctor)
Answering	bow wow (response to What's this? when mother points to picture of a dog
Requesting (action)	uh? uh? uh? (after trying to push pegs in hole)
Requesting (answer)	book↑ (after picking up book)
Calling	mama (when mother is across room)
Greeting	Hi (when teacher enters room)
Protesting	no (when resisting mother's attempts to put shoes on)
Practicing	daddy (when daddy is not present; mother does not respond)

Source: Adapted from Dore (1975).

TABLE III

COMMUNICATIVE FUNCTIONS OF CHILD LANGUAGE

Type	Bruner	deLaguna	Halliday--Stage I	Halliday--Stage II	Dore
I	Regulating Joint Actions	Influence a Listener's Acts	Instrumental	Pragmatic	Requesting Action
			Regulatory		Calling
					Protesting
II	Regulating Joint Attention	Influence a Listener's Attitudes	Interactional	Mathetic	Greeting
			Personal		Labeling
			Heuristic		Requesting Answer
			Imaginative		Repeating
			(Informative)		Answering
					Practicing

Source: Adapted from McLean and Snyder-McLean (1978).

TABLE IV

SUMMARY OF PRUTTING'S FIRST FOUR STAGES OF THE ACQUISITION OF PRAGMATICS

Prelinguistic (Birth-9 months)	Stage I (9-18 months)	Stage II (18-24 months)	Stage III (2-3 years)
Illocutionary acts--giving, pointing, showing	Verbal turntaking (Bruner, 1976)	Functions--mathetic, pragmatic, informative (Halliday, 1975)	Respond to questions (Dore, 1976)
Perlocutionary acts--crying, laughing (Bates, 1975)	Informative--new information coded first (Greenfield and Smith, 1976)	Dialogue begins (Halliday, 1975)	Functions--ideational, interpersonal, textual (Halliday, 1975)
Deixis of place and person (Bruner, 1976)	Intentions--label, response, request, greeting, protesting, repeating, description, attention (Dore, 1975)	New information-old information sequence (Bates, 1976)	Syntactical changes and attentional devices (Shatz and German, 1974)
			Contingent queries (Garvey, 1975)
	Functions--instrumental, regulatory, interactional, personal, heuristic, imaginative (Halliday, 1975)		

Source: Adapted from Prutting (1977).

delineate the acquisition of pragmatics for children over three years of age to adulthood.

Descriptions of Early Conversational Skills: Discourse Development

As children learn to use language for different purposes, they must also learn the most effective forms for getting the message across according to the needs of each specific situation and listener. Consideration of the listener's needs is an important prerequisite to the ability to effectively participate in a conversation. Therefore, pragmatics focuses on both the speaker's and the listener's utterances. The frame of reference is thus shifted from a single utterance to the conversational dyad.

Bloom, Rocissano, and Hood (1976) investigated the early discourse interaction between adult and child. They identified child utterances as either adjacent or nonadjacent. The term adjacent is used to describe any child utterance which is immediately preceded by an adult utterance while the term nonadjacent refers to an utterance not immediately preceded by an adult utterance. Adjacent utterances were further broken down into three secondary categories: contingent, noncontingent, and imitative. According to the authors, contingent utterances not only shared the topic of the preceding adult utterance but also introduced new information. Noncontingent utterances did not share the same topic as the previous adult utterance. Imitative utterances shared the topic of the prior adult utterance but did not add any new information. In addition, contingent utterances were classified as either contextually or linguistically contingent. Utterances which are contextually

contingent share the same topic through contextual information. Linguistic contingency is used to refer to utterances which share the clause structure of the prior adult utterance. Longitudinal data were obtained from four children. The subjects' language was sampled at periodic intervals from 21 to 36 months of age. Results indicated that the proportion of adjacent speech was greater than nonadjacent speech at every stage. An increase in the number of contingent utterances was noted over time indicating that the children share topics and add new information. Specifically, linguistically contingent utterances increased sharply with development. The children's utterances were also examined in relation to the adult's use of questions. Linguistically contingent speech occurred more frequently following questions than statements. However, the children's increase in linguistic contingency was developmentally greater in response to statements rather than questions. It is suggested that these two factors are instrumental in maintaining an equilibrium between the adult and child during a conversational exchange.

Pragmatics and the Language Disordered Child

While research on pragmatic aspects of child language has centered on the child who is developing language normally, attempts have also been made to relate this body of literature to the language disordered child. Rees (1978) reviews literature which applies pragmatics to communication disorders. Brief examples of pertinent literature will be included here.

Snyder (1975) described the presuppositional, declarative, and imperative performance of children at the one word stage of language development. Subjects included language disordered children, mean age

of 24.2 months, and normal children, mean age of 14.9 months. Performance was assessed by noting the subjects' choice of single words for encoding a variety of action events as the context was changed by the examiner. For example, the child was handed a series of identical blocks and then a car. It was found that although both groups encoded the changing element (car) more frequently than the unchanging element (blocks), the language disordered children were more likely to code this element nonverbally than verbally. In general, the language disordered children did not perform as well as the normal children on these tasks.

Fleming (1976) examined mothers' verbal input to both normally developing and language disordered children. She observed two family groups consisting of a mother and her two children. In both families, the older child (aged 4 years, 5 months, and 4 years, 9 months) was language disordered, and the younger child (aged 2 years, 6 months, and 2 years 11 months) was acquiring language normally. Data were collected over a one month period in three contexts including mother interacting with her normally developing child, mother interacting with her language disordered child, and mother interacting with both children together. The mothers' utterances were analyzed in terms of the following parameters: (1) physical performance including MLU, speech rate, lexical variability, and repetition; (2) structure including imperative, inverted question, intonation only question, wh-question, tag question, negation, affirmative declarative, and single word utterance categories; and (3) function including Bloom's functional types and Holzman's functional types. The most striking results were the difference between the two mothers' styles of interaction. It was also found that the presence of a language disorder caused each of the mothers to alter her speech style

somewhat. In particular, the mothers' tended to speak more slowly and use a higher percentage of reports and comments with the language disordered children.

Geller and Wollner (1976) investigated the communicative competence of three language disordered children between the ages of three to five years. The subjects' MLU's ranged from 1.1 to 1.6 years. It was found that the range of communicative functions used by these children is restricted. This study further substantiates Snyder's (1975) findings that language disordered children are deficient in their pragmatic use of language.

Gordon and Hyta (1977) investigated the use of gestures by language disordered children to perform pragmatic functions. Four children were videotaped in two situations including mother-child interaction and clinician-child interaction. The children were confronted with stimulus materials which were unobtainable or unusable without adult assistance. The adults were instructed not to initiate any interaction or to prompt the child in any manner. The following gestures used alone or with verbalization were measured: pointing, showing, requesting, and negation. Results revealed that the children used more gestures with their parents than with a clinician. Based on their findings, the authors suggested that speech and language diagnostic sessions include measurement of nonverbal behavior as an index of functional interaction skills and a parent-child interaction period.

Clinical Application of Semantic and Pragmatic Descriptions: Assessment Protocols

As the body of literature on semantic and pragmatic descriptions of

child language has grown rapidly, emphasis has also been placed on the clinical application of these findings. Descriptions of pertinent assessment strategies as well as formal studies on the validity of such procedures will be included in this paper.

MacDonald and his colleagues have advocated a semantically based program directed specifically to young, severely delayed children. They provided two assessment inventories: (1) Environmental Prelanguage Battery (Horstmeier and MacDonald, 1975) and (2) Environmental Language Inventory (MacDonald and Nickols (1974). The Environmental Prelanguage Battery (EPB) assesses various elements which are suggested to be important prerequisites for the development of language. Various social and cognitive tasks as well as motor and speech imitative behaviors are sampled. The second assessment procedure, the Environmental Language Inventory (ELI), is designed to assess the semantic-grammatical rules evidenced in two and three word utterances. The semantic-grammatical rules included in this instrument are based on data from Schlesinger's (1971) study of two word constructions. The seven rules are: Agent + Action, Action + Object, Agent + Object, Modifier + Head (possession, recurrence, and attribution), Negation + X, Location (agent or object and action), and Introducer + X. Each semantic-grammatical rule is elicited by a particular stimulus set containing both linguistic and nonlinguistic rules. The child's language is sampled in situations requiring imitative speech and in cued conversation. According to MacDonald this procedure directs the speech-language pathologist to those semantic-grammatical rules which should be the focus of treatment. Simultaneous training in both imitation and conversation within the context of a social-play interactive milieu is recommended. With this

strategy, targeted structures are made to occur at high rates and within contexts in which their communicative functions are appropriate.

Rodgon, Jankowski, and Alenskas (1977) introduced a system for analyzing early language production on the basis of a multidimensional approach which includes pragmatic as well as semantically-based categories. It is suggested that the acquisition of language is a multifaceted process including three distinct yet overlapping aspects. The first aspect is referred to as a structural-linguistic aspect; it is defined as including syntactic rules which prescribe grammatical utterances as well as rules for conveying basic semantic relation. A second aspect involves the relation between objects and events in the real world and their description in symbolic form; this is referred to as the cognitive aspect. A third aspect is the communicative aspect which is described as the function of conveying information from one person to another. It is recommended that each of a child's utterances be coded on three dimensions corresponding to the three aspects of language acquisition. The action dimension describes the relation between overt action and verbalization. The communication dimension is a record of the flow of dyadic interaction between child and parent while the linguistic-structural dimension conveys the child's attempts to express linguistic meaning relations. The main categories and more frequent subcategories are summarized in Table V. Longitudinal data from three subjects in the single word stage of development are reported. Findings revealed a similarity in the action context of single word utterances for all three of the subjects as well as individual differences in the relations between language, overt action, and a child's tendency to talk about action. Overall differences in functional styles of language acquisition

TABLE V

MULTI-FUNCTIONAL SYSTEM FOR CODING SINGLE WORD UTTERANCES

Action Dimension	Communication Dimension	Linguistic-Structural Dimension
Child performing action--present	Child imitates verbal interaction	Performatives
Child action completed	Child response to action	Naming
Another individual performing action--present	Child responds to situation	Naming--demonstrative
Another individual's action--completed	Child utterance follows adult utterance	Vocative
No action	Child sequences	Object of demand
Action of inanimate object	Child sequences--sound	Negative or affirmative
		Action by agent
		Inanimate object of direct action
		State or action of inanimate object
		Agent of action
		Possession and habitual location
		Location
		Experiencer
		Modification of event
		Conjunction and opposition
		Letters
		Counting

Source: Adapted from Rodgon, Jankowski, and Alenskas (1977).

were noted. Although this system was used only to analyze single word production, the authors suggested that it should be useful with longer utterances as well. It should also be noted that this system was not specifically designed for use with language disordered children; however, it appears to have potential for use with such children.

McLean and Snyder-McLean (1978) presented an assessment procedure derived from their Transactional Model of Language Acquisition which incorporates cognitive, social, and linguistic components. Their assessment model is composed of a set of specific Assessment Procedures Guidelines for each of 16 general target area--four in each of the major categories: cognitive bases for language, social bases for language, receptive linguistic abilities, and expressive linguistic abilities. The 16 general target areas are listed in Table VI. Each of these Assessment Procedures Guidelines includes procedures or instruments which would be appropriate for the assessment of that particular area as well as guidelines for interpretation and application of the assessment data. McLean and Snyder-McLean recommended that the speech-language pathologist first form an opinion concerning the child's general level of functioning from an informal observation and then consult the Assessment Priorities Decision Map which provides suggestions as to which of the target areas should be assessed. This Assessment Priorities Decision Map and a set of Assessment Procedures Guidelines for each of the 16 target areas are presented in McLean and Snyder-McLean's book, A Transactional Approach to Early Language Training: Derivation of a Model System. The authors further outlined general treatment strategies for the function (pragmatics), context (semantics), and structure (syntax) of communicative acts. It is recommended that treatment be aimed at all three

dimensions rather than at a single target. While their suggestions are specifically geared to young severely disordered children, it would seem that the same suggestions could be extended to less severely involved children.

TABLE VI

LISTING OF MCLEAN AND SNYDER-MCLEAN'S 14 GENERAL TARGET AREAS FOR ASSESSMENT OF COMMUNICATION

Cognitive Bases	Social Bases	Receptive Linguistic Abilities	Expressive Linguistic Abilities
Cognitive organization	Socialization	Discrimination	One word
Knowledge/ concepts	Nonverbal communication	Phonemic/ paralinguistic	Nongrammatical
Semantic relational	Child's strategies	Semantic/ lexical	Two to three word
Style-Preference	Caregiver strategies	Syntactical	Multi-word

Source: Adapted from McLean and Snyder-McLean (1978).

Bloom and Lahey (1978) proposed a three-dimensional content/form/use approach to the assessment of language in their book, Language Development and Language Disorders. These three components are integrated into an eight phase plan for assessment and invention purposes. Utterances are coded for content according to 21 semantic categories. In terms of form, each utterance is recorded as either a single word or multi-word

combination. The specific linguistic form used is also specified. For example, the utterance "daddy drive" would be recorded as a multi-word combination composed of a subject and verb (form) encoding action (content). All utterances are also coded according to use which includes function and conversational context. Specifically, each utterance is classified as one of several function categories which include comment, vocal play, regulate other's actions, obtain objects, call attention to self or other, social interactions, routines, obtain information, and obtain information about or classification of another's utterances. Conversational context is noted by categorizing each utterance as child initiated, response to question, or response to statement. In addition, responses to questions and statements are coded as adding new information or inappropriate. Thus, Bloom and Lahey were the first to systematically integrate content/form/use into an assessment and treatment strategy.

A recent study by Andrews (1974) investigated the differences in a child's linguistic ability in a variety of settings not only in terms of the syntactic relationships of the utterances but also the semantic intent. Language samples were collected from 10 retarded children between the ages of 6 years, 7 months, and 10 years, 6 months, using three different sampling procedures including spontaneous conversation with the examiner, the Environmental Language Inventory, and a home environment parent-recorded procedure. The utterances were analyzed for both the mean length of utterance and the eight semantic-grammatical rules outlined by Schlesinger (1971). Findings indicated that while the distribution of semantic-grammatical rules in a language sample do not differ significantly in the three procedures, the home environment

language sample procedure yielded significantly longer utterances than did the other procedures. Andrews (1974) recommended that a comparison of these sampling procedures be made using a younger and/or a larger group of subjects. She also suggested that variations of the procedures utilized in this study be combined for the purpose of further refining language sampling procedures.

Semantic and pragmatic descriptions of child language have influenced both assessment and treatment strategies for language disordered children. If we are to apply treatment strategies which are directed toward semantic and pragmatic goals, we must first be sure that we have accurately sampled the child's existing capabilities in both areas. Although we know that syntactic aspects of a child's performance are sensitive to various sampling variables, we have very little information concerning sampling variables which influence semantic and pragmatic performance.

CHAPTER III

METHODOLOGY

Subjects

Initially, the investigator visited potential subjects in their homes for the purpose of informally judging their expressive language skills. The children were engaged in conversation in order to assess both their level of linguistic development and their intelligibility. Also, the proposed research was described to the mothers during this visit. Three children, two with normally developing language and one with a language disorder were selected on the basis of similarity in expressive language as measured by Mean Length of Utterance (MLU) ranging from 1.75 to 2.5 morphemes. The two children with normally developing language, a boy and a girl, were 25 and 26 months of age, respectively. The language disordered child, a Down's Syndrome female, was 40 months of age. All subjects were from similar social class backgrounds. Fathers were employed in business or professional positions; mothers did not work outside the home. Each of the children had one sibling. A post hoc requirement for inclusion specified that the child produce at least 100 intelligible utterances during the initial sampling period.

Collection of the Data

The subjects were observed on six separate occasions, three times

each in the home and the clinic. All of the sampling sessions were videotaped using a Sony Videocorder Camera (AVC-3400 DC 12V), the home sessions with a Sony Port-a-Pac unit and the clinic sessions with a Sony Videocorder (AV 3600). The sampling conditions included: "dry-run" home sample, initial unstructured home sample, mother-elicited clinic sample, unstructured clinic sample, structured clinic sample, and final unstructured home sample. Each session was approximately 50 minutes in length. The samples were obtained for each of the subjects within a 10 day period in the following order:

1. "Dry-Run" Home Sample--The child was videotaped in the home during unstructured mother-child interaction. Written instructions were given to the mother before the sample was taken (Appendix A). She was instructed to interact normally with her child. She was free to choose whatever activities she wished but was asked to stay in one room and to refrain from talking with the investigator during filming. This session was conducted to familiarize the mother and child with the videotaping procedure and apparatus, thereby minimizing distractions during subsequent sampling sessions. The sample was not used for analysis purposes.

2. Initial Home Sample (Home I Mother)--Again, the child was videotaped in the home during unstructured mother-child interaction. The same set of written directions was given to the mother as described earlier.

3. Mother-Elicited Clinic Sample (Clinic Mother)--Mother and child were videotaped in a small clinic playroom at the Oklahoma State University Speech and Hearing Clinic. Again, written instructions were given to the mothers prior to filming (Appendix B). They were instructed

to play with their children in as natural a manner as possible. The same set of toys used in the unstructured clinic sample was available. In this and all other clinic sampling sessions, the room was bare except for toys and a small table.

4. Unstructured Clinic Sample (Clinic Unstructured)--A clinician at a comparable level of graduate training as the investigator was recruited to collect this sample. She was instructed to choose toys and materials and use any procedures she felt appropriate for language sampling with a young child in a routine speech-language evaluation. Once chosen, the same toys and materials were used with all subjects. As mentioned earlier, these same toys were made available to the mother for the mother-elicited clinic sample. Toys chosen included a play village with accompanying people, furniture, and cars; two picture books; rubber blocks; and cookies. The clinician was unaware of the design or the purpose of this study at the time of her participation in it.

5. Structured Clinic Sample (Clinic Structured)--The child was videotaped as he/she interacted with the investigator in a series of activities. These activities were designed to maximize the possibility that the child would produce utterances in specific pragmatic categories. The seven activities included ranged from a free play period to an eating activity. Initially, the child was taken to a room bare of any objects with the exception of four toys (rag doll, red wagon, fire truck, and tricycle) placed out of the child's reach on a table. The investigator busied herself until the child requested one of the toys. Once a toy had been chosen, the investigator made five declarative statements specific to the particular toy. Second, a paper-paste activity was presented. The investigator remained quiet while constructing a paper rabbit with

construction paper, scissors, glue, and cotton, giving the child opportunity to comment or question. As the activity was winding down, five yes/no questions were directed to the child. Next, two jars containing costume jewelry and a rubber toy monster were placed in front of the child. Lids were tightly closed. For the fourth activity, a parking garage toy was presented to the child for a brief free play period. While the child was playing, the door opened and a cat wandered into the room. The investigator was quiet waiting for the child to comment. The cat was fed by the investigator. Finally, popcorn was popped. Only one or two kernals of popcorn as well as a taste of juice in a cup were given to the child. The investigator was again quiet, making only a few comments such as "Here's some grape juice for you."

6. Final Home Sample (Home II Mother)--The child was again videotaped in the home setting during unstructured mother-child interaction. The same instructions were given to the mother as in the "dry-run" home sample and the initial unstructured home sample.

In addition to the procedures described above, an interview was conducted with mothers prior to the mother-elicited clinic sample. The interview was designed to elicit information concerning the mother's perception of her child's language capabilities in specific semantic and pragmatic categories. Each mother was also asked to estimate her child's Mean Length of Utterance. The interview is included here as Appendix C. The general purpose of the interview was to determine the degree of correspondence between the mother's perception of and insight into her child's language abilities and actual observational data on these same abilities.

Analysis of the Data

The subjects' and adults' (mother, clinician, or investigator) conversation on each of the videotapes was transcribed verbatim. All conversation was transcribed in English orthography unless no English gloss could be discerned. The International Phonetic Alphabet was used in these instances. Contextual notes were also made on the transcripts from the videotapes. Mean length of utterance (MLU) in morphemes was computed for each of the subjects' samples using Brown's (1973) rules. All of the children's intelligible utterances were classified according to three parameters of language: semantic category, conversational context, and pragmatic intention. A sample transcript is included in Appendix D.

Semantic Category Coding

Bloom and Lahey's (1978) semantic categories with modifications were used for content coding. Definitions of the categories and examples of specific utterances assinged to each of the categories are included in Appendix E.

Coding Conversational Context

Two measures of conversational context were included. First, the average number of utterances per conversational turn was computed for both the child and the adult in each sample. Secondly, the children's utterances were coded according to six major conversational categories: child initiated, response to question, response to statement, imitation, repetition, and no response. Both the response to question and response to statement categories were further coded as to their appropriateness,

either appropriate or inappropriate. Operational definitions of each category are included in Appendix F.

Coding Pragmatic Intention

Finally, each utterance was categorized according to pragmatic intention. Categories used were comment, obtain information, pretend, social, ritual, acknowledge and place hold, request for repetition, regulatory, instrumental, reject, negate statement, affirm, and uncodeable. Operational definitions are included in Appendix G.

Reliability

The investigator transcribed all samples and coded a majority of the samples. Two experimenters assisted in the coding of selected samples. Intrajudge reliability for transcription and segmentation was handled by repeated listening. On a first listening to the tape, the investigator transcribed the child's and adult's utterances. On repeated listening, finer details became more obvious and final decisions were made regarding transcription and segmentation. To determine intrajudge reliability for coding, the investigator recoded portions of three samples. For this reliability check, new uncoded transcripts were prepared by an assistant. Intrajudge reliability for coding was .93. Interjudge reliability for coding, handled in a similar manner, was .89.

CHAPTER IV

RESULTS AND DISCUSSION

Findings from the five samples (Home I Mother, Clinic Mother, Clinic Unstructured, Clinic Structured, and Home II Mother) for each of the three subjects are presented. In addition, information gathered from the mothers during an interview conducted by the investigator is discussed.

Quantity of Data

Analyzing five hours and 42 minutes of videotaped data for three children in five samples, 2,674 utterances were identified. Of these utterances, 2,454 or approximately 92 percent were transcribed and coded. The number of utterances identified and the amount of videotaped time for each child is presented in Table VII. Averaging the data across the children, 178 utterances were obtained in a 23 minute period of videotaping. These data yielded a rate of 8.0 utterances per minute. Utterances per minute ranged from a low of 2.77 (Amy, Clinic Structured) to a high of 12.04 (Melanie, Clinic Mother). This quantity of information was surprising. Originally, it was estimated that approximately 100 utterances could be obtained in a 25 minute period. However, as shown in Table VII, the actual data yielded a significantly higher average number of utterances per sampling period. Also, quantity results revealed that the children talked as much in the clinic as in the home and with strangers as much as with mothers. In terms of number of utterances per

minute, it is interesting to note that Melanie, the language disordered child, had the highest average rate of 11.04.

TABLE VII

NUMBER OF UTTERANCES, NUMBER OF CODED UTTERANCES, AND VIDEOTAPED TIME FOR CHILD

	Total No. Utterances	Total No. Coded Utterances	Time	Utterances per Minute
Tommy:				
Home I Mother	161	154	19	8.47
Home II Mother	147	141	21	7.00
Clinic Mother	140	132	25	5.60
Clinic Unstructured	156	133	23	6.78
Clinic Structured	192	172	20	9.60
Average	159	146	22	7.49
Amy:				
Home I Mother	139	139	35	3.97
Home II Mother	113	108	17	6.64
Clinic Mother	135	127	20	6.75
Clinic Unstructured	146	144	20	7.30
Clinic Structured	75	75	27	2.77
Average	122	119	24	5.49
Melanie:				
Home I Mother	238	220	23	10.34
Home II Mother	268	253	23	11.65
Clinic Mother	277	273	23	12.04
Clinic Unstructured	244	198	23	10.60
Clinic Structured	243	185	23	10.56
Average	254	226	23	11.04
Average Across Children and Samples	178	164	23	8.00

Mean Length of Utterance Data

MLU data are shown in Table VIII. Comparing the lowest and the highest MLU for each child across the five samples, the children looked quite similar with differences of 0.57, 0.53, and 0.42. Calculating the difference between any two samples across children, an average of 0.27 was obtained. Therefore, approximately 0.50 appeared to be an upper limit on the amount of variability in MLU that can be expected between sampling sessions. However, as indicated by the average variability of 0.27, the differences between samples would frequently be considerably less. It should be noted that one sample for Amy, the structured clinic sample, was not included in these calculations. Her behavior during this sample was judged to be somewhat unrepresentative of that exhibited in the other samples. Specifically, Amy cried and resisted attempts by the investigator to interest her in the activities during the first 15 minutes of the sampling session.

TABLE VIII

MEAN LENGTH OF UTTERANCE DATA

	Home I Mother	Home II Mother	Clinic Mother	Clinic Unstruc.	Clinic Struc.	Highest MLU-Lowest MLU
Tommy	1.77	2.08	1.76	2.03	2.33	0.57
Amy	2.12	2.42	2.65	2.62	1.83	0.53
Melanie	1.64	1.71	2.06	1.67	2.01	0.42

A comparison of each child's MLU as a function of the particular sample can be made. As seen in Table VIII, two of the children had high MLU's (Tommy, 2.33; Melanie, 2.01) in the structured clinic sample. Also, two of the children had high MLU's (Amy, 2.65; Melanie, 2.05) in the clinic with mother. Overall, the highest MLU's were obtained in the clinic rather than in the home samples. No home sample yielded the highest MLU for any of the children. Comparing samples with mother versus samples with strangers, all three of the children had higher or at least as high an MLU with strangers as with mother. For example, Tommy obtained a 2.03 MLU in the unstructured clinic sample and a 2.33 MLU in the structured clinic sample as compared with a 1.76 in the mother-elicited clinic sample, 2.08 in the Home II Mother sample, and 1.77 in the Home I Mother sample. Further, MLU for two of the children was lowest with mother; specifically, Tommy's lowest MLU was obtained in the Clinic Mother sample while Melanie's lowest MLU was obtained in the Home I Mother sample. These results indicated that children's utterances produced with strangers were as long and in some cases longer than those produced with mothers.

Semantic Categories

Proportional and absolute frequencies of semantic categories for each child are reported in Tables IX, X, and XI. All three children displayed 22 of the 24 semantic types. One child (Amy) displayed all 24 types. Examples of these two later developing categories (coordinate and causality) were not found in the samples of the other two children. Although the children used a complete range of semantic categories, the absolute frequency with which certain categories were used by the

TABLE IX

ABSOLUTE AND PROPORTIONAL FREQUENCIES OF SEMANTIC CONTENT CATEGORIES FOR TOMMY

	Home I Mother	Home II Mother	Clinic Mother	Clinic Unstruc.	Clinic Struc.
Existence	79(45.66)	34(19.88)	60(45.66)	36(23.22)	45(22.61)
Nonexistence	0	0	1 (0.70)	3 (1.94)	0
Recurrence	1 (0.58)	0	1 (0.70)	2 (1.29)	1 (0.50)
Rejection	3 (1.73)	9 (5.26)	4 (2.80)	7 (4.52)	0
Denial	0	0	2 (1.40)	0	1 (0.50)
Attribution	11 (6.36)	1 (0.58)	6 (4.20)	2 (1.40)	1 (0.50)
Possession	10 (5.78)	5 (2.92)	0	0	1 (0.50)
Action	22(12.72)	30(17.54)	15(10.49)	19(12.26)	32(16.08)
Locative Action	3 (1.73)	17 (9.94)	6 (4.20)	9 (5.81)	6 (3.02)
Locative State	3 (1.73)	2 (1.17)	6 (4.20)	8 (5.16)	1 (0.50)
State	2 (1.16)	2 (1.17)	4 (2.80)	2 (1.29)	6 (3.02)
Intention	13 (7.51)	8 (4.68)	10 (6.99)	21(13.55)	54(27.14)
Object of Int.	3 (1.73)	0	1 (0.70)	9 (5.81)	4 (2.01)
Quantity	2 (1.16)	9 (5.26)	1 (0.70)	5 (3.22)	9 (4.52)
Dative	0	0	0	0	1 (0.50)
Specifier	4 (2.31)	5 (2.92)	6 (4.20)	5 (3.22)	2 (1.00)
Notice	1 (0.58)	0	2 (1.40)	4 (2.58)	1 (0.50)
Time	0	14 (8.19)	0	0	2 (1.00)
Coordinate	0	0	0	0	0
Causality	0	0	0	0	0
Affirm	4 (2.31)	25(14.62)	4 (2.80)	5 (3.22)	9 (4.52)
Oh	0	0	1 (0.70)	0	0
Filler	4 (2.31)	2 (1.17)	6 (4.20)	9 (5.81)	11 (5.53)
Miscellaneous	8 (4.62)	8 (4.68)	7 (4.90)	9 (5.81)	12 (6.03)

TABLE X

ABSOLUTE AND PROPORTIONAL FREQUENCIES OF SEMANTIC CONTENT CATEGORIES FOR AMY

	Home I Mother	Home II Mother	Clinic Mother	Clinic Unstruc.	Clinic Struc.
Existence	10 (6.13)	25(17.00)	32(19.63)	24(13.19)	8 (9.64)
Nonexistence	0	0	1 (0.61)	0	0
Recurrence	1 (0.61)	0	3 (1.84)	3 (1.65)	0
Rejection	22(13.50)	4 (2.72)	2 (1.23)	8 (4.40)	6 (7.23)
Denial	3 (1.84)	1 (0.68)	1 (0.61)	6 (3.30)	5 (6.02)
Attribution	8 (4.91)	4 (2.72)	14 (8.59)	5 (2.75)	2 (2.41)
Possession	4 (2.45)	14 (9.52)	9 (5.52)	5 (2.75)	0
Action	20(12.27)	19(12.92)	20(12.27)	29(15.93)	20(24.10)
Locative Action	18(11.04)	13 (8.84)	27(16.56)	19(10.44)	9(10.84)
Locative State	4 (2.45)	11 (7.48)	4 (2.45)	8 (4.40)	1 (1.20)
State	7 (4.29)	7 (4.76)	4 (2.45)	21(11.54)	0
Intention	4 (2.45)	3 (2.04)	4 (2.45)	1 (0.55)	2 (2.41)
Object of Int.	2 (1.23)	2 (1.36)	0	1 (0.55)	0
Quantity	2 (1.23)	8 (5.44)	3 (1.84)	15 (8.24)	0
Dative	2 (1.23)	9 (6.12)	0	1 (0.55)	2 (2.41)
Specifier	13 (7.98)	1 (0.68)	7 (4.29)	12 (6.59)	1 (1.20)
Notice	0	2 (1.36)	2 (1.23)	4 (2.20)	3 (3.61)
Time	2 (1.23)	4 (2.72)	8 (4.91)	6 (3.30)	0
Coordinate	0	1 (0.68)	0	0	0
Causality	0	0	0	1 (0.55)	0
Affirm	20(12.27)	15(10.20)	17(10.43)	13 (7.14)	9(10.84)
Oh	10 (6.13)	0	1 (0.61)	0	2 (2.41)
Filler	5 (3.07)	1 (0.68)	0	0	0
Miscellaneous	6 (3.68)	3 (2.04)	4 (2.45)	0	13(15.66)

TABLE XI

ABSOLUTE AND PROPORTIONAL FREQUENCIES OF SEMANTIC CONTENT CATEGORIES FOR MELANIE

	Home I Mother	Home II Mother	Clinic Mother	Clinic Unstruc.	Clinic Struc.
Existence	39(15.30)	49(16.49)	31 (0.04)	14 (6.11)	27(12.79)
Nonexistence	1 (0.39)	0	1 (0.29)	0	0
Recurrence	0	0	0	5 (2.18)	1 (0.47)
Rejection	14 (5.49)	42(14.14)	27 (7.87)	43(18.78)	26(12.32)
Denial	7 (2.75)	6 (2.02)	6 (1.75)	15 (6.55)	7 (3.31)
Attribution	6 (2.35)	3 (1.01)	1 (0.29)	2 (0.87)	2 (0.94)
Possession	1 (0.39)	5 (1.68)	2 (0.58)	0	7 (3.31)
Action	11 (4.31)	17 (5.72)	57(16.60)	18 (7.86)	35(16.59)
Locative Action	14 (5.49)	17 (5.72)	14 (4.08)	5 (2.18)	6 (2.84)
Locative State	6 (2.35)	5 (1.68)	3 (0.87)	4 (1.75)	1 (0.47)
State	14 (5.49)	23 (7.74)	14 (4.08)	10 (4.37)	8 (3.79)
Intention	15 (5.88)	26 (8.75)	51(14.87)	30(13.10)	22(10.42)
Object of Int.	2 (0.78)	3 (1.01)	2 (0.58)	1 (0.44)	5 (2.37)
Quantity	5 (1.96)	11 (3.70)	21 (6.12)	14 (6.11)	1 (0.47)
Dative	0	0	0	0	1 (0.47)
Specifier	9 (3.53)	2 (0.67)	5 (1.46)	3 (1.31)	3 (1.42)
Notice	4 (1.57)	7 (2.36)	4 (1.17)	2 (0.87)	5 (2.37)
Time	2 (0.78)	1 (0.34)	2 (0.58)	0	1 (0.47)
Coordinate	0	0	0	0	0
Causality	0	0	0	0	0
Affirm	78(30.59)	44(14.81)	47(13.70)	36(15.72)	45(21.33)
Oh	10 (3.92)	3 (1.01)	12 (3.50)	7 (3.05)	0
Filler	4 (1.57)	2 (0.67)	8 (2.33)	8 (3.49)	1 (0.47)
Miscellaneous	13 (5.09)	31(10.44)	35(10.20)	12 (5.24)	7 (3.31)

children differed considerably. Examining proportional frequency of occurrence across the children yielded some similarities for certain semantic categories. Five of the categories (existence, action, locative action, intention, and affirm) were present in substantial numbers for all three children in each of the five samples; these categories are termed "robust." This information is summarized in Table XII. For example, reading the first entry, existence accounted for 19 to 40 percent of the semantic categories in all five samples for Tommy. Eight semantic categories (attribution, locative state, specifier, state, reject, denial, quantity, and miscellaneous) appeared at least once in every sample for two of the three children and are termed "fairly robust." The proportional frequency of occurrence ranges for these categories are lower than those for the first group. These results are shown in Table XIII. Finally, seven semantic types (recurrence, possession, notice, nonexistence, dative, and time) were found to occur with even lower frequencies in one to four of the samples (Table XIV) and are called "very risky." These results are not too surprising. Compared with sequence of development data, the seven semantic types which occur with low frequencies are typically categories no longer used (recurrence) or just beginning to emerge (time) in the semantic repetoire of children at this level of linguistic development.

Pragmatic Intention

Tables XV, XVI, and XVII show the proportional and absolute frequencies for each of the children's use of pragmatic intentions. Examining the data by child revealed some interesting findings. When data from all five samples are pooled, each child used the full range of

TABLE XII

ROBUST SEMANTIC CATEGORIES

	Tommy	Amy	Melanie
Existence	5 (19-40%)	5 (6-19%)	5 (6-16%)
Action	5 (10-17%)	5 (12-24%)	5 (4-17%)
Locative Action	5 (2-10%)	5 (8-16%)	5 (2-6%)
Intention	5 (7-27%)	5 (2-4%)	5 (6-14%)
Affirm	5 (2-15%)	5 (7-12%)	5 (13-30%)

TABLE XIII

FAIRLY ROBUST SEMANTIC CATEGORIES

	Tommy	Amy	Melanie
Attribution	5 (0.5-6%)	5 (2-8%)	5 (0.3-2%)
Locative State	5 (0.5-6%)	5 (1-7%)	5 (0.5-2%)
Specifier	5 (1-4%)	5 (0.6-8%)	5 (0.7-4%)
State	5 (1-3%)	3 (0-11%)	5 (4-8%)
Rejection	4 (0-5%)	5 (1-13%)	5 (5-18%)
Denial	2 (0-1%)	5 (0.6-6%)	5 (2-6%)
Quantity	5 (0.7-5%)	4 (0-8%)	5 (0.5-6%)
Miscellaneous	5 (5.86-11.62%)	4 (0-12.88%)	5 (3.78-16.03%)

TABLE XIV

VERY RISKY SEMANTIC CATEGORIES

	Tommy	Amy	Melanie
Recurrence	4 (0-1%)	3 (0-2%)	2 (0-2%)
Possession	3 (0-6%)	4 (0-9%)	4 (0-3%)
Notice	4 (0-2%)	4 (0-4%)	5 (1-2%)
Nonexistence	2 (0-2%)	1 (0-0.6%)	2 (0-0.4%)
Dative	1 (0-0.5%)	4 (0-6%)	1 (0-0.5%)
Time	2 (0-8%)	4 (0-5%)	4 (0-1%)

TABLE XV

ABSOLUTE AND PROPORTIONAL FREQUENCIES OF PRAGMATIC INTENTIONS FOR TOMMY

	Home I Mother	Home II Mother	Clinic Mother	Clinic Unstruc.	Clinic Struc.
Comment	92(59.74)	60(42.55)	64(48.48)	68(51.13)	59(34.30)
Obtain Information	19(12.34)	19(13.48)	12 (9.09)	3 (2.26)	15 (8.72)
Pretend	1 (0.65)	0	1 (0.76)	1 (0.75)	0
Social	6 (3.90)	1 (0.71)	1 (0.76)	2 (1.50)	1 (0.58)
Ritual	0	5 (3.55)	7 (5.30)	0	3 (1.74)
Acknowledge, Place Hold	4 (2.60)	2 (1.42)	8 (6.06)	7 (5.26)	13 (7.56)
Request for Repetition	1 (0.65)	6 (4.26)	0	2 (1.50)	1 (0.58)
Regulatory	4 (2.60)	0	3 (2.27)	10 (7.52)	24(13.95)
Instrumental	14 (9.09)	7 (4.96)	10 (7.58)	21(15.79)	44(25.58)
Rejection	3 (1.95)	8 (5.67)	4 (3.03)	7 (5.26)	0
Negate Statement	3 (1.95)	0	2 (1.52)	0	1 (0.58)
Affirm	4 (2.60)	25(17.73)	5 (3.79)	7 (5.26)	8 (4.65)
Uncodeable	3 (1.95)	8 (5.67)	15(11.36)	5 (3.76)	3 (1.74)

TABLE XVI

ABSOLUTE AND PROPORTIONAL FREQUENCIES OF PRAGMATIC INTENTIONS FOR AMY

	Home I Mother	Home II Mother	Clinic Mother	Clinic Unstruc.	Clinic Struc.
Comment	68(48.92)	76(70.37)	75(61.98)	106(73.61)	27(36.00)
Obtain Information	3 (2.16)	3 (2.78)	1 (0.83)	3 (2.08)	1 (1.33)
Pretend	2 (1.44)	0	11 (9.09)	2 (1.39)	15(20.00)
Social	1 (0.72)	2 (1.85)	0	0	0
Ritual	5 (3.60)	1 (0.92)	3 (2.48)	0	0
Acknowledge, Place Hold	5 (3.60)	1 (0.92)	0	0	0
Request for Repetition	0	0	1 (0.83)	0	0
Regulatory	8 (5.76)	3 (2.78)	6 (4.96)	5 (3.47)	11(14.67)
Instrumental	4 (2.88)	2 (1.85)	4 (3.30)	1 (0.69)	1 (1.33)
Rejection	21(15.11)	4 (3.70)	2 (1.65)	8 (5.55)	6 (8.00)
Negate Statement	3 (2.16)	1 (0.92)	1 (0.83)	6 (4.17)	5 (6.66)
Affirm	19(13.67)	15(13.89)	17(14.05)	13 (9.03)	8(10.67)
Uncodeable	0	0	0	0	0

TABLE XVII

ABSOLUTE AND PROPORTIONAL FREQUENCIES OF PRAGMATIC INTENTIONS FOR MELANIE

	Home I Mother	Home II Mother	Clinic Mother	Clinic Unstruc.	Clinic Struc.
Comment	90(40.90)	89(35.20)	86(31.50)	71(35.86)	55(29.72)
Obtain Information	3 (1.36)	2 (0.79)	6 (2.20)	8 (4.00)	0
Pretend	5 (2.27)	0	7 (2.56)	0	0
Social	0	0	1 (0.37)	3 (1.52)	0
Ritual	15 (6.81)	41(16.20)	39(14.28)	1 (0.50)	0
Acknowledge, Place Hold	0	0	0	1 (0.50)	0
Request for Repetition	0	0	0	0	0
Regulatory	50(22.70)	51(20.16)	79(28.94)	40(20.20)	61(32.97)
Instrumental	5 (2.27)	0	4 (1.46)	0	12 (6.49)
Rejection	6 (2.72)	34(13.44)	15 (5.49)	43(21.71)	25(13.51)
Negate Statement	4 (1.81)	7 (2.77)	7 (2.56)	14 (7.07)	5 (2.70)
Affirm	42(19.10)	28(11.06)	29(10.62)	15 (7.58)	17 (9.19)
Uncodeable	0	1 (0.40)	0	0	3 (1.62)

pragmatic intentions. However, there was no single sample where all 13 categories are represented. Some data were collapsed for easier analysis. Upon examination of the proportional frequency of occurrence of pragmatic intentions for Tommy (Table XVIII), it can be seen that the three samples with the mother were quite similar. Some variation is evident when the mother-elicited samples were compared with those elicited by strangers. For example, the frequency of occurrence of the regulatory, instrumental, and rejection categories increased dramatically when Tommy was with a stranger. Comment and conversational categories remained fairly stable with both mother and strangers; however, the obtain information category decreased somewhat with strangers.

For Amy and Melanie, use of the various pragmatic intentions was more variable than Tommy's. Data are presented in Tables XIX and XX. Of particular interest, some notable differences occurred when comparing mother-elicited samples with those elicited by strangers for Melanie. Specifically, occurrence of the pretend, ritual, and social categories increased dramatically in the three mother-elicited samples while the rejection category decreased.

Several trends appeared when examining the data across the children. The comment category was found to be the most frequent in each of the samples for all of the children. The obtain information category was found to be least frequent. Increases of the regulatory and instrumental categories in the structured clinic sample were evidenced in all cases. As described earlier, this sample was designed to elicit such specific types of utterances. Finally, the ritual, regulatory, instrumental, and rejection categories appeared to be most vulnerable to sample differences.

TABLE XVIII

COLLAPSED PRAGMATIC INTENTION CATEGORIZATION FOR TOMMY: PROPORTIONAL FREQUENCY OF OCCURRENCE

	Home I Mother	Home II Mother	Clinic Mother	Clinic Unstruc.	Clinic Struc.
Comment	68.7	61.1	66.4	58.6	39.4
Conversational					
Hold Place Request Repetition	3.5	7.4	7.3	7.4	8.7
Obtain Information	13.2	17.6	10.9	2.5	9.4
Regulatory Instrumental Rejection	14.6	13.9	15.4	31.4	42.5

TABLE XIX

COLLAPSED PRAGMATIC INTENTION CATEGORIZATION FOR AMY: PROPORTIONAL FREQUENCY OF OCCURRENCE

	Home I Mother	Home II Mother	Clinic Mother	Clinic Unstruc.	Clinic Struc.
Comment	48.9	70.8	62.0	73.6	36.0
Obtain Information	2.2	2.8	0.8	2.1	1.3
Pretend Social Ritual	5.8	2.8	11.6	1.5	20.0
Regulatory Instrumental	8.6	4.6	8.3	4.2	16.0
Rejection	17.3	4.6	2.5	9.7	14.7
Affirm	13.7	13.9	14.1	9.0	10.7

TABLE XX

COLLAPSED PRAGMATIC INTENTION CATEGORIZATION FOR MELANIE: PROPORTIONAL FREQUENCY OF OCCURRENCE

	Home I Mother	Home II Mother	Clinic Mother	Clinic Unstruc.	Clinic Struc.
Comment	40.0	35.1	31.5	35.8	29.7
Obtain Information	1.3	0.7	2.1	4.0	2.0
Pretend Ritual Social	9.0	16.2	17.0	2.5	0.0
Regulatory Instrumental	27.4	20.1	30.3	20.2	39.3
Rejection	4.5	13.7	7.9	28.7	16.2
Affirm	19.0	11.0	10.6	7.5	9.1

Conversational Context

The data were analyzed according to two measures of conversational context. First, the number of utterances per conversational turn was calculated for both the adult and the child in each of the samples. Secondly, the child's utterances were categorized as one of six discourse behaviors.

Mean Number of Utterances per Conversational Turn

Results of calculations of mean number of responses per conversational turn are shown in Table XXI. Across children for four of the samples (Home I Mother, Home II Mother, Clinic Mother, and Clinic Unstructured), there was considerable similarity. The adult's (mother or clinician) mean number of utterances per conversational turn was consistently higher than the child's. Further, there was very little difference between mothers in any of the three mother-elicited samples or between mothers and the clinician in the unstructured sample. However, when examining this measure for the clinic structured samples, it can be seen that the adult's mean number of utterances per conversational turn decreased while the child's increased for two of the three children. Thus, the less the adult said, the more the child said.

Discourse Behaviors

Proportional and absolute frequency data for discourse behaviors are shown for each of the children in Tables XXII, XXIII, and XXIV. Each of the children demonstrated the complete range of behaviors. Selected data (Table XV) revealed some interesting results. Regarding the no

TABLE XXI

MEAN NUMBER OF UTTERANCES PER CONVERSATIONAL TURN

	Home I Mother	Home II Mother	Clinic Mother	Clinic Unstruc.	Clinic Struc.
Tommy	1.25	1.02	0.84	0.93	1.68
Adult	1.95	1.97	1.64	1.96	1.09
Amy	1.08	0.91	1.18	1.04	0.84
Adult	1.65	1.69	1.71	1.86	1.83
Melanie	1.12	1.14	1.20	1.08	1.47
Adult	1.67	1.65	1.83	1.60	1.27

TABLE XXII

ABSOLUTE AND PROPORTIONAL FREQUENCIES OF DISCOURSE BEHAVIORS FOR TOMMY

	Home I Mother	Home II Mother	Clinic Mother	Clinic Unstruc.	Clinic Struc.
Child Initiated					
New	3 (1.95)	3 (2.13)	11 (8.33)	5 (3.76)	21(12.21)
Within	66(42.85)	36(25.53)	35(26.52)	31(23.30)	86(50.00)
Response to Question					
Appropriate	19(12.34)	48(34.04)	31(23.48)	53(39.85)	12 (6.98)
Inappropriate	12 (7.79)	14 (9.93)	13 (9.85)	18(13.53)	3 (1.74)
Response to Statement					
Appropriate	28(18.18)	23(16.31)	12 (9.09)	15(11.28)	24(13.95)
Inappropriate	3 (1.95)	4 (2.84)	0	0	1 (0.58)
Imitation	8 (5.19)	11 (7.80)	26(19.70)	8 (6.02)	7 (4.07)
Repetition	15 (9.74)	2 (1.42)	4 (3.03)	3 (2.26)	18(10.46)

TABLE XXIII

ABSOLUTE AND PROPORTIONAL FREQUENCIES OF DISCOURSE BEHAVIORS FOR AMY

	Home I Mother	Home II Mother	Clinic Mother	Clinic Unstruc.	Clinic Struc.
Child Initiated					
New	1 (0.72)	4 (3.70)	0	7 (4.86)	4 (5.33)
Within	51(36.69)	15(13.89)	49(40.49)	50(34.72)	33(44.00)
Response to Question					
Appropriate	42(30.22)	54(50.00)	31(25.62)	53(36.80)	18(24.00)
Inappropriate	8 (5.76)	8 (7.41)	12 (9.92)	9 (6.25)	6 (8.00)
Response to Statement					
Appropriate	31(22.30)	14(12.96)	13(10.74)	19(13.19)	10(13.33)
Inappropriate	0	0	0	1 (0.69)	1 (1.33)
Imitation	6 (4.32)	11(10.19)	8 (6.61)	2 (1.39)	3 (4.00)
Repetition	0	2 (1.85)	8 (6.61)	3 (2.08)	0

TABLE XXIV

ABSOLUTE AND PROPORTIONAL FREQUENCIES OF DISCOURSE BEHAVIORS FOR MELANIE

	Home I Mother	Home II Mother	Clinic Mother	Clinic Unstruc.	Clinic Struc.
Child Initiated					
New	4 (1.82)	15 (5.93)	16 (5.86)	10 (5.05)	6 (3.24)
Within	51(23.18)	59(23.32)	63(23.08)	27(12.12)	77(41.62)
Response to Question					
Appropriate	96(43.64)	62(24.50)	71(26.00)	108(54.54)	65(35.14)
Inappropriate	13 (5.91)	9 (3.56)	15 (5.49)	13 (6.56)	5 (2.70)
Response to Statement					
Appropriate	46(20.91)	73(28.85)	72(26.37)	32(16.16)	19(10.27)
Inappropriate	0	0	1 (0.37)	0	0
Imitation	7 (3.18)	34(13.44)	34(12.45)	3 (1.52)	4 (2.16)
Repetition	3 (1.36)	1 (0.40)	1 (0.37)	5 (2.52)	9 (4.86)

TABLE XXV

SELECTED CATEGORIZATION OF DISCOURSE BEHAVIORS

	Home I Mother	Home II Mother	Clinic Mother	Clinic Unstruc.	Clinic Struc.
Child Initiated					
Tommy				22.1	60.2
Melanie				17.5	42.0
Response to Question +					
Tommy				32.0	9.2
Melanie				51.4	32.9
Response to Question -					
Tommy	9.3	9.7	9.5	11.2	2.0
Amy	19.4	11.0	9.8	10.3	10.6
Melanie	5.9	3.5	5.4	6.1	2.5
Response to Statement					
Imitation					
Repetition					
No Response					
Tommy	7.2	9.3	20.0	21.0	6.2
Amy	13.1	15.0	8.3	21.1	20.2
Melanie	0.0	0.7	1.0	5.7	6.0

response category, the language disordered child, Melanie, almost always responded to her mother as seen by the small percentage of no responses. However, the percentage of no responses increased significantly when Melanie was with a stranger. For both of the other children, the no response category occurred with greater frequency than it did with Melanie. Also, the frequency of occurrence for the inappropriate response to questions was less for Melanie than for Tommy or Amy. In other words, Amy and Tommy gave more inappropriate responses to questions than did Melanie. The frequency of occurrence of Tommy's inappropriate responses to questions decreased sharply in the structured clinic sample. Finally, it is interesting to note that the frequency of occurrence of responses to questions was higher for two of the children in the unstructured clinic sample than was child initiated utterances. In the structured clinic sample, frequency of occurrence for these two categories was essentially reversed with responses to questions decreasing and child initiated utterances increasing.

Interview

Interestingly, each of the mothers overestimated their child's MLU when asked by the investigator to approximate how many one, two, three, and four word utterances their child would use in a given number of utterances. Both Tommy's and Melanie's mother overestimated their child's MLU by a similar margin of difference between estimated MLU and observed average MLU from the five samples. Tommy's average MLU was 1.99; his mother estimated his MLU to be 2.80, a difference of 0.81. When comparing Melanie's estimated MLU of 2.65 with her actual average of 1.81, there is a difference of 0.84. Amy's mother overestimated by

a difference of only 0.35 comparing the estimation of 2.80 with the average of 2.45 in four samples. This MLU estimation was as accurate as was obtained in the actual samples. The difference between mother's estimated and Amy's observed MLU is lower than the upper limit of variability, 0.50, that can be expected between sampling situations. Therefore, only one of the three mothers was able to estimate her child's MLU with at least as much accuracy as can be obtained between repeated samples.

Both Tommy's and Amy's mother indicated to the investigator that their child used a full range of semantic content categories, pragmatic intentions, and discourse behaviors. As stated earlier, all three children evidenced a full range of these categories in the samples. However, Melanie's mother reported that she does not initiate conversation with questions; respond appropriately with questions; use language to learn more about the environment (all questioning behaviors); use acknowledging behaviors in response to declaratives or when another person is talking; or describe locations of objects, herself, or another person. Table XVII reveals, however, that Melanie is using the pragmatic intention, obtain information. Specifically, her proportional range of usage for this intent was two to eight percent. Melanie displayed only one instance of acknowledging or place holding behavior. Therefore, Melanie's mother's assertion that her child is not using acknowledging behaviors in response to declaratives is confirmed by the data. Melanie is using this intent but only to a slight degree. As can be seen in Table XI, Melanie's use of the semantic context category, locative state, accounted for one to six percent of her utterances throughout the five samples. This indicated that Melanie <u>is</u> using language to describe locations of

objects, herself, or another person. Therefore, with only a few exceptions on the part of one mother, results of the interviews revealed that mothers could accurately identify both those semantic and pragmatic categories used and those missing from their child's repetoire of language behaviors. Raw data from the interviews are included as Appendix C.

CHAPTER V

SUMMARY AND CONCLUSIONS

This study extended the research on language sampling to a lower linguistic level than has been typically invesitgated. Specifically, sampling representativeness for three children with MLU's ranging from 1.64 to 2.65 was examined. Two of the children were developing language normally while the other child can be described as language disordered.

Data were collected in five situations in the following sequence:

1. Initial Home Sample (Home I Mother),
2. Mother-Elicited Clinic Sample (Clinic Mother),
3. Unstructured Clinic Sample (Clinic Unstructured),
4. Structured Clinic Sample (Clinic Structured), and
5. Final Home Sample (Home II Mother).

For each child, an average of 23 minutes of data from each of the five contexts were analyzed from a semantic and pragmatic viewpoint. Similarities and differences across the five sampling situations were described.

The results indicated, for these three children, that the use of a particular linguistic behavior cannot always be predicted from one sample. Although a substantial frequency of occurrence difference was often noted across the samples for many behaviors, some striking similarities also emerged.

Of particular interest for speech-language pathologists attempting to obtain language samples from children functioning at low linguistic levels, quantity results revealed that the children in this study talked as much in the clinic as at home and with strangers as much as with mothers. A sizable corpus of utterances can be obtained in the clinic in a reasonable period of time. MLU data indicated that the children's utterances were as long and in some cases longer with strangers as with mothers. In other words, the linguistic level of the child's utterances as measured by length of utterance did not diminish with strangers. It was also found that the average difference in MLU between repeated samples was 0.27. Approximately 0.50 appeared to be the upper limit on the amount of variability in MLU between the sampling sessions. This information indicated what a speech-language pathologist can expect in terms of a margin of safety when calculating MLU from one sample.

Pooling data, each of the children in this study displayed 22 of the 24 semantic types categorized. One child displayed all 24 types including the typically later developing categories of coordinate and causality. There were similarities across children in terms of frequently occurring semantic categories and also infrequently occurring categories. Five categories (existence, action, locative action, intention, and affirm) occurred in substantial numbers in all five samples. Another group of eight categories (attribution, locative state, specifier, state, reject, denial, quantity, and miscellaneous) were present at least once in every sample for two of the three children. A last group of seven categories (recurrence, possession, notice, nonexistence, dative, and time). occurred in one to four of the samples with low frequency. This information helps a speech-language pathologist to answer the question, "How

likely is it that a child's entire range of semantic categories will be found in a single half-hour sample?" In any one sample it would be difficult to miss the categories of existence, action, locative action, intention, and affirm. It would be quite easy, however, to miss the categories of recurrence, possession, notice, nonexistence, dative, and time in a sample obtained from a child whose MLU ranges from approximately 1.75 to 2.50.

Again pooling the data, each child was found to use the full range of pragmatic intentions. However, no one sample yielded a full range of these categories. From this information, it appears that the pragmatic intention categories are more vulnerable to sampling conditions than are the semantic categories. It was found that all of the children used the comment category with a high frequency of occurrence and the obtain information category with a low frequency of occurrence. In addition, results revealed that all three children showed substantially high increases in requests in the clinic structured setting as compared with the other sampling situations.

Two measures of conversational context were analyzed. The measure of number of utterances per turn revealed little variability for four of the sampling situations: Home I Mother, Home II Mother, Clinic Mother, and Clinic Unstructured. The data for the mothers and clinician, as well as each of the children, are very similar. Data from the structured clinic sample differs. In this sample, the number of utterances per turn for the adult decreased while the number of utterances per turn for the child increased. Thus, the less the adult said in her turn, the more the child said in his/her turn. This information indicated that children are sensitive to conversational constraints even at this relatively low

linguistic level. This further suggested that the speech-language pathologist can use well placed silences during language sampling to elicit this conversational skill. Interestingly, the overall quantity of utterances produced by the children did not decrease in this sample. Therefore, this well placed silence was not at the expense of the overall quantity of utterances produced. Regarding discourse behaviors, each of the children demonstrated the complete range of behaviors during sampling. An interplay between the categories of response to questions and child initiated was noted in the samples. More responses to questions than child initiated utterances were found in the unstructured clinic sample. This was reversed in the structured clinic sample.

Results of the interviews with the mothers revealed that mothers tend to overestimate their child's MLU. Only one mother was able to estimate her child's MLU with as least as much accuracy as can be obtained between repeated samples. Mothers were, however, able to predict which semantic and pragmatic intention categories are used or are missing from their child's repetoire.

Knowledge gained from this study can help the speech-language pathologist evaluate the child with low level language. The margins of safety indicated for various measures provides some evidence on the likelihood that a particular linguistic behavior will be found in any one sample. While many of the categories were stable from one sample to the next, others were less likely to be evidenced in each sample. From the results of this study, it appeared that speech-language pathologists cannot always predict either the presence of or the frequency of a particular linguistic behavior from one sample.

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APPENDIXES

APPENDIX A

INSTRUCTIONS FOR MOTHER: HOME SAMPLES

1. Please notify me if your child is tired or ill so that we may reschedule the observation.

2. Please interact naturally with your child for 30 minutes.

3. You may choose whatever activities you wish. For example, if you typically work puzzles with your child or chat with him/her as you prepare lunch, do so. You may change activities as often and as many times as you wish.

4. Please stay in one room. Choose the room that you and your child are most likely to be in when doing the activity or activities you have chosen.

5. Please refrain from talking with the observer during the filming.

6. Please make arrangements for your other children to be taken care of during the time we are filming. Only two-way interactions are desired for the purposes of this study.

APPENDIX B

INSTRUCTIONS FOR MOTHER: CLINIC SAMPLE

1. Please notify us if your child is tried or ill so that we may reschedule the observation.

2. Please interact naturally with your child for 30 minutes.

3. A variety of toys have been provided for your use.

APPENDIX C

INTERVIEW QUESTIONS AND ANSWERS

I. Estimation of MLU

On the average how many words is your child putting together? T--2.8, A--2.8, M--2.65.

II. Dialogue Skills

1. Does your child initiate conversations? T--yes, A--yes, M--yes.
   a. With a declarative statement? T--yes, A--yes, M--yes.
   b. A question? T--yes, A--yes, M--no.
   c. A command? T--yes, A--yes, M--yes.
   d. In response to actions? T--yes, A--yes, M--yes.
   e. In response to a situation? T--yes, A--yes, M--yes.
2. Does your child respond verbally to your utterances? T--yes, A--yes, M--yes.
   a. Appropriately? T--yes, A--yes, M--yes.
      1. With a delcarative statement? T--yes, A--yes, M--yes.
      2. A question? T--yes, A--yes, M--no (only question "why").
      3. Repetition? T--yes, A--yes, M--yes.
      4. Does your child continue conversation with same topic? T--yes, A--yes, M--yes.
      5. Introduce a new but appropriate topic? T--yes, A--yes, M--yes.
   b. Inappropriately? T--yes, A--yes, M--yes.
3. Estimate the length of time your child will engage in a continuing conversation with you or another individual (playmate, etc.). T--3 minutes, A--15 minutes, M--2 minutes.
4. Does your child respond appropriately to questions? T--yes, A--yes, M--yes.
   a. Wh questions? T--yes, A--yes, M--yes.
   b. Yes/no questions? T--yes, A--yes, M--yes.
5. Does your child use acknowledging behaviors (mmhm, ok, etc.)? T--yes, A--yes, M--yes.
   a. In response to questions or requests? T--yes, A--yes, M--yes.
   b. In response to declaratives or when other person is talking? T--yes, A--yes, M--no.

III. Functions of Language

1. Does your child use language to obtain satisfaction of his needs? T--yes, A--yes, M--yes.
   a. Request objects? T--yes, A--yes, M--yes.
   b. Request food? T--yes, A--yes, M--yes.
   c. Request people? T--yes, A--yes, M--yes.
2. Does your child use language to control your action or the actions of others? In other words, does he/she use language to try to get you to do something? T--yes, A--yes, M--yes.
3. Does your child use language to establish or maintain contact with other people? T--yes, A--yes, M--yes.
   a. Call? T--yes, A--yes, M--yes.
   b. Greet? T--yes, A--yes, M--yes.

4. Does your child use language to express his feelings? T--yes, A--yes, M--yes (seldom).
5. Does your child use language in order to learn more about his environment? T--yes, A--yes, M--no (little asking).
6. Does he/she ask wh-questions (what, where, why) that call for information? T--yes, A--yes, M--yes (only "why").
7. Does your child engage in sound play? T--yes, A--yes, M--yes.
   a. Play with sounds or words (chant, sing/song)? T--yes, A--yes, M--yes.
   b. Practice words? T--yes, A--yes, M--yes.
8. Does your child report on events which took place when you were not present? T--yes, A--yes, M--yes.
9. Does your child use "polite" language? T--yes, A--yes, M--yes.
   a. "Please?" T--yes, A--yes, M--yes.
   b. Softened voice when requesting? T--yes, A--yes, M--no.

IV. Structural and/or Meaning Categories

1. Does your child name objects? T--yes, A--yes, M--yes.
2. Use words to attract attention or to call you? T--yes, A--yes, M--yes.
3. Does your child name an object he wants (accompanied by a gesture such as reaching or pointing)? T--yes, A--yes, M--yes.
4. Does he use "yes" or any variant? T--yes, A--yes, M--yes.
5. Does he use "no" or any variant? T--yes, A--yes, M--yes.
6. Does your child request or demand more of an action? More food? T--yes, A--yes, M--yes.
7. Does your child verbalize when something disappears? Or when something expected is not present? T--yes, A--yes, M--yes.
8. Does your child use modifiers? T--yes, A--yes, M--yes (only on occasion).
9. Does your child indicate possession? T--yes, A--yes, M--yes.
10. Does your child describe the location of an object? The location of himself or another person? T--yes, A--yes, M--no.
11. Does your child use combinations of the following type: Sue read, Sue drink, mommy eat, dog bark, doll walk? T--yes, A--yes, M--yes.
12. Does your child use combinations of this type: cut paper, eat cookie, throw ball, hit doll, wash hair? T--yes, A--yes, M--yes.

APPENDIX D

SAMPLE TRANSCRIPT

Clinician	Tommy		Semantic Content	Conversational Context	Pragmatic Intention
	What's that	→	Exist.	CI_W	Obtain Info.
Those are beads					
	beads	→	Exist. (I)	Imitation R	Comment
(no response)					
	What's this?	→	Exist.	CI_W	Obtain Info.
That's a monster					
	monster	→	Exist.	Imitation R	Comment
(no response)					
	It bite Tommy	→	Action	CI_W	Comment
Bite Tommy?					
	yeah	→	Affirm	RQ+	Affirm
It'll bite Tommy?					
	(no response)				
	Cookie monster	→	Attrib.	CI_W	Comment
It's a cookie monster? Think that monster will get you?					
	no	→	Denial	RQ+	Negate statement
He won't? I don't think he will either					
	(makes monster noise)				
	sick	→	State	CI_W	Comment
(door opens, kitty comes in)					
	A kitty cat (claps hands)	→	Exist.	CI_N	Comment
Lookie					
	(laughs)				
	kitty cat	→	Exist.	CI_W	Comment

APPENDIX E

DEFINITIONS FOR SEMANTIC CONTENT CATEGORIES

Existence: An object exists in the environment and the child either looks at it, points to it, touches it, or picks it up while naming or pointing out its existence with single words such as the word "dish," the word "there," or, even, perhaps the stereotype question: "What's dis?" The names of objects like "cookie" or "dog" eventually evolve into identification sentences such as: "This cookie" and then eventually "This is a cookie." This class of utterances has been called "ostension" by Braine (1971) and Schlesinger (1971) and "nomination" by Brown (1970). Existence may be signaled by /ə/ (as an apparent article) or variants of the demonstrative forms "that," "this," and may eventually include some form of the copula verb "to be."

Nonexistence-Disappearance: Utterances are placed in this category if they make reference to the disappearance of an object or the nonexistence of an object or action in a context in which its existence might somehow be expected. Children use terms such as "no," "all gone," and "away."

Recurrence: Utterances are placed in this category if they make reference to the reappearance of an object, or another instance of an object or event with or without the original instance of the object still present.

Rejection: If the child opposes an action or refuses an object that is in the context or imminent within the situation and uses forms of negation, the utterances are referred to as rejection.

Denial: Utterances are categorized as denial if the child negates the identity, state, or even expressed in another's utterance or in his or her own previous utterance.

Attribution: Utterances that make references to properties of objects with respect to (1) an inherent state of the object (e.g., "broke" and "sharp"), or (2) specification of an object that distinguishes it from others in its class (e.g., "red," "big," and "bread" in "bread book" are categorized as attributions). Another form of coding attribution is to refer to an attribute as a condition of the object with a copula sentence such as "the car is big." This form of coding attribution is placed under state.

Possession: Utterances placed in this category make reference to objects within the domains of different persons. A class of words (such as "Mommy," "Daddy," "Baby") can mean the same thing (Possessor) in relation to a class of different words (such as "sweater," "coat," "record") that mean something else (Object Possessed); or, alternatively, Object Possessed can be specified in relation to a constant proform such as "my." As with attribution, there is an alternative form for coding possession; one can specify the possessive state of the object with the copula sentence such as "The car is mine." This form of coding possession is placed under state.

Action: Utterances placed in this category refer to two kinds of movement when the goal of the movement is not a change in the location or an object or person (see Locative Action). Some utterances refer to action that affects an object other than to change its location. Other action utterances refer to movements by actors (persons or things) in events where the movement does not affect another person or object.

Locative Action: Utterances in this category refer to movement where the goal of the movement is a change in location of a person or object. The movement that caused this change in location occurs within

the speech event. Most locative actions entail an agent, an affected object, and a place or the goal of the movement. Where the agent and affected object or person are the same, the single constituent is designated as a mover. When utterances in this category specify a movement by an agent that caused another object (patient) to change place, the preverbal constituent whether or not expressed, is referred to as patient.

Locative State: Utterances in this category refer to the relationship between a person or object and its location, where no movement established the locative relation within the context of the speech event, that is, immediately before, during, or after the child's utterance. Locative states entail a person or object located and a place.

State: Utterances in this category make reference to states of affairs usually involving persons or other animate beings: (1) An internal state, usually with a verb form such as "like," "need," or "want"; (2) an external state of affairs as darkness or cold; (3) a temporary state of ownership or possession; (4) an attributive state.

Quantity: Utterances are placed within this category if they designate the number of objects or persons either by use of a number word, plural -s inflection, or adjectives such as "some" or "many."

Notice: Utterances in this category refer to attention to a person, object, or event and necessarily include a verb of notice (such as "see" or "hear"), since such events as seeing or hearing could not be identified by aspects of context and behavior. Eventually, utterances in this category involve two clauses, one of which contains a notice verb focusing on the object of attention, which is the complement of the second clause.

Time: Utterances placed within this category make some reference to time (i.e., ongoing, imminent future, or past), either by use of grammatical morphemes as -ing, -ed, or irregular past tense of verbs; by adverbs of time such as "now"; or by modals and auxiliary verbs such as "will," "was," or "gonna." Included in this category is the third person singular -s. Imminent future was first coded by modal verbs such as "wanna," "gonna," or "have to," and is referred to as intention. In addition, utterances are considered under time if the relationship between two events and/or states is temporal and this temporal relationship is a dependency relationship. Note that temporal relationships that are not dependent relationships (e.g., a sequential relationship between two independent events and/or states) are placed under category coordinate.

Coordinate: This category includes utterances that refer to two events and/or states that are independent of each other (i.e., the joining of the two does not create a new meaning) but are somehow bound together in space and/or time. The two clauses may include the same or different verbs and may relate to sequential, simultaneous, or static events conjoined intraclausally that are independent of each other but are bound together in space and/or time.

Causality: Utterances included in this category are those that have an implicit or explicit cause and effect relationship between the two verb relations, that is, one expressed event or state is dependent on the other for its occurrence. Most often, this relationship is intentional and/or motivational, with one clause referring to an intended or ongoing action or state, and the other clause giving a reason or result of it. This relationship may or may not be expressed by the conjunctions "because" or "so."

Dative: Utterances are included in this category if they designate the recipient of an object or action with or without a preposition.

Specifier: Utterances are included in this category if they specify a particular person, object, or event by contrastive use of the demonstrative pronouns "this" versus "that" or by contrastive use of the articles "the" versus "a." Eventually, specification involves the joining of two clauses, one of which specifies or describes an object or person by function, place, or activity.

The above definitions were taken from Bloom and Lahey (1978).

APPENDIX F

OPERATIONAL DEFINITIONS OF DISCOURSE BEHAVIORS

1. Child Initiated (CI)
   Utterance used by child to initiate conversation
   a. Child initiated, New (CI_n)
      Child initiates with a completely new topic
   b. Child initiated, Within (CI_w)
      Child initiates with a general topic "already on the floor"

2. Response to Question (RQ)
   Utterance immediately following question by adult
   a. Response to Question, Appropriate (RQ+)
      Utterance, in some form, provides information sought in adult's question
   b. Response to Question, Inappropriate (RQ-)
      Utterance does not provide the information sought in adult's question

3. Response to Statement (RS)
   Utterance immediately following statement by adult
   a. Response to Statement, Appropriate (RS+)
      Utterance is related to previous adult utterance
   b. Response to Statement, Inappropriate (RS-)
      Utterance is unrelated to previous adult utterance

4. Imitation (I)
   Utterance replicates and immediately follows adult utterance
   a. Imitation, Same (I_s)
      Exact replication of adult utterance
   b. Imitation, Reduction (I_r)
      Reduced replication of adult utterance
   c. Imitation, Expansion (I_e)
      Expanded replication of adult utterance

5. Repetition (R)
   Utterance reduplicates and immediately follows child's own previous utterance

6. No Response (NR)
   Child does not respond either verbally or nonverbally to adult utterance

APPENDIX G

OPERATIONAL DEFINITIONS OF PRAGMATIC INTENTIONS

1. Comment
   Communicates about people, objects, or events

2. Obtain Information
   Seeks in any verbal form to obtain information about person, object, or event

3. Pretend
   Speaks as if someone else

4. Social
   Initiates or terminates social interactions (for example, bye-bye)

5. Routine
   Engages in a stereotypic ritual (for example, recites abc's)

6. Acknowledges/Place Hold
   Acknowledges existence of previous utterance or attempts to retain turn in a conversational exchange

7. Request for Repetition
   Attempts to obtain repetition of adult's utterance

8. Regulatory
   Attempts to control another person's actions

9. Instrumental
   Requests for obtaining objects or services

10. Rejects
    Resists or protests utterance or action

11. Negate Statement
    Denies previous statement

12. Affirm
    Affirms an utterance or action

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