Learning How to Say What One Means: A Longitudinal Study of Children's Speech Act Use[*]

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Abstract

In this paper we present a set of methods for describing development in the expression of communicative intents. Studying children in interaction with a parent, we found children improved from age 14 to 32 months in the number of communicative attempts per minute they made, in the intelligibility of their attempts, as well as in the repertoire of intents they expressed. Correlations with other language measures suggest that a complete picture of language development requires a description of pragmatic skills in addition to syntactic and lexical indices. Our two-level coding scheme revealed that the social-interactive interchanges most commonly engaged in by the youngest children were negotiating immediate activity, discussing a joint focus of attention, and directing hearer's attention. Within these social interchanges, a small but widely shared set of communicative intents was expressed by the younger children; surprisingly, questions were quite late emerging communicative intents, as were agreeing, disagreeing, and giving reasons.

Keywords: *pragmatics; speech acts; language development; communicative capacity; illocutionary effect*

Research on early language development has provided rich descriptions of children's growth in the capacity to produce words, to combine words into utterances, to provide obligatory morphological markings, and to talk about complex topics and nonpresent referents. While all of these developments are crucial steps to an adult-like language system, children in the second and third years of life also show enormous development in the kinds of communicative intentions they express, an area of development which has received less attention. For example, speech acts such as request, protest, and greet are among children's earliest communicative acts, while speech acts such as promise, deceive, or persuade develop much later (Astington, 1988). Children's capacities to express communicative intentions verbally reflect developments in their cognitive abilities and their social understandings, as well as more strictly linguistic skills.

We contend that a complete picture of language development would incorporate a description of how children's capacities to express communicative intents in

interaction with familiar adults grow. This description would have at least two facets: a) how many and which communicative intents are expressed at various ages or stages of language development? b) how are they expressed – nonverbally or verbally? conventionally or idiosyncratically? relatively autonomously or only with considerable support from the interlocutor?

Partial answers to these questions are available from previous research. A number of studies (e.g., Dore, 1974, 1975, 1976, 1978; Dore, Franklin, Miller, & Ramer, 1976; Greenfield & Smith, 1976; Ninio, 1985, 1992; see Ninio & Snow, in press, for a more complete review) have been devoted to a descriptive characterization of children's early utterances in terms of the communicative intents they express, and of the forms of expression they are able to control for the verbalization of these meanings. Very young children have been described as being limited to interpersonal communicative functions, adding uses of language for purposes of requesting or conveying information only later (Halliday, 1975). Bates, Camaioni, and Volterra (1975) described the earliest truly communicative gestures and vocalizations as protodeclaratives (e.g., a child points at an object while looking at his mother, meaning something like 'attend to my focus of attention') and protoimperatives (e.g., a child building a tower says 'mommy' meaning something like 'help me with this'); both these early communicative intents are primarily interpersonal rather than informative.

Prior research on children's communicative intents has generated a number of conclusions which constitute starting points for our own research. First, it is quite clear that infants well before the onset of speech are highly socially interactive, differentially responsive to social and nonsocial stimuli, and able to produce behaviors which are interpreted as explicitly communicative by adults (see, for example, Snow, 1977; Trevarthen 1977, 1979; Trevarthen & Hubley, 1979); these facts have led to the characterization of children as 'pragmatically precocious' (Ninio, 1993, Ninio & Snow, 1988). The earliest identifiable intentional communications are likely to be expressed through gestures, vocalizations, idiosyncratic phonetic forms, or combinations thereof rather than through conventional linguistic forms (Dore, Franklin, Miller & Ramer, 1976; Ninio & Snow, in press). Even during the period of one-word speech, much of a child's repertoire is likely to be somewhat idiosyncratic, highly dependent on social interpretation for communicative effectiveness, and linguistically somewhat marginal (i.e., largely consisting of pro-forms like 'dat', vocatives, markers like 'oops,' particles like 'up,' forms learned in routine formats like 'bow-wow,' and so forth). Nonetheless, these linguistically limited resources are used to express a fairly wide variety of intents: moves in games, calling to people, greetings, performatives, markings, object transfer, requests, and protests.

Although a fair number of researchers have classified children's early utterances pragmatically, their findings are difficult to synthesize into a coherent description. Part of the reason for this is that the coding systems used have varied widely, have employed quite different exclusion criteria (e.g., some exclude imitation, others exclude moves in games), have often mixed conversational or syntactic features with pragmatic features in classifying acts, have in many cases been designed primarily for children in the one-word period, and have typically differentiated a very small number of categories (see Ninio & Snow, in press; Ninio, Snow, Pan & Rollins, 1994 for further discussion of previously used coding systems). Furthermore, few longitudinal analyses have been carried out from which the

nature of earlier vs. later emerging communicative capacities could be inferred. Wells (1985) who did carry out a large longitudinal study of children's pragmatic intents which used the same category system for younger and older children found that later-emerging interpersonal functions like threatening and promising within the control system, blaming and apologizing within the expressive system, and giving explanations within the representational system had not yet been acquired by a majority of the children studied at 60 months.

While Wells' findings are intriguing, his coding scheme reflected only utterance-level intents (speech acts), and thus could not characterize how specific intents are embedded in different social interchanges. Furthermore, his observations were not videotaped, so some fine differentiations could not be made in his system. We thus have little basis for speculating about how children's participation in social-interactive interchanges expands, nor how communicative attempts are embedded within interchanges, whether the initial repertoire is relatively universal, nor how development in communicative intents relates to other indices of language development. The work presented here is a first attempt to address these questions.

Coding scheme.   The system that is proposed here, which we call the Inventory of Communicative Acts – Abridged (INCA-A), is a shortened and modified version of the system developed by Ninio and Wheeler (1984b; see Ninio, Snow, Pan & Rollins, 1994, for a fuller discussion of the coding scheme). Ninio and Wheeler's system was based both on Speech Act Theory (Austin, 1962; Searle, 1969, 1976) and on studies of face-to-face interaction (Goffman 1961, 1974; Streeck, 1980) that emphasize the importance of socially constructed communicative interchanges. Thus, the system identifies and codes communicative intent at two different levels – the level of the verbal interchange and the level of the utterance, thus acknowledging the existence of an organization of talk at a level higher than the single utterance (c.f. Dore & McDermott, 1982; Streeck, 1980). An interchange is defined as one or more rounds of talk all of which serve a unitary interactive function implicitly agreed upon by the interlocutors. Within this social-interchange, speakers express specific intents at the utterance level. The INCA-A, then, actually consists of two subsystems, each of which codes for a different component of communicative intent. Since the system was designed to provide exhaustive coding of the communicative attempts expressed by children of varying ages (as well as their mothers), it can reflect development and continuity across a wide age range. In addition to its theoretical grounding, the ecological validity of the system was assured by distinguishing categories based on mothers' interpretations of their own and their children's intents. Finally, it is important to note that the type of analysis employed is communicative rather than functional. On the level of the utterance, the intended, rather than the achieved, illocutionary act is coded. On the level of the interchange, it is the speaker's overt (though not necessarily explicit) framing of the immediate social situation that is coded. The system used here differs from the original Ninio and Wheeler (1984b) system primarily at the interchange level; Ninio and Wheeler designed their system for coding interaction at home during naturally occurring activities, and thus included categories for establishing mutual attentiveness and moving into joint activity that were unnecessary in our more structured setting. Ninio and Wheeler also used different categories to distinguish the sort of activities being negotiated, distinctions we collapsed into a single category *Negotiating Immediate Activity*; we collapsed as well their distinction among *Markings* according

to what was marked (e.g., sneezing versus starting to eat) and among *Performatives* according to the game being played (see Ninio & Snow, in press, for more extensive comparison of the two systems). Our use of the system also differs from Ninio and Wheeler's in that we included nonverbal and semi-gestural communicative acts, whereas they included only purely verbal ones.

Research questions. The present study was designed to address the following issues:

1. Children's early communicative capacities: How many communicative attempts do they make and how interpretable are they? How many different communicative intents do children express, and which specific intents are included in their early repertoire? How do children's communicative abilities change during the second and third year of life? What indices derivable from spontaneous speech reflect developmental and individual differences in communicative ability? How do these indices relate to one another and to other measures of linguistic sophistication, e.g., MLU?

2. Interchange repertoire: In the context of which verbal interchanges do children begin to communicate verbally? Are certain interchanges common across most parent-child dyads?

3. Speech act repertoire: What kind of speech acts do children express with their earliest communicative attempts, and how consistently are these observed across children? In other words, do most children begin by expressing the same set of speech acts?

4. Interchange-speech act relationships: In the context of which interchanges do children start to produce interpretable speech acts? Which interchanges permit the greatest variety of speech acts? What Interchange-Speech act combinations are frequent and common across children?

Method

Subjects

The subjects whose language development is reported here were chosen from a larger sample of 100 children on whom language and other data were available through the *MacArthur Individual Differences Project* (see Snow, 1989, and Dale, Bates, Reznick, & Morisset, 1989, for description of subject recruitment and background information on the original sample). The present sample was selected from the 100 children using the following criteria: English-speaking families; no evidence by age three of any hearing impairment or developmental delay; equal proportions of girls and boys; representation of the full range of socioeconomic status available in the original sample; children whose families could still be contacted for data collection for a related project at age 5. These criteria constrained our sample at Time 1 to 52 families, observed when the children were 14, 20 and 32 months old. Background information about the sample and MLUs for the children are presented in Table 1, where it can be noted that attrition from 14 to 32 months did not notably affect the composition of the sample.

Procedure

Parent-child dyads came to the laboratory at three ages, 14 months, 20 months, and about 32 months. With the exception of two children who were videotaped

Table 1. Background characteristics of sample at each of three ages

	Age		
	14 months (N=52)	20 months (n=48)	32 months (n=37)
Gender (M, F)	26, 26	23, 25	19, 18
Mean MLU (sd)	1.13 (.27)	1.33 (.31)	2.55 (.75)
Mean Hollingshead Scores (sd)	53.0 (12.4)	52.9 (12.7)	53.3 (13.2)
Birth order (first, later)	34, 18	31, 17	23, 14
Mean parental age (sd)	30.0 (4.2)	30.2 (4.2)	30.4 (3.9)

with their fathers for one session, all dyads were mother-child pairs. Parents and children were videotaped using a camera located either at ceiling level in one corner of the room and operated by remote control, or located behind a one-way mirror.

Transcripts at 14 and 20 months reflect spontaneous language data collected during a five minute warm-up and several subsequent activities. Only activities that were dyadic (i.e., parent-child, rather than parent-child-investigator) were analyzed for the present study. During the warm-up period, the parent and child were left alone in a small room with a set of toys, and the parent was instructed to take a few minutes to let their child become accustomed to the setting. During the remaining semi-structured free play period, the parent was asked to play with the child using in sequence the contents of four boxes. The boxes contained a ball, a cloth for peekaboo, paper and crayons, and a book. Parents were not instructed how long should be spent on each box, but were asked to have only one box open at a time, and to try to get to all four boxes in about 10 minutes. In reality, the sessions were terminated only when the parent had tried to engage the child in all four activities. This led to some variation in the duration of the videotaped session, ranging from 10 to 25 minutes, with greater variability in session length at 14 months than at 20 months.

The protocol for parent-child interaction at the third time point also involved the four boxes. No warm-up period was considered necessary. Two substitutions were made in order to render the activities age-appropriate; the ball and peekaboo cloth were replaced by hand puppets and a toy house.

Transcription

Videotaped parent-child interaction was transcribed onto computer files using the transcription conventions of the *Child Language Data Exchange System* (MacWhinney & Snow, 1985, 1990; MacWhinney, 1991). Transcripts were verified

by a second transcriber for content and checked for adherence to transcription conventions using the automatic checking facilities of the CHILDES system. Utterance boundaries were based primarily on intonation contour, and secondarily on pause duration. No attempt was made to distinguish the number of unintelligible words in a string.

Coding and Data Analysis

Using the INCA-A, each communicative attempt by either a parent or a child was coded on two levels: 1) the level of interpersonally agreed-upon *Interchange*, constructed across one or more rounds of talk; and 2) the specific communicative intent, or *speech act*, expressed (see Appendix for full listing of interchange and speech act categories[1]). Communicative acts included verbal utterances, vocalizations, and free-standing conventional gestures (e.g., head nods, pointing). Gestures accompanying verbal/vocal acts were considered only where they clarified an otherwise uninterpretable verbal/vocal communicative attempt; any communicative attempt that was interpretable at either the interchange or speech act level only by virtue of accompanying gestures was tagged such that these attempts could be analyzed separately or included with the purely verbal communicative attempts. Nonverbal compliance with a directive (e.g., child sitting down in response to parent's request that she sit), while perhaps informative as to the child's comprehension abilities, was not considered communicative, and thus was not coded. The total number of communicative acts for children as a group was 475 at 14 months, 3,568 at 20 months, and 5,004 at 32 months; parents at the same observations produced 16,234, 15,626, and 9,253 communicative acts.

Reliability. Speech act coding was done by one of five coders, each of whom was required to reach at least 80 percent inter-rater reliability on training tapes before beginning coding of transcripts. Subsequent reliability checks were undertaken over the course of coding, such that reliability was computed on 20 percent of the transcripts at each age period for each coder working on transcripts at that data point. Reliability expressed as a simple percent agreement between two coders ranged from .79 to .90 on the interchange level, and .81 to .89 on the speech act level. Inter-rater reliability was further assessed by calculating Cohen's kappa for the interchange level using five transcripts chosen to represent a range of ages and levels of interpretability. The values for kappa, which take account of chance agreement between coders, ranged from .74 to .88 (substantial to almost perfect agreement according to guidelines in Landis and Koch, 1977); other double-coded transcripts show a similar level of agreement. We also investigated which categories were most commonly disagreed upon by the coders, and calculated simple percent agreement for those most troublesome categories. At 14 months and 20 months, by far the most frequent disagreements involved *Negotiating Immediate Activity* and a variety of other interchanges. In particular, some coders were willing to interpret *Uninterpretable Utterances* as continuations of negotiating the ongoing activity. Still, inter-rater agreement on *Negotiating Immediate Activity* was .79. At 20 months and 32 months *Discussing Joint Focus* and *Directing Hearer's Attention* were often confused, particularly in the context of book reading, where the parents' attempts to draw their child's attention to a new feature on the page was often incorrectly coded as continuing an ongoing discussion of a joint focus

of attention. Inter-coder agreement on discrimination of these two categories was .87.

Data reduction. Types of Interchange, Speech Act, and Interchange-Speech Act combinations produced by each speaker, and their corresponding frequencies, were generated using the CLAN programs from CHILDES. This information provided the basis for quantitative analyses described below, and for a description of early emerging categories of communicative attempts. For purposes of comparing Interchange, Speech Act, and Interchange-Speech Act combination repertoires across subjects, only those types produced at least twice were considered. This criterion was not applied to proportional measures, since those were token-based rather than type-based. Quantitative measures of interest included: the number of communicative attempts produced by the child per minute; the proportion of communicative attempts that were interpretable (i.e., codable) on at least the Interchange level; the extent to which interpretability was dependent on nonverbal components; the number of Interchange types, Speech Act types, and Interchange-Speech Act combination types produced by a child at least twice at an observation. The Interchange-Speech Act combination measure we refer to here as Pragmatic Flexibility.

Results

Results will be reported in three parts. First, we present summary statistics for basic descriptive measures of communicative ability, and report on associations between these pragmatic measures and other language measures. Next, we describe the types of communicative interchanges children can be observed to engage in during fairly brief, unstructured dyadic interaction with a parent. We then describe the types of communicative intents children of this age express in the different interchanges. For both Interchange and Speech Act, we examine the degree of convergence in early repertoire observed across children.

An overview. As Table 2 shows, children as a group increased in number of communicative attempts per minute, proportion of attempts which were interpretable, number of Interchange and Speech Act types, and Pragmatic Flexibility over the 18-month period of study. In interpreting the increase in communicative attempts per minute, it is important to remember that all attempts, regardless of their interpretability, are reflected in the statistics reported here. Thus, it is not the case that children are simply becoming more adept in expressing their intents in an interpretable fashion (though that of course is true), but that they are also attempting to communicate with others more intensively.

That said, we must then examine the issue of interpretability in slightly more detail. At 14 months, 55% of communicative attempts produced by the children were indeed uninterpretable, even at the level of Interchange. Another sizeable proportion of attempts (15%) were interpretable at the Interchange level, but not at the Speech Act level. That is, it was often clear that the child was directing the hearer's attention to an object, but unclear whether the child was, for example, stating a proposition or requesting information about the object. Often, interpretation of the child's communicative attempt at the Interchange level was possible by virtue of accompanying nonverbal components (such as a gesture or a nod). For

Table 2. Means and standard deviations for summary measures at three ages

	Age		
	14 months	20 months	32 months
Communicative attempts per minute	4.37 (2.60)	7.91 (2.80)	11.2 (2.80)
Proportion of attempts interpretable	.47 (.23)	.79 (.16)	.94 (.03)
Number of Interchange types	4.00 (1.80)	6.92 (1.90)	8.50 (2.00)
Number of Speech Act types	3.79 (2.50)	10.50 (3.50)	14.40 (2.70)
Pragmatic Flexibility	5.13 (3.50)	14.20 (5.50)	22.70 (5.60)

example, John directs his mother's attention to a football with a combination of vocalization and showing behavior:

Child: [vocalization]. (Child picks up football and extends football toward mother).

Mother: football!

While it is unclear what John's specific intent is (labeling the object, asking a question, etc.), his gesture and vocalization make clear that he is directing his mother's attention. As one would expect, the importance of these nonverbal 'aids' decreased as children's verbal skills improved. Table 3 shows this decrease for the three earliest-emerging Interchange types. In the discussion which follows, it is important to view children's growing repertoires and productivity against the backdrop of their increasing interpretability.

At all three ages, number of Interchange types, of Speech Act types, and Pragmatic Flexibility showed high intercorrelations (see Table 4). These three measures correlated moderately but significantly with communicative attempts at all ages, and all three correlate substantially with interpretability at 20 months. This finding may be due to truncated variance on interpretability at 14 months, when

Table 3. Proportion of communicative attempts in early-emerging Interchanges interpretable only by virtue of accompanying nonverbal acts

	Age		
Interchange	14 months	20 months	32 months
Directing Hearer's Attention	.85	.36	.05
Negotiating Immediate Activity	.80	.25	.02
Discussing Joint Focus	.41	.13	.05

Table 4. Associations among pragmatic and other language measures at each age

14 months	Interpretable	Interchange types	Speech Act types	Pragmatic Flexibility
Communicative Attempts/min	-.16	.45**	.44**	.41**
Proportion Interpretable		.23	.18	.16
Interchange Types			.79***	.75***
Speech Act Types				.86***

20 months	Interpretable	Interchange types	Speech Act types	Pragmatic Flexibility
Communicative Attempts/min	.22	.63***	.52***	.65***
Proportion Interpretable		.47***	.60***	.51***
Interchange Types			.78***	.85***
Speech Act Types				.91***

32 months	Interpretable	Interchange types	Speech Act types	Pragmatic Flexibility
Communicative Attempts/min	.02	.38*	.59***	.64***
Proportion Interpretable		.37*	.04	.25
Interchange Types			.60***	.76***
Speech Act Types				.80***

* $p < .05$
** $p < .01$
*** $p < .001$

most children produced many uninterpretable utterances, and at 32 months, when most children produced few uninterpretable utterances.

In contrast to the high degree of association among pragmatic measures, the pattern of correlations between measures of communicative ability and MLU suggest a considerable degree of independence, though low to moderate correlations were found at 20 months between MLU and the number of Interchanges, number of Speech Acts, and Pragmatic Flexibility (see Table 5). Lexical measures (word types and word tokens produced by the child in 10 minutes) were strongly associated with the pragmatic measures at the 14 and 20 month observation, and only moderately at 32 months.

Children's Interchange Repertoire

The number of Interchange types used by children at 14, 20, and 32 months is shown in Figure 1. At 14 months, most children were just beginning to engage in communicative interchanges. The average child engaged in four different types of

Table 5. Associations between pragmatic and other language measures at each age

14 months	MLU	Word types/10 mins	Word tokens/10 mins
Communicative Attempts/min	-.19	.19	.21
Proportion Interpretable	.35*	.20	.09
Interchange Types	-.08	.45***	.37**
Speech Act Types	-.06	.55***	.41**
Pragmatic Flexibility	-.10	.59***	.53***

20 months	MLU	Word types/10 mins	Word tokens/10 mins
Communicative Attempts/min	.08	.55***	.67***
Proportion Interpretable	.27	.43**	.41**
Interchange Types	.32*	.60***	.64***
Speech Act Types	.44**	.58***	.65***
Pragmatic Flexibility	.37**	.68***	.74***

32 months	MLU	Word types/10 mins	Word tokens/10 mins
Communicative Attempts/min	-.26	.23	.15
Proportion Interpretable	.13	.33*	.23
Interchange Types	-.06	.39*	.30
Speech Act Types	-.18	.40**	.36*
Pragmatic Flexibility	-.14	.39**	.31

* p < .05
** p < .01
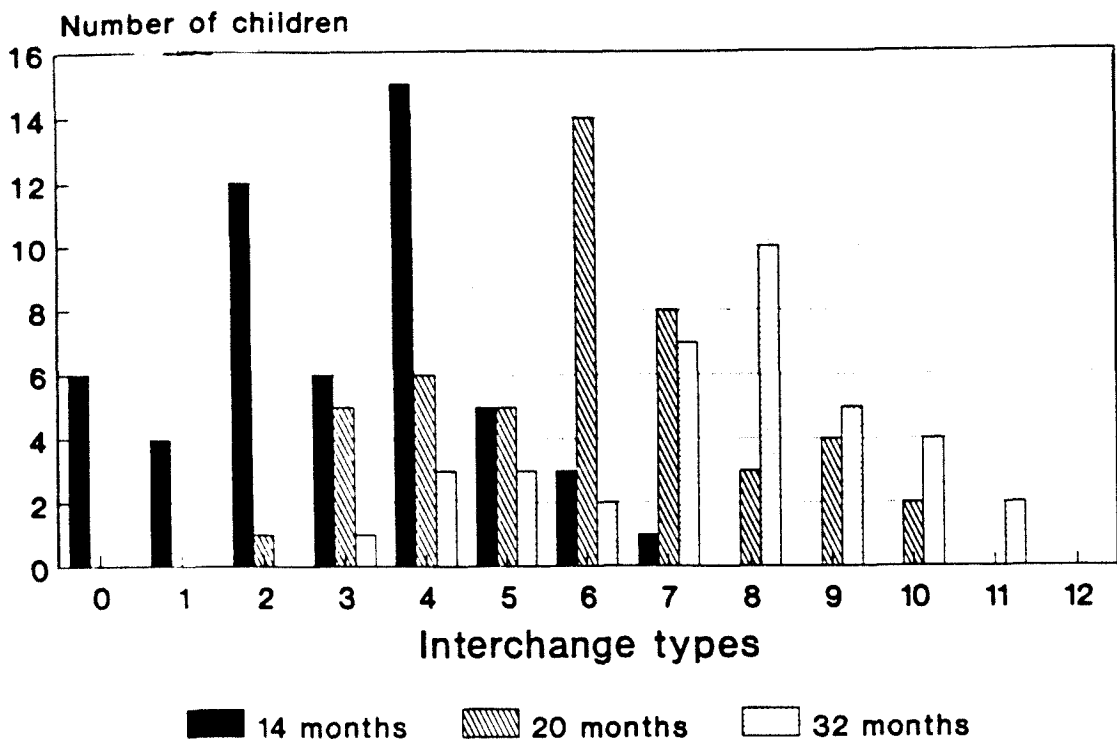*** p < .001

Number of children

Figure 1. Number of Interchange Types used by children at three ages.

Interchanges, according to our 2-token criterion. Six of the 52 children failed to engage in any Interchange at this observation. Of those types children did engage in, the most common Interchanges observed across children were *Directing the Hearer's Attention, Negotiating the Immediate Activity*, and *Discussing a Joint Focus* (see Table 6). Fewer children *Marked* events and *Discussed the Related-to-Present*, and even fewer *Negotiated Mutual Attention* or *Performed Verbal Moves in Activity*. At 14 months, it is difficult to detect a 'core' Interchange repertoire shared by all children. Indeed, a small group of children have yet to begin engaging in identifiable communicative interchanges at all. Nonetheless, the possibility of a core repertoire at a slightly older age is foreshadowed by the substantial numbers of children engaging in *Directing Hearer's Attention, Negotiating Immediate Activity*, and *Discussing Joint Focus* at 14 months. Coincidentally, these three Interchanges, along with *Marking*, were used most frequently by the group of 14 month olds as a whole (see Table 7).

By age 20 months, a core repertoire of communicative interchanges was indeed beginning to take shape: nearly all the children observed at this age engaged in *Negotiating Immediate Activity, Directing Hearer's Attention*, and *Discussing Joint Focus*. In addition, between 50–60% of the children engaged in a second group of Interchange types (*Discussing Related-to-Present; Marking; Negotiate Mutual Attention and Proximity*; as well as *Discussing Clarification of Verbal Communication*). This second set includes communicative contexts that require the child to take a slightly removed stance with respect to the immediate activity or focus of attention, while still having a point of reference in the here-and-now. For example, with scaffolding help from her mother, Rachel relates the toy at hand to her memory of televised football:

Child: ball.
Mother: that-'is a football ball?
Child: yes.
Mother: yeah.

Table 6. Proportion of children who engaged in each Interchange at 14, 20, and 32 months; proportion of parents who engaged in same Interchange is given in parentheses

Interchange type	Age		
	14 months n=52	20 months n=48	32 months n=37
Directing Hearer's Attention	.83 (1.00)	.98 (1.00)	.97 (1.00)
Negotiating Immediate Activity	.71 (1.00)	1.00 (1.00)	1.00 (1.00)
Discussing Joint Focus	.69 (1.00)	.94 (1.00)	1.00 (1.00)
Marking	.42 (1.00)	.56 (1.00)	.89 (1.00)
Negotiate Mutual Attention and Proximity	.10 (1.00)	.52 (.98)	.86 (.97)
Performing Verbal Moves in Activity	.06 (1.00)	.17 (.94)	.22 (.54)
Discussing Related-To-Present	.17 (.90)	.58 (.90)	.49 (.89)
Discussing Clarification of Action	.02 (.88)	.10 (.70)	.08 (.27)
Discussing Hearer's Thoughts and Feelings	.00 (.79)	.10 (.77)	.32 (.65)
Showing Attentiveness	.00 (.69)	.00 (.25)	.05 (.30)
Discussing Clarification of Verbal Communication	.04 (.63)	.48 (.92)	.73 (.95)
Read Written Text	.00 (.52)	.00 (.48)	.05 (.68)
Discussing Recent Event	.00 (.50)	.10 (.60)	.41 (.62)
Discussing Non-Present	.02 (.29)	.27 (.50)	.51 (.57)
Comforting	.00 (.25)	.02 (.17)	.00 (.14)
Discussing Speaker's Thoughts and Feelings	.00 (.25)	.00 (.27)	.24 (.32)
Negotiating Future Activity	.00 (.03)	.00 (.04)	.05 (.08)
Negotiating Possession of Objects	.00 (.00)	.04 (.13)	.11 (.05)

Child: people play.
Child: [unintelligible] on the tv [unintelligible].
Mother: people play football on tv?

Similarly, engaging in clarification of communicative attempts (one's own or others') requires that the child suspend focus on the here-and-now until the misunderstanding can be resolved. It is perhaps surprising that *Marking (oops, uh-oh)* and *Negotiating Mutual Attention* (e.g., calling the mother by name) are not among the earliest emerging Interchanges, although in the case of the latter it may be partly a function of the setting, where mothers are presumably more single-mindedly focused on the child than they would ordinarily be.

The distribution of child communicative attempts across Interchanges is somewhat different at 20 months than at 14 months. *Negotiating Immediate Activity* and *Discussing Joint Focus* now account for a higher proportion than does *Directing Hearer's Attention,* and ten percent of all child acts are *Performing*

Table 7. Mean proportion of child communicative acts in each Interchange at three ages

	Age		
Interchange	14 months ($\bar{x}$, s.d.)	20 months ($\bar{x}$, s.d.)	32 months ($\bar{x}$, s.d.)
Directing Hearer's Attention	.15 (.15)	.13 (.08)	.06 (.03)
Negotiating Immediate Activity	.12 (.12)	.29 (.12)	.40 (.09)
Discussing Joint Focus	.07 (.08)	.21 (.12)	.30 (.11)
Marking	.05 (.10)	.03 (.03)	.04 (.04)
Discussing Related-to-Present	.02 (.05)	.04 (.04)	.02 (.03)
Performing Verbal Moves in Activity	.01 (.04)	.01 (.02)	.00 (.01)
Discussing Clarification of Verbal Communication	.00 (.01)	.03 (.03)	.03 (.03)
Negotiate Mutual Attention and Proximity	.02 (.05)	.03 (.03)	.02 (.02)
Discussing Non-Present	.00 (.01)	.01 (.01)	.02 (.02)
Discussing Clarification of Action	.00 (.01)	.01 (.01)	.00 (.01)
Discussing Hearer's Thoughts and Feelings	.00 (.01)	.00 (.01)	.01 (.01)
Discussing Recent Event	.00 (.00)	.00 (.01)	.01 (.01)
Discussing Speaker's Thoughts and Feelings	.00 (.00)	.00 (.00)	.00 (.00)
Negotiating Future Activity	.00 (.00)	.00 (.00)	.00 (.01)
Negotiating Possession of Objects	.00 (.00)	.00 (.01)	.01 (.01)
Uninterpetable Utterances	.56 (.22)	.22 (.16)	.06 (.03)

Verbal Moves in Activity. The frequency of *Performing Verbal Moves in Activity* is not, of course, surprising, given that one of the props dyads were given was a towel for playing peekaboo. Rather, what is remarkable is that not all the children do engage in *Performing Verbal Moves in Activity*, even given the availability of the towel, an encouraging adult partner, and what would appear to be a relatively straightforward communicative routine. *Marking, Negotiate Mutual Attention and Proximity,* and *Discussing Clarification of Verbal Communication* each account for a small fraction of the total communicative acts produced by the children as a group at this age, and the remaining Interchange types are rarely, if ever, observed. Thus, the repertoire of Interchange types displayed by 20 month olds appears to be fairly consistent across children, given this type of setting.

At 32 months of age, the core set of communicative interchanges engaged in by most children has again grown. Not only do all the children observed at this age *Negotiate the Immediate Activity, Discuss a Joint Focus,* and (with one exception) *Direct the Hearer's Attention,* the percent of children engaging in *Marking, Negotiate Mutual Attention and Proximity, Discussing Related-To-Present,* and *Discussing Clarification of Verbal Communication* has increased from 50–60% to

81–86%. Furthermore, a third set of Interchange types, used by only a few children at 20 months, is now displayed by 54–70% of the children in the sample. The Interchange types in this third group are *Discussing the Non-Present, Discussing a Recent Event,* and *Discussing the Hearer's Non-observable Thoughts and Feelings.* Again, children seem to be taking communication to a new level of sophistication, learning to engage in discussion of events or topics with no anchor in the here-and-now, as in the 32 month transcript of Andrew:

Child: where-'is my other book?
Mother: at home?

As Table 7 indicates, the remaining Interchange types were engaged in by a minority of children, even at 32 months. Subsequent analyses for parents revealed that many of these types were also not used by most adults in this setting. The more peripheral Interchanges did not reliably appear at every observation subsequent to their initial use, while the core Interchanges *Negotiating Immediate Activity* and *Discussing Joint Focus* were virtually always present at every age after initial appearance.

The distribution of child communicative acts across Interchange types at 32 months was similar to that at 20 months, except that the mean proportion of *Directing Hearer's Attention* fell from .13 to .06, and the mean proportion of *Performing Verbal Moves in Activity* fell from .10 to zero. It may be that by 32 months children are better able to maintain a joint focus, and/or that they can better gauge their interlocutor's focus of attention, and thus need explicitly to direct their partner's attention less frequently. Given the only modest levels of *Performing Verbal Moves in Activity* production even with the peekaboo prop at 14 and 20 months, it is not surprising that performatives are even more rare at 32 months, when there is no explicit prompt or prop provided.

Overall, then, the repertoire of Interchange types demonstrated by children during brief observations such as those in this study appears to grow more similar across age. Initially, all children participate in only a small core of social interchanges (primarily negotiating and discussing the here-and-now), but gradually this shared repertoire expands to include negotiating and discussing the nonpresent or non-observable, and metacommunication skills such as clarifying unclear messages.

Children's Speech Act Repertoires

Our third research question asked what kind of speech acts children express during this period of early development, and whether children share a repertoire of intents. On logical grounds, one would perhaps not expect to find a high degree of convergence across children, both because the number of possible speech act types is quite large, and because production of some types of speech acts depends on the preceding intent expressed by one's interlocutor. One can only answer a wh-question, for example, after a wh-question is asked, and one can put forth a counter-suggestion only after a suggestion has been made.

Prior to examining the composition of children's speech act repertoires, we tallied the total number of Speech Act types produced by children at each age (see Figure 2), as well as the number produced within each of the most common Interchanges (*Directing Hearer's Attention, Negotiating Immediate Activity,*
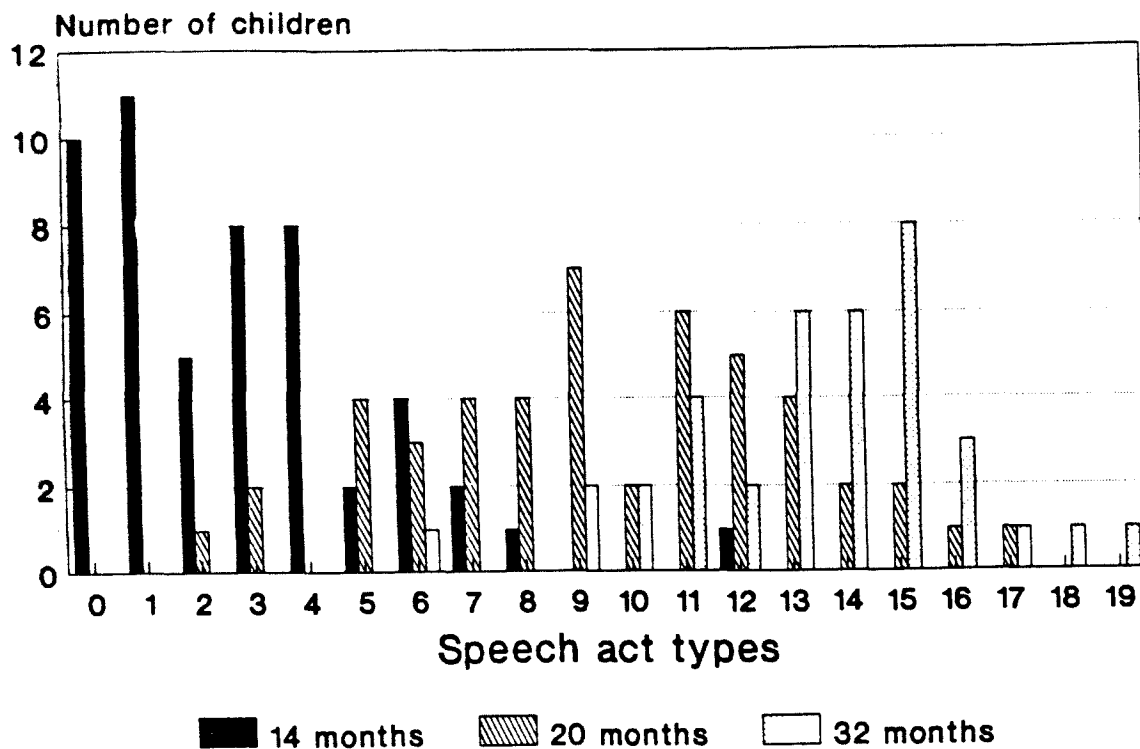
Number of children

Figure 2. Number of Speech Act Types used by children at three ages.

Discussing Joint Focus) (see Figures 3a, 3b, and 3c). It can be clearly seen from comparing these figures that diversification at the speech act level from age 14 to 32 months takes place more within *Discussing Joint Focus* and *Negotiating Immediate Activity* contexts than within *Directing Hearer's Attention*. This is somewhat surprising in light of the early and robust emergence of *Directing Hearer's Attention*.

Using our two-token criterion for control of a speech act category, we tallied the number of children who displayed each speech act at each age (see Table 8). At 14 months, no speech act was used by more than a third of the children. The
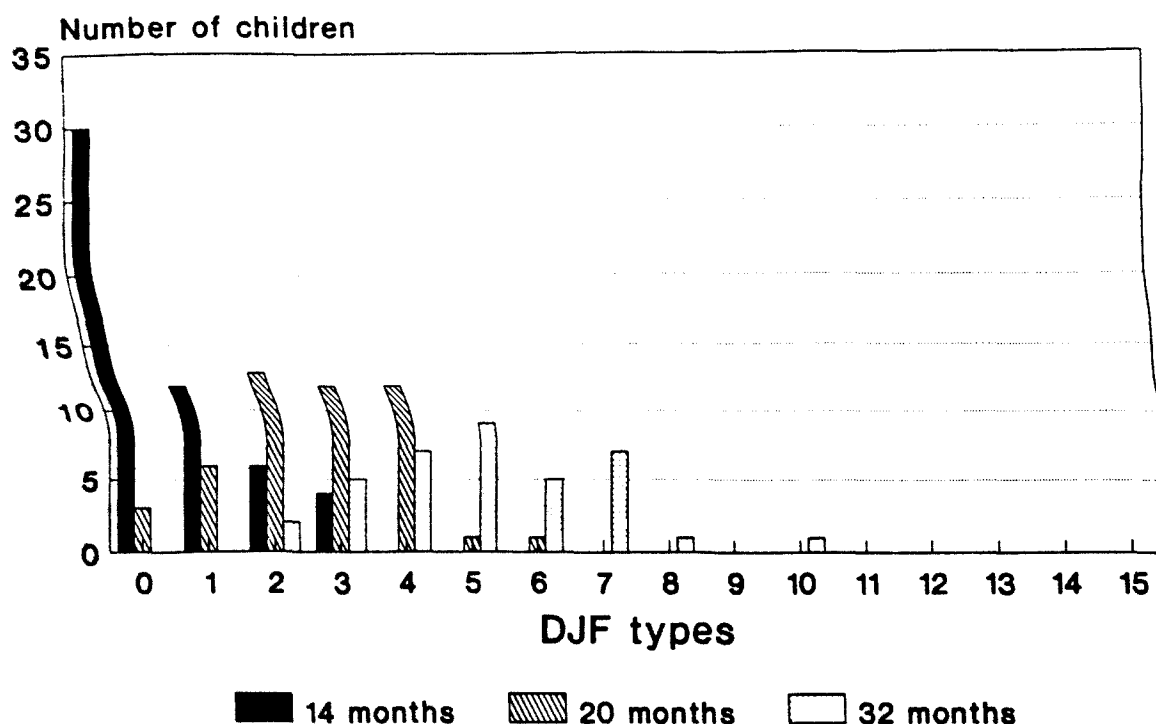
Number of children

Figure 3a. Number of Speech Act Types used by children at three ages within the interchange *Discuss Joint Focus*.
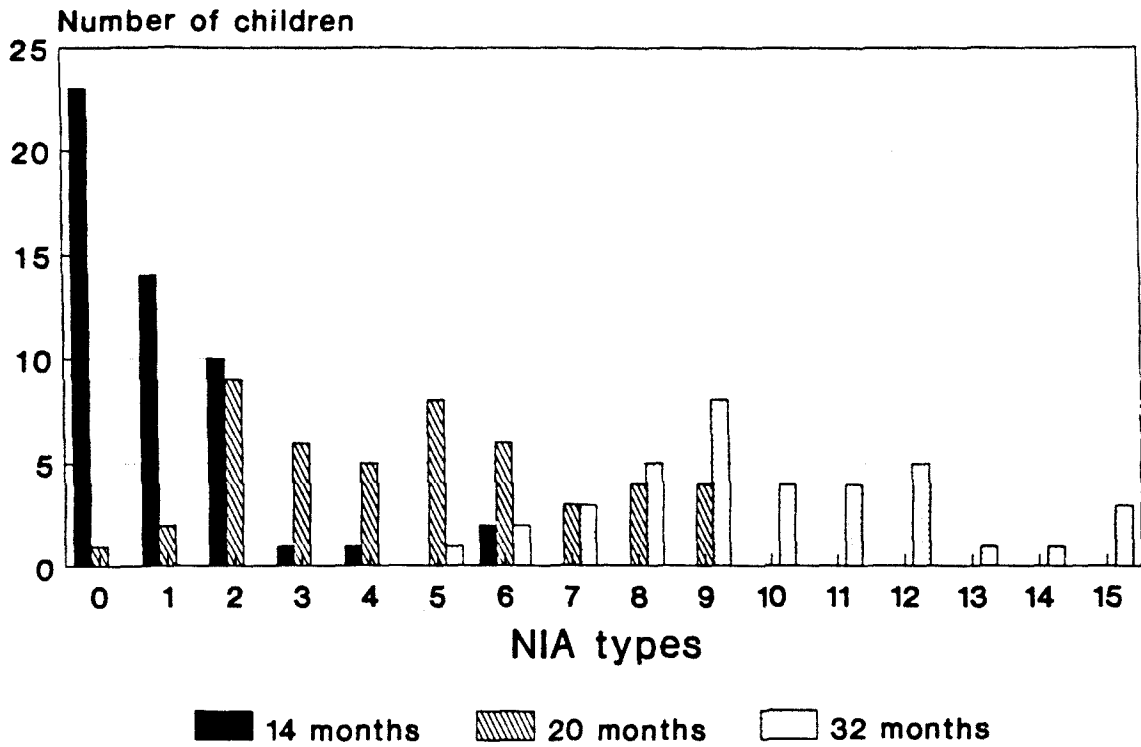
Number of children

Figure 3b. Number of Speech Act Types used by children at three ages within the interchange *Negotiate Immediate Activity.*
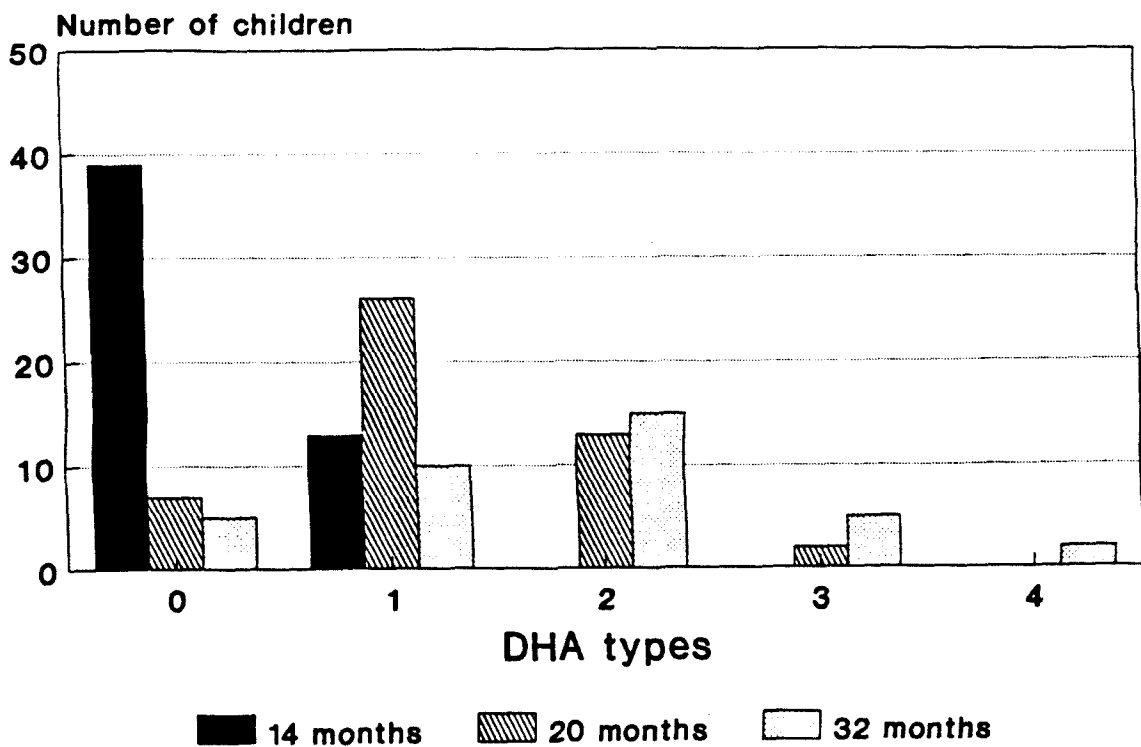
Number of children

Figure 3c. Number of Speech Act Types used by children at three ages within the interchange *Direct Hearer's Attention.*

most generally displayed speech acts were *transfer object, repeat, state a proposition, mark an event, answer wh-question, request/propose, prohibit/protest,* and *perform a verbal move in a game.* With the exception of *transfer object* and *prohibit/protest* all of these are displayed by a majority of children at 20 months. It is notable that *prohibit/protest,* and *perform a verbal move in a game* are used by even fewer children at 32 months than at 20 months.

At 20 months, a majority of children also displayed control of *refuse to do, agree to do, affirmative answer to yes-no question,* and *state intent.* Most 32 month

Table 8. Number of children at each age producing given speech act at least twice

Speech Act		14 months (n=52)	20 months (N=48)	32 months (N=37)
YY	Utter a word-like utterance without clear function.	52	48	37
ST	State or make a declarative statement.	15	46	37
TO	Mark transfer of object to hearer.	18	12	11
PR	Perform verbal move in game.	11	32	17
MK	Mark occurrence of event.	15	25	33
PF	Prohibit/forbid/protest hearer's performance.	12	21	5
SA	Answer a wh-question by a statement.	14	40	36
RT	Repeat/imitate other's utterance.	16	37	20
RP	Request/propose/suggest action.	12	40	34
RD	Refuse to carry out act requested by other.	9	35	18
AA	Answer in the affirmative to yes/no question.	7	29	37
AD	Agree to carry out act requested by other.	6	27	34
CL	Call attention to hearer.	1	17	11
SI	State intent.	0	26	35
CS	Counter-suggestion; an indirect refusal.	0	14	5
AC	Answer calls; show attentiveness to talk.	2	11	20
QN	Ask a product-question (wh-question).	1	11	33
YQ	Ask a yes/no question.	0	10	21
AP	Agree with proposition expressed by other.	1	2	10
AN	Answer in the negative to yes/no question.	1	7	17
RR	Request to repeat utterance.	0	2	6
DC	Create a new state of affairs by declaration.	0	4	6
SC	Complete statement on request eliciting.	0	1	6
DW	Disagree with proposition expressed by other.	0	1	6
RQ	Yes/no question about hearer's wishes (suggestion).	0	0	6
YA	Answer a question with a yes/no question.	0	1	0
AB	Approve of appropriate behavior.	0	0	1
CR	Criticize or point out error in nonverbal act.	0	0	1
PA	Permit hearer to perform act.	0	1	4
PM	Praise for motor acts, i.e. for nonverbal behavior.	0	1	0
YD	Agree to a declaration.	0	1	0
PD	Promise.	0	0	1
XA	Exhibit attentiveness to hearer.	0	0	1
SS	Signal to start performing an act.	0	1	2
ET	Exclaim in surprise or enthusiasm.	0	0	5
NA	Intentionally non-satisfying answer to question.	0	0	2
EI	Elicit imitation of word or sentence.	0	0	1
GR	Give reason; justify a request etc.	0	0	2
TA	Answer a limited-alternative question.	0	0	3
CN	Count.	0	0	2
FP	Ask for permission to carry out act.	1	1	4
ED	Exclaim in disapproval.	1	1	2
EM	Exclaim in distress, pain.	0	0	1

olds continued to engage in these speech acts, with the exception of *refuse to do*. Two speech acts which seemed to be emerging at 20 months, *call by name* and *counter-suggestion* were, unaccountably, less widely used at 32 months.

At 32 months, the most notable development is that the majority of children are asking wh- and yes-no questions for the first time; the production of *answers to a wh-question with a statement* and *affirmative answer to yes-no question* at 14 and 20 months confirms that they had been hearing and answering these questions for some months before starting to ask them. In addition, a majority of the children produce *acknowledgement*. Approximately 20% of the 32-month-olds displayed control of *request reruns, declare a new state of affairs, supply completion, agree with proposition, disagree with proposition, answer in the negative to a yes-no question*, and *request with yes-no question*. One would expect these categories to be demonstrated by larger numbers of children at later ages. Of this list, *agree with proposition, disagree with proposition*, and *declare a new state of affairs* reflect new abilities to operate at the discourse level, responding to the interlocutor's propositions with agreements or disagreements, or marking episodes explicitly by declaring a new state of affairs. It is striking that *requests with yes-no questions* are only starting to emerge at 32 months, despite the fact that most children at this age are demonstrating the ability to ask yes-no questions for other purposes, and that they have been exposed to maternal questions about their wishes or intentions frequently since birth.

It can be seen from Table 8 that another 17 speech acts are still extremely marginal by 32 months; some of these are characteristically parental speech acts (e.g., *approve behavior*), while others are quite infrequent in the parents' speech as well (*exclaim in distress*). A subset of these infrequent child speech acts, though, might be expected to develop after the third year of life, e.g., *give reason* or *criticize*.

We have presented here data about how many children display each of the various speech acts. Another question is how frequently each of the speech act categories is used by each of the three age groups. As the proportional use data in Table 9 show, early emerging speech act categories are also used most often at 14 months.[2] The proportional use of some early emerging speech acts declines with age, because the older children have more alternative speech act categories at their control. The categories *answer a yes-no question with a statement, state a proposition, affirmative answer to yes-no question, wh-question, yes-no question* and *state intent*, on the other hand, come to be more frequent in the children's speech over this age range, parallelling their use by more children. It is worth noting, though, that categories like *transfer object*, which are used early and by a relatively high proportion of children, nonetheless never constitute more than 1% of the observed speech acts.

Interchange-speech act combinations

At 14 months, the most common interchange-speech act combinations (discounting all combinations that were uninterpretable on the speech act level) only occurred with a sample frequency of 67 (for the most frequent) to 35 (for the 10th most frequent); the categories encountered among the 10 most frequent were *prohibit/protest, request/propose, refuse to do*, and *mark transfer of object* within the context of *Negotiating Immediate Activity*; *agree with a proposition* and *state a proposition* within *Discussing a Joint Focus of Attention*; *mark an event* and *mark*

Table 9. Proportional occurrence of speech acts accounting for a mean of at least 2% of all speech acts

Speech Act		Age		
		14 months	20 months	32 months
YY	Utter a word-like utterance without clear function	.66	.23	.09
ST	State or make a declarative statement.	.08	.15	.17
PR	Perform verbal move in game.	.03	.04	—
MK	Mark occurrence of event.	.05	.03	.05
SA	Answer a wh-question by a statement.	.02	.12	.14
RT	Repeat/imitate other's utterance.	.06	.06	.02
RP	Request/propose/suggest action.	—	.06	.07
RD	Refuse to carry out act requested by other.	.03	.05	—
AA	Answer in the affirmative to yes/no question.	—	.04	.07
AD	Agree to carry out act requested by other.	—	.04	.05
AC	Answer calls; show attentiveness to talk.	—	—	.02
QN	Ask a product-question (wh-question).	—	.02	.06
YQ	Ask a yes/no question.	—	—	.02
CL	Call attention to hearer.	—	.03	—
SI	State intent.	—	.04	.05

transfer of object within the *Marking* interchange; *Directing Hearer's Attention* by *stating a proposition* and *Discussing Related-to-Present* with a *performative*. At 20 months, when the most frequent combination occurred 476 times, and the 10th most frequent combination occurred 98 times, *Negotiating Immediate Activity* by *prohibit/protest* was no longer among the 10 most frequent, nor were *mark transfer of object* within *Marking* or *Negotiating Immediate Activity*. *Agree to do* and *state intent* within *Negotiating Immediate Activity*, and *repetition* within *Discussing Joint Focus* appeared among the 10 most frequent combinations, reflecting the children's greater speech act repertoire within *Negotiating Immediate Activity*, and their decreasing interest in marking the transfer of objects. By 32 months, the most frequent combination, *agree with a proposition* within *Discussing Joint Focus*, occurred 678 times, and the 10th most frequent occurred 132 times. *Repetition* within *Discussing Joint Focus* was no longer among the 10 most frequent, nor were *Discussing Related-to-Present* with a *performative*, and *Negotiating Immediate Activity* with a *refuse to do* (which had been among the most frequent at both previous ages). New high frequency combinations included *stating, answering in the affirmative* and *agreeing to statements* within *Negotiating Immediate Activity* – reflecting yet again a tendency to expand the speech act repertoire within *Negotiating Immediate Activity*.

Discussion

Summary of findings. We have described the communicative act repertoires of children aged 14, 20, and 32 months, and described both how those repertoires expand and which are the most common communicative intents expressed. The major development during the period under study was in frequency and intelligibility of communicative attempts. The 14 month olds tried to communicate with their parents relatively infrequently, even when we included gestures and nonverbal vocalizations in our coding of communicative attempts. By 32 months, most children were producing over a hundred communicative attempts during the observation, and most of those were interpretable.

While early communicative attempts tended to occur during a limited set of communicative interchanges (*Negotiating Immediate Activity, Discussing Joint Focus, Directing Hearer's Attention, Marking*), the variety of speech acts young children could produce was somewhat greater, though still subject to considerable development during the time period under study. The value of a pragmatic analysis such as that employed in this research is suggested by the late appearance of speech act categories such as using yes-no questions as requests, despite the earlier appearance of yes-no information questions. It is clear that pragmatic difficulty must be added to syntactic difficulty if we are to understand the determinants of development.

The findings of this study contradict some seemingly commonsense assumptions. For example, we did not find that children's earliest communicative intents were responses. In fact, child initiatory speech acts (statements, markings, transferring object) figured prominently in children's earliest repertoires. Conversely, communicative attempts classified as repetitions (these were imitative utterances that had no communicative intent beyond imitation) were relatively infrequent, because many utterances which others might have merged into a category called 'imitation' could be identified as expressing any of a variety of intents (Pan, Sokolov, Rollins, & Snow, 1991).

Measuring pragmatic development. One question motivating this research was how one might most reliably and efficiently measure a child's pragmatic sophistication. One easily computed and straight-forward measure is of course number of communicative attempts per minute. Alternatively, one might exclude uninterpretable attempts, and employ a measure of only interpretable communicative acts. As we have seen, both of these did show growth across the period 14 to 32 months of age for typically-developing middle class children observed in free-play with a parent. Neither of these measures, of course, provides any information about the variety of intents the child produces, nor the variety of interactional contexts in which s/he does so. In order to try and capture this level of information, we have used the measure we call 'pragmatic flexibility.' First, we found evidence that indices of pragmatic development are not redundant with traditional developmental indices such as MLU and measures of the lexicon, particularly at 32 months; second, we found that the pattern of correlations among measures of communicative ability was somewhat different at 20 months, when interpretability seemed to be an index that reflected individual differences in rate of development. Across the age range studied, pragmatic flexibility emerged as highly correlated to both interchange and speech act types, and as moderately correlated to communicative attempts per minute. Previous work using pragmatic flexibility as a

measure of communication has shown that pragmatic flexibility declines with age in some children with autism (Rollins, 1994) and that children with specific language impairment show higher pragmatic flexibility than younger controls matched for language age, though a lower level than age-matched controls (Rollins, Pan, Conti-Ramsden, & Snow, 1994). Both these findings confirm the validity of pragmatic flexibility as an index of pragmatic skill.

We also found in exploratory analyses that pragmatic flexibility at 32 months was predicted by a number of 20 month measures – indicators of grammatical development such as MLU, MLU of the five longest utterances, and IPSyn (Scarborough, 1990); of volubility (word tokens per 10 minutes, words per turn, MLT ratio); and of pragmatic development (speech act types and pragmatic flexibility). The autocorrelation furthermore suggests some stability in pragmatic flexibility, at least after the initial period of language development.

A question which remains is whether the coding scheme and measures used here would reflect a child's pragmatic skill in interaction with peers, or in other contexts (e.g., interaction with unfamiliar adults) which arise with increasing frequency as children get older. While the most accurate estimate of pragmatic competence, at least for the younger children, is probably obtained from observations of interaction with a parent, supplementary information about somewhat different pragmatic abilities might well be obtained from observation of peer interaction or interaction with less familiar adults.

Complexity of the coding scheme.   It will not have escaped the reader's attention that the coding scheme used here for analyzing communicative attempts was lengthy, complicated, time-consuming to apply, and less than perfectly reliable. We feel, nonetheless, that it revealed a considerable amount of information that would have been masked by a coding scheme that looked only at the speech act level, or which collapsed the interactional and speech act levels. For example, the children began to direct their interlocutor's attention by using eye gaze, vocalization, or pointing/showing behaviors. With age, they learned to engage their interlocutor by expressing specific intents such as directives (*look at that*) or questions (*what's that?*). Similarly, children's earliest participation in negotiating activity often involved simple marking (*uh-oh*) or sound effects (*vroom, vroom*). Later, they came to express a variety of intents within the social context of negotiating activity, including requesting, stating propositions, agreeing or refusing others' requests, etc. It was only by maintaining the distinction between social/communicative activity or context (what Ninio calls Interchange) and specific communicative intent expressed (i.e., Speech Act), that the continuity between children's early and later communicative behavior was observable.

Of course, for some purposes simpler ways of assessing pragmatic level may be desirable. One approach to a simpler system is exemplified by Oller and Eilers (1989), which ranks complexity of communicative acts from babbling through imitation, expressives, conventional communications, requests, then questions, and calculates an index reflecting percent of utterances falling into each category. We would argue that their system might be adequate in the age and developmental range for which they used it (14–28 months) but that it would fail to reflect developmental changes starting to occur then, e.g., the introduction of nonpresent topics, of fantasy, and so on. Alternately, use of the INCA-A coding only at the Interchange level may reflect sufficient information about children's pragmatic

development for many purposes; Rollins (1994), for example, reported limitations in the pragmatic capacities of autistic children that emerged primarily at the Interchange level.

Place of pragmatics in a full description of language development. We have presented here a set of methods for describing development within the domain of communicative intents. We certainly do not mean to argue that parallel developments in linguistic domains such as the lexicon and grammar and in cognitive sophistication during this same period of development are unimportant, or even unconnected to pragmatic development. The coding scheme we have used gives the fullest possible credit to children for unconventional and even non-verbal expression of intents, and thus we see that children at the youngest age observed are producing rather sophisticated communicative acts, such as statements. But of course the grammatical complexity, conventionality, lexical variety, and interpretability of their statements increases enormously over the age range observed.

One might argue that we are overestimating the communicative capacities of children by using such a forgiving coding scheme; we would counter, though, that the communicative intents identified by the coding scheme overlap with those intuitively identified by mothers engaged in interaction with their young children. In fact, the coding scheme was originally developed (Ninio & Wheeler, 1984a, 1984b) based in part on mothers' interpretations of their own and their children's intents viewed on videotape. Use of this kind of coding instantiates our view that children are relatively precocious in social and communicative abilities, as compared to lexical and grammatical abilities.

It is striking that many communicative intents used generally and frequently by parents addressing children as young as 14 months are not acquired by the children until much later. There are many possible explanations; some categories of communicative intent presuppose a certain level of cognitive sophistication, e.g., *Discuss Non-Present, Discuss Hearer's Nonobservable Thoughts and Feelings.* Others, however, which are rather simple – such as *Performatives* and *Negotiate Mutual Attention* – are still late in appearing and relatively infrequent in children's talk. We must acknowledge the possible limitation of the observational setting, where parent and child were alone together and thus did not need to negotiate mutual attention as much as might happen at home. Furthermore, the observations were relatively brief, and some categories of communicative intent which have a low base occurrence rate are unlikely to be seen even in the repertoires of children who control them.

Despite the brevity of the observations, however, and the novelty of the setting at least for the youngest children, the results we have presented are quite orderly. The developmental sequence identified based on children's control over Interchange, Speech Act, and Combination types is replicated in the data on proportional use, and in general, categories once established remain in evidence at later time points. It should be noted, though, that to some degree the orderliness in the children's behavior depended on the parental control over the interaction. Parents more or less universally, for example, initiated peekaboo games and requested labels, thus ensuring contexts for the child to display their ability to *Perform Verbal Moves in Activity* and *answer wh-questions with a statement.* Brief observations in home settings where the activities might vary more widely would not necessarily generate such interpretable data.

The results presented here provide a first step in answering persistent questions about the place of pragmatics in a theory of language development. Some have argued that rules for mapping communicative intent onto utterance form are the basis of children's entry into spoken language (e.g., Ninio & Snow, 1988), but considerable controversy exists about whether such pragmatically based linguistic rules are merely transitional or whether, at some point, the child's linguistic system undergoes a transformation from a use-conditional to a form-conditional system. Such a process is posited both by nativists who believe that innate grammatical knowledge is triggered at some later stage of language use (e.g., Pinker, 1984) and by empiricists who believe either in a sudden or in a gradual reorganization of children's linguistic system from a pragmatically based one to an autonomous formal system (Berman, 1986; Nelson, 1985). Furthermore, some have argued that growth in communicative intent is the source of children's growth in syntax and lexicon (e.g., Bates & MacWhinney, 1979, 1982; Bruner, 1983; Ninio & Snow, 1988). The data presented here confirm the relative precocity of pragmatic over grammatical development, and suggest there are regularities in the emergence of pragmatic capacities as striking as those in other linguistic subsystems. Further analyses of form-function mapping within the categories of communicative intent children have mastered would be necessary to answer questions about whether pragmatic capacities generate lexical and syntactic growth.

Whatever one's beliefs about how the expression of communicative intents relates to the grammatical system, it is clear that one can describe regularities in children's pragmatic development by assessing their repertoire of communicative intents. Charting the early development of children's pragmatic abilities is crucial in providing a sturdy basis for the early identification of communicative delay, precisely because communicative capacities develop so early and so robustly in normally developing infants. The importance of including pragmatic development in a complete description of language growth is underlined by the existence of specific pragmatic deficits – e.g., in the language of children with autism, who often show relatively sophisticated grammatical and lexical systems but whose understanding of the conventional and appropriate expressions of common communicative intents is often disturbed. It is also important to assess the degree to which children with language disorders that primarily affect the grammar (e.g., specific language impairment) function like age-mates or like language-age mates in the domain of pragmatics. This requires having some sense of the course of development of communicative skills in children without disorders.

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Notes

1. Some modifications were introduced to the INCA-A scheme as it is described in Ninio *et al.* (1994). For example, to represent the full complexity of communicative acts occurring within the context of fantasy play, fantasy utterances were coded using the same interchange categories as communicative acts occurring outside fantasy, rather than using the two more global categories suggested by Ninio *et al.*, Discuss Fantasy World and Negotiate Fantasy World. These acts were then tagged so that they could be retrieved and analyzed either together with non-fantasy acts, or separately.

2. The proportions given in Table 8 exclude utterances that were untranscribable because of ambient noise or mechanical failure, as well as communicative attempts that were interpretable only with help of nonverbal information.

Appendix (adapted from Ninio, Snow, Pan & Rollins, 1994)

Categories of Interchange Distinguished in the Current Study

Code	Category	Function
NCS	NEGOTIATE CO-PRESENCE AND SEPARATION	to manage the transition between co-presence and separation.
NMA	NEGOTIATE MUTUAL ATTENTION AND PROXIMITY	to establish mutual attentiveness and proximity or withdrawal.

Code	Category	Function
SAT	SHOWING ATTENTIVENESS	to demonstrate that speaker is paying attention to hearer.
DHA	DIRECTING HEARER'S ATTENTION	to achieve joint focus of attention by directing hearer's attention to objects, persons and events in the environment.
DJF	DISCUSSING A JOINT FOCUS OF ATTENTION	to hold a conversation about something in the environment that both participants are attending to, e.g., objects; persons; ongoing actions of hearer and speaker; ongoing events.
DRP	DISCUSSING THE RELATED-TO-PRESENT	to discuss non-observable attributes of objects or persons present in the environment or to discuss past or future events related to those referents.
DRE	DISCUSSING A RECENT EVENT	to hold a conversation about immediately past actions and events.
DNP	DISCUSSING THE NON-PRESENT	to hold a conversation about topics which are not observable in the environment, e.g., past and future events and actions, distant objects and persons, abstract matters. (Excluding conversations about hearer's and speaker's inner states.)
DHS	DISCUSSING HEARER'S THOUGHTS AND FEELINGS	to hold a conversation about hearer's non-observable thoughts and feelings.
DSS	DISCUSSING SPEAKER'S THOUGHTS AND FEELINGS	to hold a conversation about speaker's non-observable thoughts and feelings.
PSS	NEGOTIATING POSSESSION OF OBJECTS	to determine or discuss who is the possessor of an object.
NIA	NEGOTIATING THE IMMEDIATE ACTIVITY	to negotiate the initiation, continuation, ending and stopping of activities and acts; to direct hearer's and speaker's acts; to allocate roles, moves, and turns in joint activities; to evaluate speaker's and hearer's acts as correct or incorrect; or as desirable or undesirable.

Code	Category	Function
NFA	NEGOTIATING AN ACTIVITY IN THE FUTURE	to negotiate actions and activities in the far future.
PRO	PERFORMING VERBAL MOVES IN AN ACTIVITY	to perform moves in a game or other activity by uttering the appropriate verbal forms.
MRK	MARKING	to express socially expected sentiments on specific occasions such as thanking, apologizing, etc. or to mark some event.
CMO	COMFORTING	to comfort hearer, to express sympathy for misfortune.
DCC	DISCUSSING CLARIFICATION OF VERBAL COMMUNICATION	to discuss clarification of hearer's ambiguous verbal communication, or a confirmation of speaker's understanding of it.
DCA	DISCUSSING CLARIFICATION OF ACTION	to discuss clarification of hearer's nonverbal communicative acts.
TXT	READ WRITTEN TEXT	to read or recite written text aloud.
OOO	UNINTELLIGIBLE UTTERANCES	unknown function.
YYY	UNINTERPRETABLE UTTERANCES	unknown function.

Categories of Illocutionary Force Distinguished in the Proposed System

Directives and responses

RP   Request/propose/suggest action for hearer, or for hearer and speaker.

RQ   Yes/no question about hearer's wishes and intentions which functions as a suggestion.

DR   Dare or challenge hearer to perform action.

WD   Warn of danger.

CL   Call attention to hearer by name or by substitute exclamations.

SS   Signal to start performing an act, e.g., to run or roll a ball. Pace performance of acts by hearer.

AD   Agree to carry out act requested or proposed by other.

AL   Agree to do for the last time.

RD   Refuse to carry out act requested or proposed by other.

CS   Counter-suggestion; an indirect refusal.

GI   Give in; accept other's insistence or refusal.

AC   Answer calls; show attentiveness to communications.

GR   Give reason; justify a request for action, refusal or prohibition.

Speech elicitations and responses

EI   Elicit imitation of word or sentence by modelling or by explicit command.

EC   Elicit completion of word or sentence.

EX	Elicit completion of rote-learned text.
RT	Repeat/imitate other's utterance.
SC	Complete statement or other utterance in compliance with request eliciting completion.
CX	Complete text if so demanded.
EA	Elicit onomatopoeic or animal sounds.

Commitments and responses

SI	State intent to carry out act by speaker; description of one's own on-going activity.
FP	Ask for permission to carry out act.
PD	Promise.
TD	Threaten to do.
PA	Permit hearer to perform act.
PF	Prohibit/forbid/protest hearer's performance of an act.

Declarations and responses

DC	Create a new state of affairs by declaration.
DP	Declare make-believe reality.
YD	Agree to a declaration.
ND	Disagree with a declaration.

Markings and responses

MK	Mark occurrence of event (i.e. thank, greet, apologize, congratulate, mark ending of an action, etc.)
TO	Mark transfer of object to hearer.
CM	Commiserate, express sympathy for hearer's distress.
EM	Exclaim in distress, pain.
EN	Express positive emotion.
ES	Express surprise.
XA	Exhibit attentiveness to hearer.

Statements and responses

ST	State or make a declarative statement.
AP	Agree with proposition expressed by previous speaker.
DW	Disagree with proposition expressed by previous speaker.
WS	Express a wish.
CN	Count.

Questions and responses

QN	Ask a product-question (wh-question).
YQ	Ask a yes/no question.
TQ	Ask a limited-alternative yes/no question.
EQ	Eliciting question (e.g., hmmm?)
AQ	Aggravated question, expression of disapproval by restating a question.
SA	Answer a wh-question by a statement.
AA	Answer in the affirmative to yes/no question.
AN	Answer in the negative to yes/no question.
QA	Answer a question with a wh-question.

YA   Answer a question with a yes/no question.
TA   Answer a limited-alternative question.
NA   Intentionally non-satisfying answer to question.
RA   Refuse to answer.

Performances
PR   Perform verbal move in game.
TX   Read or recite written text aloud.

Evaluations
PM   Praise for motor acts, i.e. for nonverbal behavior.
ET   Exclaim in surprise or enthusiasm, express enthusiasm for hearer's performance.
CR   Criticize or point out error in nonverbal act.
AB   Approve of appropriate behavior. Express positive evaluation of hearer's or speaker's acts.
DS   Disapprove, scold, protest disruptive behavior. Express negative evaluation of hearer's or speaker's behavior as inappropriate.
ED   Exclaim in disapproval.

Demands for clarification
RR   Request to repeat utterance.

Text editing
CT   Correct, provide correct verbal form in place of erroneous one.

Vocalizations
YY   Utter a word-like utterance without clear function.
OO   Unintelligible vocalization.