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## MAKING THE ABSENT PRESENT: FACILITATING THE TRANSITION FROM SENSORIMOTOR TO LINGUISTIC COMMUNICATION

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### INTRODUCTION

How do children who are able to communicate successfully in sensorimotor interaction acquire the ability to transact a successful linguistic communication? To study this transition, we selected what is undoubtedly the most basic and well-established of all interactive routines in the infant's sensorimotor repertoire—adult-initiated offer sequences. The prototype for this interaction is, of course, the original feeding situation, in which the mother begins the interaction by offering a nipple to the newborn infant. Our hypothesis was that a mother could utilize this well-understood interactive context to help the baby progress to the comprehension of offers presented on a purely linguistic level ("Do you want o?"). We thought, furthermore, that the processes which ultimately lead to the comprehension of linguistically communicated offers might provide a paradigm for the general transition from sensorimotor to linguistic communication. The specific focus of our research was to examine how the caregiver works to provide a shared context that is sensitive to the child's abilities at different points in the developmental process.

Successful communication rests on shared knowledge of the world (Bates, 1976; Keenan & Klein, 1975), notions about the orderliness of interactions (Goffman, 1974; Minsky, 1975; Watson, 1977), and methods of accomplishing negotiated activities (Cicourel, 1977; Grice, 1975; Sacks, Scheg

loff, & Jefferson, 1974) that are taken for granted (Garfinkel & Sacks, 1970; Searle, 1975a). Rarely do we make explicit these common presuppositions. Only when there is a failure in interaction, a violation of our expectations, do we even become aware that there is an intricate, invisible framework that is taken for granted and upon which we depend to guide us in our everyday activities. One way to uncover these devices is to examine in careful detail instances that fail or deviate from the expected outcomes (Wikler, 1976).

Because not all offer sequences initiated by an adult caregiver achieve their expected communicative result, a data base of videotaped caregiver-child interactions provided material for a naturalistic experiment.<sup>1</sup> We could compare successful and unsuccessful offers of different types and analyze the verbal and nonverbal information required at different points in development to elucidate the transition from sensorimotor to linguistic communication. Our results show that, at first, the caregiver must explicitly provide on a sensorimotor level what, among adults, "everyone already knows" (Schutz, 1971), so that a collaborative interpretation of what is going on can be achieved or negotiated. Then, as the child comes to know more and more—first on the sensorimotor level, then on the level of symbolic representation—the caregiver's burden of responsibility for successful communication gradually decreases.

### Different Approaches to the Problem

Working in language acquisition and infant-mother interaction, researchers have approached the transition from sensorimotor to linguistic communication from several empirical/theoretical perspectives, perforce from different chronological vantage points. Psycholinguists studying language acquisition have approached this transition from the top down. Developmental psycholinguists inspired by Chomsky (1965) ignored the transition, conceiving of language structure as apart from other facets of cognitive and social competence (e.g., Braine, 1963; Brown & Bellugi, 1964; Miller & Ervin, 1964). They began their accounts with the earliest multiword utterances, analyzing them in terms of formal syntax. Schlesinger (1971) presaged a new approach by pointing out that grammatical relations actually encoded the language learner's conceptualization of real-world events. Other writers became concerned with the cognitive and semantic aspects of language acquisition (Brown, 1973; Macnamara, 1972). Later, presyntactic speech was analyzed in relation to the extralinguistic context (Bloom, 1973; Greenfield & Smith, 1976; Greenfield, Smith, & Laufer, 1972) and to discourse history (Greenfield & Smith, 1976; Keenan, Schieffelin, & Platt, 1976). Researchers also began to consider the function as well as the form of child language and turned to speech act theory (Dore, 1975). Precursors to speech acts were found in prelinguistic communication (Bates, 1976; Bruner, 1974/1975, 1975, 1977; Carter, 1975; Dore, 1975).

Another approach has been to examine the effect of the caregiver's linguistic input on the child's association of language (Cross, 1977; Newport, 1976; Newport, Gleitman, & Gleitman, 1977). The evidence for a direct link between syntactic input by the caregiver and acquisition by the child has been disappointing and tenuous at best. Our hypothesis is that, because the child acquires new linguistic forms by relating unknown language input to familiar nonlinguistic forms (Greenfield, Laufer, & Smith, 1972; Greenfield & Smith, 1976; Macnamara, 1972), the nonlinguistic or sensorimotor input of the caregiver is as crucial as the linguistic input in the language learning process. During the transition from sensorimotor to linguistic communication, one would expect that the simultaneous presence of a message on *both* the sensorimotor and linguistic levels would be key to the child's comprehension and acquisition of the new linguistic forms. From this analysis, it follows that linguistic studies of caregiver input which fail to consider whether or not a sensorimotor translation of the unknown linguistic form is available to the child would generally fail to find a strong connection between adult input and the child's progress.

Our study was designed to explore the interrelated roles of nonverbal and verbal input in the child's transition from sensorimotor to linguistic communication. As our focus we selected the comprehension of one particular type of communicative interaction, the offer. The method relies on holding communicative context (offers) constant over time and observing developmental changes in the forms that can be comprehended. Bruner, Roy, and Ratner (this volume, Chap. 2) have employed a similar procedure in their developmental study of children's production of requests. Our method is a variant of one suggested by Braunwald (1978) where nonverbal context is held constant over time and changes in the child's means of linguistic expression are observed.

In studying nonverbal input provided by the caregiver, we were in effect learning about the creation of shared world knowledge, upon which successful communication depends (Bates, 1976; Keenan & Klein, 1975). Part of this knowledge is of a general sort, not specific to offers. It relates to the nature of social and communicative interaction. Development of this knowledge in the first year of life is summarized in the next four sections, since this knowledge is prerequisite to the specific acquisition with which our study is concerned. For more detailed summaries of communicative development during the first year, the reader is referred to reviews by Schaffer (1977) and Lieven (1977).

### Development of Interactional Skills

Interaction requires a variety of skills, and many of these have been found to exist in very young infants. Stern (1977) and Tronick, Brazelton, and Als (1977) have shown how infants can initiate, maintain, terminate, and avoid interaction; caregivers have different repertoires to achieve the same

ends. Trevarthen (1977) has discussed the origins of communicative behaviors, observing that (as early as 2 months of age) both caregivers and infants initiate exchanges and mutually work at sustaining them. Trevarthen has proposed that the first 6 months are devoted to the development of intersubjectivity, that is, a commitment to conveying and sharing a mental state with the coparticipant at this level. The exchanges have no content nor are they directed toward objects other than the participants themselves. At about 6 months of age the infant-caregiver exchanges begin to incorporate things from the objective world. That is, the interactions can now be focused on some topic outside of the interactants themselves.

Snow (1977), who has explored the development of vocal and conversational turn taking between caregiver and infant, corroborated Trevarthen's findings. These same transitions are reflected in the content of the caregiver-infant "conversations": "At the earliest age, the mothers were talking a great deal about the children's feelings and experiences (their being tired, hungry, bored), what they are looking at, etc., and at later ages about their activities and about objects and events in the immediate environment" (Snow, 1977, p. 7). The change begins at about 5-7 months of age. Apparently at 5-7 months the infant can only interact with the caregiver or with an object, but not both simultaneously. That is, the infant can play with a ball or the caregiver, but not both. Only later can the infant play ball *with* the caregiver (Schaffer, 1977).

### Communicative Intention

In caregiver-child interactions, intention on the part of the child has been defined as using the communicative value of behavior to purposefully affect the action of others, bringing about some desired goal. Trevarthen (1977) and Tronick et al. (1977) attribute the intention to initiate and sustain intersubjectivity to infants of 2 months and 3 months, respectively. Bruner (1977) also describes the development of communicative intention during the first year, as reflected in the exchange of objects. Somewhat later, near the end of the first year of life, children manifest the intention to communicate by means of what Bates (1976) calls protodeclaratives and protoimperatives. Bates shows how children begin to use objects to get the attention of adults to interact with them, that is, to make sensorimotor assertions, or protodeclaratives. Adults are also used as a means to get objects; these actions are protoimperatives. Protodeclaratives and protoimperatives are considered to be the precursors of the corresponding speech acts: declaratives and imperatives.

### Development of Reciprocity

Brazelton, Koslowski, and Main (1974) have discussed the genesis of reciprocity (i.e., the sensitivity of the coparticipants to each other) that is exhib-

ited in the pacing of alternation in interactions. The turntaking system observed in conversation (Sacks, Schegloff, & Jefferson, 1974) entails similar interactional skills. The domain of interactional skills disclosed by the conversational analysts is consequential for what it means to be (or, for our inquiry, to become) a competent member. Since their model of the organization of the turn-taking system addresses the management of turn size and turn order in conversation, that model is useful in studying the developmental acquisition of the turn-taking system.

Speaker selection (in conversation) can be accomplished by the current speaker continuing or selecting a new speaker, or by a new speaker self-selecting. One way for the current speaker to select a next speaker is through the organization of the talk; for example, through the organization of adjacency pairs. Adjacency pairs such as Question/Answer, Summons/Response, and Greeting/Greeting have first pair parts (e.g., Question, Summons, and Greeting) which by their nature demand a response, or second pair part (e.g., Answer, Response, and Greeting).

Snow (1977) has investigated the acquisition of these specific conversational skills in adult-infant dyads. In interactions with very young infants, the caregiver's major goal is characterized as getting the child to take a turn. At 3 months, caregivers and children participate in pseudodialogues; the mother responds to the infant *as if* the child's vocalizations have communicative significance. If the child fails to respond, the caregiver provides the response herself; that is, she takes the child's turn. At about 7 months the child is a more "active" interactant, albeit unwittingly. The child can "initiate" an exchange by smiling, burping, or laughing or with a protest cry. The caregiver's regular response to these behaviors makes the child's behavior appear to be the first part of an adjacency pair. At this level, the caregiver does not have to fill in the child's part, and the frequency of speaker switching is markedly increased. By 12 months the child initiates and responds more consistently, while the caregiver expands or explains the child's babbling. At 18 months the children in Snow's study were able to take turns appropriately and substitute words for babbling. The mother's criteria for an acceptable response became a closer and closer approximation to the adult form.

### Interactive Routines

With the development of intentionality and reciprocity, plus the skills to interact (including intersubjectivity and turn taking), interactive routines are constructed by the prelinguistic child and the caregiver. These interactive routines are developed in the carrying out of everyday activities, and especially in play activities such as peek-a-boo (Bruner & Sherwood, 1976; Greenfield, 1972) and give-and-take (Bruner, 1977; Gray, 1978).

Some concepts relevant to the general development of interactive routines have been proposed by Wertsch (1977, 1978a, 1978b) and Wood,

Bruner, and Ross (1976). Wertsch asserts that many human activities entail metacognition, that is, our ability to know about and regulate our own doings. However, very little is known about how a child comes to direct his or her own activities. Following Vygotsky's (1978) claim that knowledge of the world is not acquired or applied in a social vacuum, Wertsch and his colleagues (Hickman & Wertsch, 1978; Wertsch, Hickman, McLane, & Dowley, 1978) have investigated the acquisition of self-directed activities by closely examining the social interaction of caregivers and children. They found that initially in a problem-solving situation, the caregiver guides, or "other-regulates," the child by fitting the child's actions into her interpretation of the ongoing activity. The caregiver assists the child most effectively by eliciting behaviors within the child's "zone of proximal development." The zone of proximal development is the distance between what the child can accomplish alone and what the child can do when aided by someone more competent. The work of Wertsch and his co-workers strongly supports Vygotsky's contention that all human abilities first appear interactionally and only later are produced by the individual alone.

"Scaffolding," a related notion developed by Wood et al. (1976), refers to the caregiver's structuring of an interaction by building on what she knows the child can do. For example, if an object is dropped, the caregiver waits for the baby to pick up the object. If the baby does not pick it up, she may pick it up and hold it just out of reach, giving the baby the opportunity to reach for it. Ideally, the caregiver's scaffold is never more than what is required to elicit the baby's most complex performance relevant to the interaction at hand. Scaffolds, well tailored to the child, allow the child to operate in his or her zone of proximal development (Wood & Middleton, 1975), thus enlarging the "zone of actual development." Our study aimed to investigate the scaffolding properties of nonverbal or sensorimotor information provided by the caregiver to help the child actualize the transition from sensorimotor communication to language.

More specifically, since our study of the transition from sensorimotor to linguistic communication focuses on adult-initiated offers to children in the one-word period, the earlier development of the give-and-take routine described by Bruner (1977) and Gray (1978) documenting the existence of the prerequisite sensorimotor framework, is relevant. Bruner and Gray found that at 3 months infants and their caregivers participated in a giving-and-grasping routine. At this age, the caregivers are the sole initiators, fitting their actions into and between the children's. A great deal of work is done by the caregivers, both verbally and nonverbally, to get the infants' attention: the object is maneuvered in front of the children to catch their gaze, and questions such as "*Do you want X?*" are posed to secure their attention. The caregivers manipulate the interaction so that the babies have a turn. For example, these sequences often end with the caregivers actually shoving the object into the babies' fist-shaped hands. Bruner (1977) and Gray (1978) found that at 5

and 6 months, respectively, babies take their turns as the caregivers scaffold the interaction; caregivers may offer the object by holding it just out of reach so that the babies have to signal their intent to take it by a reaching gesture. At this stage (5–6 months) the routine can more aptly be referred to as (caregiver) offering and (baby) taking. Bruner (1977) has observed that by 10 or 11 months the baby inserts vocalizations into the game at regular intervals, thus segmenting the interaction. By 12 months (in Bruner's study) the child can dominate the game by both showing and offering the objects that he or she possesses. The sensorimotor system has become reversible. These findings suggest that by way of other-regulation or scaffolding the caregiver provides the child with a structure with which to interpret events, and with which to eventually acquire self-regulation.

Part of our study focuses on the caregiver's attempts to make herself understood by the child. This is, in a sense, the complement of work done by Braunwald and Brislin (1979). They have demonstrated the importance of the caregiver's role of inferring the child's "here and now" in order for the child to make herself or himself understood. From our perspective, the caregiver's work to make *herself* understood highlights the crucial nature of creating a context in which communication can be interpreted by the coparticipants.

Children who are limited to saying one word at a time operate at the perceptual sensorimotor level; that is, in the "here and now" (Greenfield & Smith, 1976). Thus presupposed information, knowledge common to both coparticipants, is automatically available only to the extent to which it is tangibly present and being attended to. With children just beginning to talk, the shared knowledge of the world that can be assumed is, therefore, severely limited. While most language development research has treated the nonverbal context as a static given, a "background" to the interaction, the creation of the nonverbal situation may actually be "foreground," a part of the interaction itself. For example, while the caregiver may sometimes implicitly rely on what is afforded in the existing nonverbal situation in order to communicate, he or she may also take an active role in constructing a shared context on the sensorimotor level. In this way, the previously discussed phenomena—the ability to interact, the development of intentionality and reciprocity, plus the development of stable interactive routines—all provide a base from which the child-caregiver pair can progress from sensorimotor to linguistically transacted communication.

## METHOD

The infant-caregiver research recognizes the child as an integral and important partner in transacting or negotiating the outcomes of interactions. However, our perspective in examining the transition from sensorimotor to linguistic communication is that the interactions are collaborations whose

outcomes are not predictable from individual intentions alone. Ethnomethodologists suggest that interactants have procedures for making situations intelligible and that common understanding is an "artful accomplishment" (Garfinkel, 1972). Meaning is seen as a dynamic process; it is constructed in a specific context by actors who actively interpret what they hear and see to make sense of the interaction (Cicourel, 1977; Garfinkel, 1967, 1972; Garfinkel & Sacks, 1970). An outcome of shared meaning may often be a negotiated compromise between the "original" intentions of the individual participants. This view is reflected in our criteria for assessing a successfully communicated offer on the part of the caregiver: The child's response must not only be relevant to the offer the caregiver has initiated, it must also be interpreted by the caregiver as relevant.

We undertook an analysis of microinteraction to formulate just what caregiver-child pairs do to communicate successfully. In negotiating the emergent meaning of events, these coparticipants revealed to us, as well as to each other, the identifying features of everyday life in and as its detail (Garfinkel, 1978; Burns, 1978). That is, an event is composed of, and is isomorphic with, its detail.

Ethnomethodology has made us sensitive to and committed to the need to be "true" to our data in a particular way. The analyst does not impose on the data any a priori notions of the nature of the organization. Instead, the analyst seeks to determine what the organization of the interaction is for the coparticipants. This organization of interactions is displayed by the coparticipants to each other and therefore is available to the analyst as well. An interactant's current action is taken to be the interactant's analysis of the situation up to that point. (See Schegloff and Sacks, 1973, for a discussion of displayed interpretation in interaction.) The object of analysis is close description and assessment of the identifying features and details of interaction. A competent analysis is dependent on the analyst being a member of the "culture" and having been involved in or, ideally, having witnessed these or similar events.

Since each interaction is unique, its constituents will necessarily reflect its individuality. Therefore, there are no absolute criteria for assessing the appropriateness of a constituent for a particular interaction, and no behavior has absolute meaning independent of the context in which it is implicated (Moerman, 1977; Schegloff, 1976, 1977). What is judged to be an acceptable next turn by coparticipants is specific to the particulars of the situation: It is not some indeterminate general response. According to Garfinkel (1978), the particulars of a situation, its "quidity," are just those persons, just that place, with just those objects, enacting just those activities, in just that way. In this sense, individual differences do affect outcomes; the dyadic particulars are the very essence of the interaction. Supporting empirical evidence from Gray's study (1978) of giving-and-taking shows that each caregiver-child

pair develops individually different interactive sequences that are continually refined and elaborated.

Our treatment of the data does not follow other precepts of ethnomethodology. In particular, the major concern of ethnomethodologists is the analysis of naturally occurring events. An analysis of "variance" follows as a matter of course. That is, the naturally occurring variation in these interactions discloses the organization of the interactions, but the variation in and of itself is not a major concern. However, among developmental psychologists the origins and growth of behavior are of central importance. Thus we consider here the variations in the organization of interactions as well as the changes in the distribution of the variations as the child develops.

In order to study the support that caregivers supply to make interactions successful, we needed to select a unit of interaction to analyze. The fundamental unit of interaction is an adjacency pair such as a question and answer, greeting and greeting, summons and answer, and so on (Sacks, Schegloff, & Jefferson, 1974). However, this simple unit might appear to obscure the importance of the respondent, who in answering a question or returning a greeting may appear to be merely reactive. This is not the case; the respondent is an active participant. In more complex interactions, segments of behavior within a sequence have both reflexive and projective properties. *Reflexive* indicates the manner in which the behavior occurs in reaction to the immediately prior interaction, and it involves the interpretation of that interaction. *Projective* indicates that the segment of behavior points into and affects the future. That is, within a sequence between person A and person B, B's constituent is designed to respond to A's immediately prior turn as well as to affect A's next turn, while an emergent, shared interpretation of the event can be inferred from the coparticipants' collaborative efforts. For instance, in a feeding sequence when a spoonful of cereal is proffered, the open mouth of the child is reactive to the food from the proffered spoon. The open mouth is also projective, by supplying the appropriate configuration for receiving the food that enables the mother to realize her offer. If for some reason there is no acceptable second constituent (opening the mouth) to a first constituent (proffering food), a third constituent (putting the food in the child's mouth) cannot occur without affecting the coparticipants' interpretation of the sequence. In these situations, where an acceptable second constituent does not occur or is not noticed, we anticipate that the nature of the organization of the interaction which is usually taken for granted will become visible.

The availability of the organization of interactional sequences to the participants can be inferred from the efforts made to bring off an interaction (Roberts, 1977), to make it successful. Some of these efforts will be linguistic: The caregiver repeats or elaborates the verbal offer. Others are nonverbal: The caregiver often begins to provide sensorimotor elements of the message absent from the situation in response to the child's inappropriate second con-

stituent. From this scaffolding or other-regulation, we can infer that the caregiver is creating a tangible world, accessible to both participants, in an attempt to effect a successful communicative interaction. In a particular situation, if a behavior on the caregiver's part that might serve to consummate the offer is produced prior to the child's response, the caregiver's behavior is no longer contingent on the child's in the same way and is transformed into some other interaction. For example, an offer of food becomes a command to eat when the caregiver attempts to feed, despite the child's closed mouth. In fact, this occurs rarely. Instead of immediately providing a consummatory response when the child has not responded to the original offer, caregivers often work to make present the sensorimotor information from which the child can interpret the offer sequence and subsequently produce an appropriate second constituent.

### Differentiation of Offers from Requests

One of the problems we encountered in characterizing an offer sequence arose in attempting to distinguish between offer and request sequences. Our work and work by conversational analysts suggest a means for discovering observable differences between offer and request sequences. The conditions proposed by Searle (1969) for differentiating speech acts include intentions, beliefs, and so on that are, of course, unobservable. According to Searle (1975a, p. 80), an indirect offer such as "*Do you want me to do A?*" is a commissive (a commitment by the speaker to a course of action such as a promise, a plan, a bet, and so on [Searle, 1975b]), and an indirect request such as "*Can you do A?*" is a directive to the hearer. Searle (1969) proposes that certain conditions must prevail for the successful performance of various speech acts. Although Searle's work is based not on actual interaction but on his knowledge as a competent member, we would like to develop these notions and apply them to communicative interactions that may or may not include speech.

Searle (1969) asserts that the conditions that are necessary for the successful and felicitous enactment of interactions are different for different acts. On the one hand, Searle (1975a, p. 71) contends, for offers, that a preparatory condition, what the speaker believes to be true, is that the hearer wants the speaker to do A. Second, as already noted, making the offer commits the speaker to doing A. That is, in our data, given that the child wants the caregiver to do A, the caregiver is committed to the offer. On the other hand, Searle (1975a, p. 71) proposes that the sincerity conditions for an indirect request (but not an indirect offer) are the expression of the speaker's desire (want, wish) that the hearer carry out the request. A sincerity condition refers to the psychological state expressed by the speaker in the performance of an illocutionary act (Searle, 1969, p. 65). In terms of the caregiver-child in-

teractions we analyzed, the sincerity condition for an indirect request is that the caregiver wants the child to carry out whatever has been requested. In offer sequences the caregiver is *committed* to doing what was offered and believes that the child wants the caregiver to realize the offer, while in request sequences the caregiver *wants* the child to enact the request. However, in the case of both offer and request sequences the caregiver "wants" the interaction to be accomplished.

Evidence from conversational analysis shows that there is an overall preference for agreement and a dispreference for, or avoidance of, disagreement that is displayed in the sequential organization of conversation (Pomerantz, 1975; Schegloff, 1975, 1976, 1979). That is, in offer and request sequences, coparticipants work to negotiate agreement. In both offer and request sequences it is possible that the imperative form may be found following the initial offer or request since this might induce compliance, which would agree with the original request or offer.

Searle's work suggests another way to differentiate offer sequences from request sequences. The sincerity condition of requests implies that responses to rejected offers will be different from responses to rejected requests. If the child rejects an offer, we would expect no special effort on the caregiver's part to force the child to consummate it because in an offer what is important is what the child wants. In the case of a request, we would expect the caregiver to insist that the child do A by upgrading to a command, reflecting the caregiver's desire for the child to do A. Basically we believe the difference rests on the degree to which the caregiver wants the child to do A.

On the linguistic level we hypothesized that, whereas offer sequences are signaled by "*Do you wanna?*" request sequences are signaled by "*Can ya?*" In an offer sequence the caregiver's first consideration is what the child wants to do. That is, the child is free to accept or reject the offer. If the child rejects the offer, the caregiver may do a confirmation check of the child's response by saying "*No?*" or reformulate the offer to agree with the child's response by saying "*You don't want to do A?*" The caregiver may then retract the offer and shift the topic. Preliminary analysis of the "*Can ya?*" sequences supports the view of them as request sequences. When the child fails to comply promptly the caregiver often upgrades the request to a command; for example, "*Can ya put the key in?*" becomes "*Put the key in,*" with falling imperative intonation. Next the caregiver manipulates the child to achieve compliance; for example, "*Put the key in*" is followed by the caregiver placing the child's hand containing the key into the slot in the toy. This difference in the caregiver's response to a rejection is behavioral evidence for the difference in communicative force.

In terms of nonverbal offer sequences, we have not tried to differentiate nonverbal offers from nonverbal request sequences. We have included all those behaviors which meet the specifications of our definition. Evidence

that this set of interactions includes both request and offer sequences rests on the argument put forward that rejection of requests can be followed by upgrades on the part of the caregiver. Among these sensorimotor interactions is one in which the child refuses to comply and the caregiver responds by upgrading to a sensorimotor command. That is, the child refuses to approach the caregiver's extended hand. Subsequently the caregiver insists by pulling the child firmly forward. In sum, then, in an offer the caregiver leaves it up to the child whether to accept or reject what is being offered, while in an indirect request what is crucial is that the caregiver wants the child to accept.

### Collection of Adult-Initiated Offer Sequences

For this study of adult-initiated offer sequences<sup>2</sup> we collected all instances of the four following adult-initiated behaviors: (a) the caregiver extends a hand to mediate a transfer of an object; (b) the caregiver extends a hand to mediate an activity; (c) the caregiver asks, "*Do you want O* (object)?" (d) the caregiver asks, "*Do you want to do A* (activity)?" (Both c and d are accompanied by yes/no question intonation.) The first two are sensorimotor, while the last two are the corresponding offers on the linguistic level. An offer can also be expressed simultaneously on both levels, yielding combinations of a and c or b and d.

### Analysis of Offer Presentation

We can divide the adult behaviors that initiate offer sequences and offer presentations into two components: their illocutionary force as a communicative acts (i.e., the intention to offer) and their locutionary force, or propositional content (*what* is offered). This analysis expands Searle's (1969) concept of speech by recognizing the possibility that both illocutionary force and propositional content may be expressed in a nonverbal or sensorimotor modality as well as through language. It is for this reason that we speak of communicative acts rather than speech acts, composed of communicative force rather than illocutionary force and implied propositional content rather than locutionary force. It is important to note that the use of the term *proposition* does not always refer to a linguistically represented proposition but can also refer to the other propositional content implicit within the structure of the sensorimotor offer itself.

### Communicative Force of Offer Presentations: Modality of Initiation

The modality in which the caregiver conveys the communicative force of her communication served as a parameter for classifying adult-initiated offer sequences. The force of an offer presentation is displayed by the care-

giver extending her hand or by saying "Do you want —?" A transfer offer sequence may be sensorimotor initiated; for example, when the caregiver gestures by holding out an object, say a duck, to the child. Second, this offer sequence can be linguistically initiated, as in "Do you want your duck?" A third possibility would entail the mother extending her hand and holding out a duck as she asks the question "*Do you want the duck?*" The latter has been classified conservatively as sensorimotor initiated since the entire offer presentation is available on the sensorimotor level. In terms of the information available to the child, the fact that redundant information is provided on the sensorimotor and linguistic levels has potentially great significance for helping the child (as well as adults) to decode the unknown linguistic elements, thus aiding him or her in making the transition from sensorimotor to linguistic representation. (All the interactions have some sensorimotor components since the coparticipants are situated in face-to-face interaction in a particular time and context; they are not engaged in a telephone conversation devoid of sensorimotor information. Similarly the interactions have linguistic components because they are embedded in an ongoing interaction that is continuously alternating between being conducted on a sensorimotor and/or linguistic level.)

### Offer Sequence Content: Transfer and Participatory Offer Sequences

In our discussion we also divide adult-initiated offer sequences into two broad categories: offer sequences involving a transfer of some concrete object ("*Do you want O?*") and suggestions or offer sequences involving participation in some activity ("*Do you want to do A?*"). This second category includes all adult-initiated offer sequences in which the transfer of some object is not the projected outcome; for example, "*Do you want to walk?*" does not involve the transfer of an object, and "*Do you want to eat more cheese?*" may entail an embedded transfer of an object, cheese, that facilitates the accomplishment of the candidate activity, eating. However, the transfer of the object does not consummate the offer sequence; the activity of eating is explicitly required.

### Processing Requirements for Transfer and Participatory Offer Sequences

Both types of offer sequences require processing of their common communicative force. In an offer sequence initiated on the sensorimotor level alone, one must understand the meaning of the extended hand. Critical to the ontogenetically later comprehension of linguistically initiated offer sequences is the understanding that "*Do you want?*" has the same communicative force, is synonymous with, the extended hand.



In terms of processing the implicit or explicit propositional content of the two different kinds of offer presentations, participatory offer presentations are always more abstract and often more complex. The object of a transfer offer presentation has a tangible and enduring, real-world referent, whereas an activity is fleeting. Syntactically, the transfer offer presentations consist of a simple sentence with a simple noun phrase functioning as the direct object of want. Participatory offers are complex sentences where the direct object of want is an infinitival complement which implies an embedded sentence. Often the infinitive takes some type of patient argument. This comparatively great complexity is mirrored on a nonverbal level.

In terms of comprehending the verbal propositional content, for a transfer offer presentation, the child often needs only to understand one lexical item, for example, *milk* in "*Do you want milk?*" Intransitive participatory offer presentations contain only one lexical item, such as *walk* in "*Do you want to walk?*" For most participatory offer presentations, the child must understand not only the specific lexical items but also the relationship obtaining between them. For example, the relationship between *play*, *Andy*, and *ball* in "*Do you want to play ball with Andy?*" must be comprehended.

### Propositional Content of Offer Sequences

The propositional content, both implicit and explicit, can be categorized as follows.

**Persons.** This category includes all animate beings independent of their semantic role. Included are agent/donor/facilitator, recipient, experiencer, and so on. For certain offer sequences, participants other than the child are necessary to perform the activity. In a transfer offer sequence, both the donor and the recipient are needed. In a participatory offer sequence, the child may be able to perform the activity alone, as in "*Do you wanna sing a song?*"—or a coparticipant may be implicit in the offer sequence. This is the case in certain games where two people are required. For example, in the offer sequence "*Wanna make row-row?*" (see Fig. 1-11, in the Qualitative Data section) another actor is required to play the game. The coparticipant may be implicit, as in this example, or may be explicitly mentioned, as in "*Do you wanna play row-row with Carla?*" In this case Carla's presence is obligatory for this particular offer sequence to be consummated. It is worth noting that the actual mentioning of a coparticipant does not automatically necessitate his/her presence. The presence is dependent on the nature of the individual offer sequence. In the example (see Fig. 1-7) "*D'ya wan call Daddy?*" (on the phone), Daddy need not be present. In fact his absence is desirable because the telephone usually functions as a device to communicate with someone who is not present. It is important here to differentiate the people necessary to perform the activity, implicit or explicit in the offer sequence itself, from

the role of the caregiver as a facilitator in the realization of the offer sequence.

**Things.** This is the object being offered or an instrument that is required to perform the activity. In a transfer offer sequence, the object is either verbally or concretely present, depending on the modality of the offer presentation. In the case of a participatory offer sequence, it may be that one or more things are needed to perform the activity. For example, if the caregiver asks, "*Do you wanna comb the baby's hair?*" the child needs two things: the doll as object (presumably one with hair) and a comb as instrument.

**Demonstration of activity.** Sensorimotor communication of an ongoing activity or a demonstration of the proposed activity provides semantic information. If the caregiver asks, "*Do you wanna play with the puppet?*" she may put the puppet on her own hand and show the baby how it works. Some complex participatory offer sequences are composed of a series of actions. The caregiver sometimes demonstrates each separate component for the child. "*Do you wanna call Daddy on the phone?*" is an example of an offer with component actions: Holding the receiver, dialing, putting the receiver to the ear and mouth, and talking. Each of these components might be separately demonstrated or suggested.

### Organizational Framework of Offer Sequences

To elucidate the organization of an offer sequence we have developed an interactional model, derived from viewing and reviewing the tapes, which reflects the offer sequences' general structure. An offer sequence usually consists of two major components, I and II. Each major component is an ordered pair in which the portion or role of each participant constitutes its first and second parts. (A description of similar phenomena, adjacency pairs, that are found in conversation is discussed in the section on reciprocity in the Introduction.) The constituent interactions found in offer sequences do have an invariant order, but unlike adjacency pairs, they are not predominantly discrete moves.<sup>4</sup> The response to the first part often is initiated before and/or while the first part is being completed; that is, the child may begin to open her/his mouth to acknowledge an offer of food before the caregiver's hand reaches the apex of extension. Further, we assume that the actions of coparticipants engaged in an ongoing interaction are designed to display their sensitivity and orientation to each other. (See Sacks, Schegloff, & Jefferson, 1974; Schegloff, 1972). A depiction of the framework is presented here, followed by an illustrative example.

#### 1. Offer establishment

- a. Offer presentation: Within an ongoing interaction the caregiver establishes the topic of the offer as well as the fact that an



offer is imminent; that is, the communicative force and propositional content are presented.

- b. Offer acknowledgment: The child's behavior is not only appropriate as a response to the offer presentation but also establishes the offer presentation (Ia) interactionally, that is, shows that it was taken to be an offer. Further, the acknowledgment elicits the offer realization (IIa).

## II. Offer consummation

- a. Offer realization: The caregiver displays that she has assessed that the child's prior behavior constitutes an offer acknowledgment (Ib). This display *facilitates* the enactment (IIB) of the offer in the case of positive acknowledgment (Ib) or *terminates* the offer in the case of negative acknowledgement (Ib).
- b. Offer enactment: In the case of a positive acknowledgment (Ib) followed by an offer realization (IIa), the child consummates the offer by taking the object, performing the activity, or refusing to do so.

We will illustrate the different parts of an offer sequence with a particular example offer presentation (Ia): When the mother holds out a rubber duck and asks, "*Do you want your rubber ducky?*" she establishes the communicative force and propositional content of the offer presentation. The offer acknowledgment (Ib), the baby reaching up toward the caregiver's extended hand, constitutes an appropriate behavior in response to the offer presentation and successfully elicits the offer's realization. The offer realization (IIa), the caregiver giving the duck to the child, is a realization of what was offered. Finally, the offer enactment (IIB), the child's taking of the duck, is the activity that consummates the offer. If the caregiver had asked, "*Do you wanna ride on the horsie?*" (presentation: Ia), an appropriate acknowledgment (Ib) might be for the child to walk over to the horse and/or to start to climb up. It is important to note that the nature of the child's acknowledgment (Ib) is tailored to the particular presentation (Ia). Its function, however, is constant. The child's acknowledgment (Ib) in an acceptance not only acknowledges the caregiver's presentation (Ia) but also elicits her enactment (IIa). For an adult, an appropriate acknowledgment (Ib) is often the response "yes" or "okay." However, most of the children in this study did not have an unambiguous affirmative morpheme in their repertoire, although by Level II (see under sample, below) "No" was a common response. Thus, the child's affirmative acknowledgment (Ib) is necessarily behavioral. Variations of the framework are discussed in the data section in terms of the caregiver's relative success in conveying her communicative force.

## Prerequisites for Successful Communication

In the previous sections we have described transfer and participatory offer sequences, the modality of their initiation, their propositional content, and their interactional framework. However, we have not as yet mentioned the elements which affect how an offer sequence is negotiated at any given stage of development. For a child to respond appropriately to the caregiver's presentation of the offer, certain presuppositions must obtain, depending on the type of offer sequence and the capabilities of the child. Pragmatic presuppositions are background beliefs that the speaker takes for granted or seems to take for granted when participating in conversation (Stalnaker, 1974). We suggest that this common knowledge of the world is a prerequisite to nonverbal communication as well. We rarely, if ever, talk about monitoring each other or state that we are situated in a particular orientation in a particular place. Further, we do not commonly make assertions about the existence of entities or actions. Yet the preexistence of this information as presupposed background is crucial to successful communication (Bates, 1976; Keenan & Klein, 1975). For sensorimotor communication to be effective, two conditions must be available as background to the ongoing interaction.

First, the coparticipants are monitoring/attending to one another and/or maintaining the same focus of attention (Keenan, Schieffelin, & Platt, 1976; Sacks, Schegloff, and Jefferson, 1974).

**Attention.** Attention of the child to an object or to the caregiver presenting an offer was found to be significant in offer sequences. Attention usually involves visual attention (eye gaze) but can also be auditory. For example, if the child is looking away from the object or activity, auditory cues such as a spoon being scraped in a food dish provide information about ongoing events.

Second, an interpretation of the propositional content of a communicative act requires a concrete interactional setting. Interactional setting includes the particular place in which the coparticipants are situated (location) as well as their orientation in space to the contents of the proposition, both animate and inanimate (configuration) (Bates, 1976; Cicourel, 1977; Garfinkel, 1972; Olson, 1970; Schegloff, 1971).

**Location.** This refers to a specific place. Often this is not relevant, but in cases such as eating or taking a bath, where the offered activity is identified with a specific room in the house, the location is a significant factor.

**Configuration.** This is the relationship between the placement and orientation of the participants and objects to each other, that is, the direction coparticipants are facing, the freedom of coparticipants to engage in an activity, and so on. If, for example, the caregiver is offering the child a glass of milk, the child needs to be reasonably close and have mouth and/or hands relatively empty, to be able to accept the milk.

## SAMPLE

The six children selected for this study were part of a larger longitudinal sample of babies made available through a private pediatric practice in Los Angeles. The children whose interactions were analyzed came from middle-class white families. All the parents were college educated with the exception of one mother. Parents of each child were trained to keep a record of the child's language development. Each lexical item was entered on a separate form designed to record specific verbal as well as nonverbal information describing each speech event. The diary-keeping procedure emphasized the acquisition of semantic functions (Greenfield & Smith, 1976). Since the diary was longitudinal, the changes over time in the use of each lexical item were naturally incorporated into the diary record. Slightly before or just after the child's first meaningful word, diary keeping was initiated. A small honorarium was given to each family that participated. (Although all caregivers observed in our study were mothers, our tentative hypothesis is that our results would apply to *any* caregiver-infant pair. Mothers, rather than fathers or other caregivers, were observed for reasons of convenience rather than for reasons of social or psychological principle. The nature of the caregiver—mother, father, extrafamilial caregiver—would, however, become important in a study evaluating differences between caregivers, a task which our study did not attempt.)

### Level of Linguistic Development

Children were selected for the study who had attained an appropriate level of linguistic development. Within the one-word period, children at each of three levels of linguistic development were chosen to participate in this study. The productive use of the following semantic functions served as criteria for classification within the three levels: Level I—performative, indicative object, and volitional object; Level II—agent, action/state, object; Level III—object associated with another object, animate being associated with another object, and location. Only spontaneous, nonimitative utterances from the diaries were evaluated as exemplars of particular semantic functions. Three instances of distinct lexical items within one semantic function and/or lexical items representing three different semantic functions within a particular level served as evidence of productive use. For instance, if Sandy had been observed to say *X* while pointing at *X* (*X*: ball, clock, doll), she was categorized as having displayed abilities characteristic of Level I. One instance of each of three semantic functions was equally acceptable; that is, saying "*bye-bye*" while waving bye-bye (performative), pointing at a cookie while saying "*cookie*" (indicative object), and whining and reaching for milk while saying "*milk*" (volitional object).

In order to assess interjudge agreement of the classification of semantic functions, longitudinal records of lexical items were selected from the diaries of children from the larger sample on child language. These children were not included in the present study. All entries were classified by two of the authors as spontaneous or imitated. Interjudge agreement was 97.7% (43/44) for classifying utterances as spontaneous or imitated. The spontaneous utterances were judged to be classifiable or to be ambiguous due to insufficient information. The classifiable utterances counted as instances of particular semantic functions according to definitions in Greenfield and Smith (1976) for classifying utterances as Level I, II, or III. The overall agreement was 81%.

The children were classified as follows at the time of the first observation: Level I—Jeremy (9 months) and Sandy (13 months); Level II—Alice (19 months), Jim (15 months), and Lisa (17 months); Level III—Jeri (22 months). At the time of the second observation, 4–6 weeks later, the children were reclassified in the following manner: Level I—Jeremy and Sandy; Level II—Alice and Jim; and Level III—Lisa and Jeri.

## PROCEDURE

Three half-hour naturalistic videotapes were taken in the home of each caregiver-child pair. Caregivers selected interactive settings in which the most communication could be expected. Not surprisingly, these situations involved mealtime, play, diaper changing, and bathing. The latter was excluded because of obvious technical difficulties due to water and available light.

### Video and Audio Equipment

For the video recording sessions we used a Sony AVC 3450 video camera, a Sony 8400 VTR, and a Sony Port-a-Pack battery pack. Since this equipment is light-weight, the camera person and assistant could follow, with relative ease, the natural flow of the interaction from room to room and from house to yard. The assistant was responsible for carrying most of the equipment and for maintaining connections among those pieces of equipment as the interactants moved about. The caregiver and child both wore clip-on Sony ECM-50 electric condenser, lavalier microphones attached by long cables to separate channels of a Sony TC-520CS stereocassette audio tape recorder. The quality of the audio signal from the Sony ECM-50 lavalier microphone is far superior to the signal that would have been recorded using the microphone in the video camera. Therefore, the signal from the lavalier microphone was transmitted to the VTR by means of a Phonocord MA (RP-024) and recorded on the videotapes as well as on audiotapes. We found

this procedure very satisfactory with one exception. The long cords were quite a problem for the toddlers. In the future we plan to use radio microphones to avoid entanglements in the cords by unsteady feet. We used available artificial and natural light while recording.

### Video Laboratory

Copying and analyzing the tapes was undertaken in the laboratory. A copy was made of each videotape. At the time when a copy was made, a time code was simultaneously laid down on the copied tape by a GYYR videotimer G-77. The originals were filed as a permanent record and the copies were used for the analysis. The videotapes were viewed by playing the tape on a Sanyo VTR 1200 connected to a Sony CVM 1720 TV monitor. Slow motion on the Sanyo VTR 1200 is 7:1. That is, the viewing time of a 30-minute tape played in slow motion could be 3½ hours. VTRs with only two heads produce a jerky or unsteady image that considerably limits viewing time due to visual fatigue. Because of the Sanyo VTR 1200's four-head design, the slow motion is remarkably steady and permits extended viewing time.

The audio portion of each session was transcribed from the audiocassette using a Lexicon Varispeech II. This machine has the capability of slowing down speech by one-half or speeding it up to 2½ times normal, while preserving pitch. That is, the high degree of speech distortion usually associated with slowing down or speeding up the signal is greatly reduced. The slow mode facilitates obtaining an accurate phonetic transcription, while the fast mode highlights the intonation contours. The signal from each lavalier microphone can be analyzed separately on the Sony TC-520CS stereocassette tape recorder because the signal from each microphone was recorded on a separate channel. This capability is especially helpful when overlaps in conversation occur. Listening to separate channels aids in disambiguating simultaneous multiple voice sequences. However, in caregiver-child conversation during the one-word period, overlaps are relatively rare.

### TRANSCRIPTION SYSTEM

A transcription system was devised to aid in the analysis of the videotapes. First, each tape is viewed in "real" time to get the gist of the interaction. As those who have analyzed video are aware, if the transcription is made directly from slow motion, the interaction often looks to be something other than what is seen to be occurring in real time. That is, the constitutive temporality of events, the way in which time defines the event (Garfinkel, 1978), is lost in slow motion. Apparently, stretching the duration of the components of the interaction transforms an episode into something else. Thus, to control for slow motion distortion of the constitutive temporality of events, the tape

is alternately viewed in real time and slow motion. Next, a description of the interaction is recorded. An action is identified as such not at the moment a change in movement is first observed but when the goal of that movement can be seen. On some occasions what a movement might constitute cannot be inferred from the coparticipants' ongoing engagement in the event. In that case, a more concrete, molecular description of the movements is recorded. For instance, if what is being done cannot be seen to be a reach, then the action might be recorded as follows: J lifts her hand, rotates the hand and arm, extends the fingers with a slight opposition of the fingers and thumb, and so on.

The activities, visual attention, and linguistic behavior of both caregiver and child were recorded. Activities recorded separately for each coparticipant included potentially communicative gross body movement (learning toward, pulling away), activities (reaching, grasping, throwing), conventional communicative gestures (headshaking, shrugs), facial expressions (smiles, grimaces), and body orientation. Visual attention in terms of eye gaze vis-à-vis the picture plane (television monitor screen) was recorded on subsequent viewings. Separate audio transcriptions were made. The caregiver's speech was rendered for the most part according to conventions established by Sacks, Schegloff, and Jefferson (1974) to render the sequential properties of speech. A phonetic transcription was made for the child (Ladefoged, 1975) since, obviously, the child's vocalizations during the one-word period are often unstable and/or idiosyncratic realizations of lexical items. Finally, each observation and the beginning and the end of each utterance were electronically coded in minutes and seconds, tenths, and hundredths of a second. Since there are fewer than 100 fields per second on videotape, the time code is actually only accurate to the nearest tenth of a second. However, the time code is not being used as an absolute measure but as a relative measure to code events sequentially. Thus, this inaccuracy does not affect our analysis. The audio transcription and the observations of the caregiver and child's behaviors were integrated sequentially on the basis of the time code into a scriptlike format.

Interjudge agreement of offer sequence selection was assessed in the following manner. Two of the authors viewed three 5-minute segments of videotape from pilot tapes of the children in this study. Six verbally initiated participatory offer sequences and three verbally initiated and five nonverbally initiated transfer offer sequences were identified. There was 93% agreement over all aspects of the coding.

Figure 1-1 is a transcript of an offer sequence. In the following section an interpretive summary is given in which the offer framework has been imposed.

A brief but incomplete description of the transcription conventions is included here to aid in reading these examples. The caregiver's utterances are in standard English orthography. In the text and in the transcripts, an English equivalent has been provided when there was evidence from diary records or from the caregivers that the child had this item in his/her lexicon. The English

Kitchen  
L C J  
Kitchen  
table

	TIME			MOTHER (Liz: L)			CHILD (Jeremy: J)		
	min	sec	frac	nonverbal	verbal	eye gaze	eye gaze	verbal	nonverbal
	11	00	30	seated in chair		↑ bananas in dish	< spoon		seated in high chair
		1	00	scooping up bananas					
Ia		2	04	extending spoon toward J		> J			
			70	pause					
Ib			80						mouth opening
IIa		3	04	food into J's mouth					mouth closed over spoon
IIb			67						
			85	extracts spoon from J's mouth					

Figure 1-1: Level I: Immediately successful transfer offer

word is followed in parentheses by the child's phonetic realization. The phonetic realization is enclosed in brackets according to linguistic convention. For example, in *no* ([naʊ]), *no*, the lexical item, is followed by the child's phonetic realization, [naʊ]. Punctuation marks (, : ?) are used for intonation, not as grammatical symbols. The end of an utterance is represented by an oblique(/). The length of an utterance is depicted by a column of vertical obliques to the right of the time code. Contextual notes are enclosed in double parentheses; uncertain transcriptions, in single parentheses. Underlining indicates increased loudness. Overlap is indicated by brackets ([ ]). Colons (::) indicate syllable lengthening. A lexical item that is cut off before completion is indicated by a raised hyphen, for example, *what*-. When the termination of one utterance or word is nearly simultaneous with the beginning of the next utterance or word, this rapid offset/onset, or latching, is indicated as follows: "In"/"Out!"/. Pauses are specified in seconds and tenths of seconds—for example, (1.7)—while pauses of undetermined length are indicated by a dot (.). The direction of eye gaze is represented vis-à-vis the TV monitor screen horizontally as follows: >, facing right; <, facing left; Δ, facing away from the camera; ∇, facing toward the camera. Eye gaze direction on a vertical axis is represented in this way: ↑, up; ↓, down. Nouns next to a symbol in the eye gaze column indicate the object of visual attention. Body orientation, in the upper left-hand corner of the transcript, is schematized as follows: C, body facing to the right; D, body facing to the left, and so on. The offer sequence constituents Ia, Ib, etc., are also entered to the left of the time code.

### Interpretive Summary of Figure 1-1

This nonverbally initiated transfer offer sequence is typical of many feeding sequences. According to information from the tape that is recorded on the transcript in the upper left-hand corner, the caregiver, Liz, and the child, Jeremy, were seated in the kitchen opposite each other. Jeremy was looking at the spoon while his mother scooped up some banana. The mother presented the offer by lifting up the spoon, slowly approaching Jeremy with the food, and then pausing (Ia). (The offer sequence constituents can be found recorded to the left of the time; see 11:02:04 for Ia.) As Jeremy opened his mouth, acknowledging the offer presentation at 11:02:80 (Ib), the mother facilitated the consummation of the offer by placing the food in Jeremy's mouth at 11:03:04 (IIa). Finally, Jeremy accepted the food as he closed his mouth over the spoon at 11:03:67 (IIb).

### Analysis of Offer Sequence Organization

First the offer presentation (Ia) was identified and categorized as sensorimotor or linguistically initiated. *Immediately successful offer sequences* were characterized by the caregiver considering the child's subsequent behav-

ior to be an acknowledgment (Ib) of the offer presentation (Ia) and, in unusual cases, to be an enactment (IIb). What was crucial to the definition of a successful offer sequence was that the child's acknowledgment (Ib), positive or negative, was recognized as such in the caregiver's next response (IIa). Acknowledgment (Ib) elicited the offer realization (IIb). In the case of a positive acknowledgment (Ib), if the offer realization (IIa) by the caregiver and the enactment (IIb) of the offer by the child followed in adjacent positions, then the offer sequence was classified as immediately successful. If the acknowledgment (Ib) was a rejection, the caregiver terminated (IIa) the offer sequence, which was arrested at that point. Such a sequence was also classified as immediately successful. An example of a rejection sequence is presented in the transcript given in Figure 1-2. Alice is on the left and her sister, Carla, on the right. Both children were seated on the living room floor facing each other. Their mother was seated somewhat behind Carla looking toward Alice. Both Alice and Carla were holding and looking at some cards. Alice's mother (Lila) asked, "*Do you wanna go bye-bye today?*" (offer presentation: Ia). Alice looked toward her sister as she held some cards out to her. Alice said, "*No*" ([naʊ]) and turned her head away from the camera and from her sister and mother (offer acknowledgment: Ib). Alice's mother redid her turn by saying, "*You don wanna go bye-bye (.2) see Da:dady?*" (offer realization: IIa). Alice was playing with the cards when Carla echoed with a partial repeat of her mother. Carla said, "*You don wanna see: Daddy?*" (offer realization: IIa). Alice glanced at Carla, turned her head away from Carla and said, "*Daddy*" ([daedi]). We claim that both Alice's mother and Carla took Alice's utterance of "*no*" ([naʊ]) to be a rejection, since each of them responded by redoing the initial offer to agree with Alice's disagreement. In this case "*Do you wanna . . . ?*" was changed to "*You don wanna . . . ?*" by both Alice's mother and Carla. These reformulations display the mother and sister's assessment that Alice rejected the offer presentation and also signal the termination of the offer sequence. Alice's head turn and the other behaviors that the caregivers in our study took to be rejections are strikingly similar to observations by Brazelton, Koslowski, and Main (1974) on infants' responses to unpleasant stimuli. The children exhibited, in most cases, several of the following behaviors simultaneously: active withdrawal by increasing physical distance or by changing position (e.g., arching, shrinking, or turning away); overt rejection by pushing an object away; and signaling by crying, whining, or fussing. Some of these children were able to say "*no*" or to signal *no* by shaking their heads horizontally. Once again, note that immediately successful offer sequences can be acknowledged by either rejections or acceptances.

We want to emphasize that the caregiver will not take just any behavior to be an acknowledgment (Ib) to a specific offer sequence. An acceptable one, an appropriate response, is specific to the particulars of the interaction

and is not some indefinite response such as smiling. (See the transcript in Fig. 1-13. At 2:24:90 Alice's smile did not elicit an offer realization by her mother.) Furthermore, the specificity of the responses constituting the child's acknowledgment and consummation of offer sequences constitutes one important justification for using the term *comprehension* in discussing the child's responses. The results, still to be reported, provide additional reason to consider acknowledgment of an offer sequence as evidence of comprehension on the part of the child.

On rare occasions (3 out of 71 participatory offer sequences) the child responded to the offer presentation (Ia) with a rapid *enactment* (IIb). In each case the offer sequence was contracted. That is, both the acknowledgment (Ib) by the child and the facilitation by the caregiver (IIa) were missing. Figure 1-3 is an example of an offer sequence in which the offer presentation (Ia) was followed immediately by an enactment of the offer (IIb). Jim and his mother were seated on the grass in the garden. Jim had been looking intermittently at a framed photograph of his relatives. Just prior to his mother's talk, Jim was holding the framed photograph face down on his lap. At that moment Jim was looking at the camera and his mother was watching him. Jim's mother said, "*Do you want to look at (.) the picture?*" (presentation: Ia). Jim looked down at the back of the picture while his mother was still talking and without delay rotated the picture frame. Then Jim looked down at the picture (enactment: IIb). Subsequently he said, "[sibi (.5) {ow:}]" and immediately lifted up the picture. Jim's mother nodded and repeated what Jim had tried to say, "*pitch::ure.*"

Interactions such as this are somewhat difficult to interpret. On each occasion the child had been involved in this activity a few moments prior. The offer presentation seemed to serve as a prompt to continue an interrupted activity rather than as an offer presentation to participate in the activity on a new and different occasion. Offer sequences characterized by an enactment adjacent to the offer presentation were categorized as immediately successful. Immediately successful offer sequences include those offer sequences in which the offer presentation (Ia) was followed by an acknowledgment (Ib) or by an enactment (IIb) in the child's next portion of the interaction.

In an *eventually successful offer sequence* the response or failure to respond of the child was not interpreted by the caregiver as an acknowledgment (Ib). Brazelton, Koslowski, and Main (1974) observed a state similar to "failure to respond." Infants responded to inappropriate stimuli by looking dull, yawning, or withdrawing into the sleep state. In the case of offer sequences, these responses usually prompted the caregiver to remedy the situation by redoing her part or providing the child's. That is, the caregiver attempted to get the child's attention, recast the offer, and/or presented missing contextual information. The interactional work done by the caregiver specifically to attain an acknowledgment (Ib) was recorded. Acceptances of the offers (Ib)

Living Room

DL

AC DC

(Carla: C, older sister)

	TIME			MOTHER (Lila: L)			CHILD (Alice: A)		
	min	sec	frac	nonverbal	verbal	eye gaze	eye gaze	nonverbal	
	21	41	90				! cards	sitting on floor holding cards	
Ia		42	16		Do you wanna go bye-bye today?/				
			35			C: ! cards L: < A			
		43	17					brings cards toward C	
			36				> C		
Ib			77 99					no (Inaol)	
		44	04		C: clockwise head turn	C: <, Δ	Δ !		

Ila			42		You don wanna go bye-bye (.2) ((highpitched))				placing cards between self & C
		45	00		See Da:ddy?/	C: !			
		46	14 20		C: counterclockwise head turn				
Ila			77		C: You don wanna ((high-pitched)) see: Da:ddy?/		! cards		
		47 48	82 14				> C		
			65				!		clockwise head turn
			87			C: < ! cards		Daddy ([daedi])	
		49	39						

Figure 1-2: Level II: Immediately successful participatory offer (rejection)

Backyard  
S C J

	TIME			MOTHER (Samantha: S)			CHILD (Jim: J)		
	min	sec	frac	nonverbal	verbal	eye gaze	eye gaze	verbal	nonverbal
	00	51	89	seated on blanket on grass			> J		seated on blanket, quizzical look
Ia		52	47		Do you wanna look at (.) the picture?/				
		53	39 42					I back of picture frame	

Iib			64							rotates picture face up
		54	67					∇ I picture		
		55	60					sibi (.5) foe:/		
			88							lifts up picture
		56	67 79							
		57	27 60					Pitch::ure/		

Figure 1-3: Level II: Immediately successful participatory offer



were followed immediately by offer realizations (IIa) that facilitated the enactments (IIb) of the offers in subsequent portions. In rejections (Ib) the offer realization (IIa) served to arrest the consummation of the offer (IIb). Offer sequences in which extra interactional work was done that obtained an appropriate acknowledgment (Ib) were counted as eventually successful offer sequences.

In *unsuccessful offer sequences* the child did not produce an acknowledgment. That is, the child responded inappropriately, looked dull, or looked dull and then increased physical distance. Looking dull and increasing physical distance was not interpreted as rejection since there was no evidence the child was ever engaged in the specific interaction. In these cases, sometimes the caregiver attempted to remedy the offer sequence. That is, the caregiver tried to do work to bring off the offer sequence by attracting the child's attention, recasting the offer, or providing contextual information. However, this work did not succeed in eliciting an acknowledgment by the child. Further, the caregiver sometimes provided the child's part by doing or saying what would count as an appropriate acknowledgment (Ib). In these cases, the caregivers interpreted the child's behavior as an apparent failure to respond only when the child did not display the modeled acceptance. For instance, the caregiver supplied candidate acknowledgments by modeling acceptances such as "Say ye:s!" (see Fig. 1-12). When the caregiver's attempts had no effect, sometimes the caregiver displayed her perplexity by noticing the child's inappropriate behavior—for example, "No:(.3) huh" (see Fig. 1-12)—or by reformulating the offer to agree with the lack of response or interest—for example, "You don't want to do anything"—or by retracting the offer—for example, withdrawing proffered food (see Fig. 1-4). In these metacommunicative utterances the caregivers seemed to be noting the absence of an appropriate response on the part of the child rather than offering candidate responses. In these instances attempts to gain acknowledgment were finally abandoned by the caregivers.

### Interactional Work Used to Achieve Eventually Successful Offer Sequences

Sometimes work done by the offerer in her next portion displays the lack of success (Roberts, 1977) of the initial offer presentation. Failure of the first presentation of the offer is remedied by explicitly supplying common background information: That is, the caregiver may *recast* or *upgrade* what she has said or done, *get and/or focus the child's attention*, and/or *supply the elements* missing from the interactional setting or from the propositional content, which may facilitate interpretation of the offer presentation by reducing uncertainty. For instance, drawing the child's attention to one of several objects present in the situation specifies the particular one under consideration. Further, changing a particular orientation in space in a specific loca-

tion may eliminate some potentially possible activities by making others more probable. Similarly, the provision of the persons or objects, and a demonstration of the activity relating them to each other, eliminates alternative referents. Sometimes the child spontaneously comes to attention and/or supplies background information on the sensorimotor level.

The caregiver's behavior relevant to the offer sequence was categorized in terms of the interactional device used and the background information provided. The child's behavior was classified with respect to the background information provided. Further, we recorded the modality in which each behavior was performed. The caregiver's interactional work of *recasting* included sensorimotor and linguistically exact repetitions and paraphrases of the initial offer presentation. Recastings provide no new information on the sensorimotor level, although more of the sensorimotor information may be represented linguistically on subsequent turns. Recastings do occur whether or not all the information is available on the sensorimotor level. In one offer sequence, Sandy's mother (Jan) recast her initial sensorimotor offer of proffering a toy telephone on the linguistic level by querying "Telephone?" (see Fig. 1-8). In another offer sequence, Mitzi (Jeri's mother) had on a lavalier microphone; Jeri had taken hers off. First Mitzi said, "(Ya) want on you?/ Like on Momma?/" as she reached toward Jeri, lavalier in hand, offering to put the lavalier on Jeri. A few seconds later Mitzi paraphrased her prior utterance and activity by saying, as she sat back, "Wan me to put it on you?/ Like Momma?/" Upgrades by the caregiver are defined as changing an offer to a request or a command. An upgrade does not provide missing background information, since the original offer presentation and any upgrade share the same propositional content. For instance, the linguistic offer presentation "Do you want to drink your milk?" may become the request "Can ya drink your milk?" or the command "Drink your milk." All share the same predicate (*drink*) and arguments (*you* and *milk*). What differs is their illocutionary force. Upgrades, like recasting, were assessed in terms of the presence or absence of background information on the sensorimotor level at the time the upgrade was made.

*Attention-getting devices* (see Keenan, Schieffelin, & Platt, 1976, for a detailed discussion) that served to indicate the elements were recorded. For instance, in one offer sequence, Alice's mother (Lila) first asked, "Do you wanna try this one right here?" When Alice did not acknowledge the offer presentation, Lila used a nonverbal attention-getting strategy. She pointed at a hole in a shape box (the location) that she had just referred to as "right here." Next Lila said, "See it?" (an interrogative directive). The interactional work of pointing at the location and saying "See it?" counted as sensorimotor and linguistic attention-getting devices, respectively. These behaviors were also classified as attempts to provide the location. In another set of examples, sometimes Jeremy's mother scooped up food and extended the spoon toward him while he was looking at someone or something else.

Before she tried to get his attention to the food, he would often turn back toward her and look at the proffered food. In these cases Jeremy spontaneously provided his attention on the sensorimotor level by looking at the food.

Caregivers *supply the elements* from the interactional setting and the propositional content by elaborating on various elements in the offer sequence, building the relationship between the elements, simplifying the task, or providing a demonstration of the activity. In the transcript in Figure 1-12, Jim looked over at the pool after his mother, Samantha, asked, "*Do you wanna go swimming with Brookie today (.3) in the poo:l?*" Samantha simplified the offer and said, "*Wanna go in the poo:l?*" As Jim turned to look at the pool she elaborated by saying, "*Yea:h the pool's over the:re.*" A little later Samantha asked, "*What da ya do: in the pool?*" After Jim uttered an unintelligible nasal sound, she said, "*Do you swi:m?*" "*Do you swi:m?*" provided the activity on the linguistic level that is done in the pool, *building the relationship for the child between some of the elements*. Apparently providing this relationship on the linguistic level was not sufficient. Jim never acknowledged this offer. In the transcript in Figure 1-7, Liz provided a *demonstration*, on the sensorimotor level, of calling daddy on the phone, to complement the linguistic offer "*D'ya wan call Da:ddy?*"

Work irrelevant to the offer sequence although relevant to the interaction in general was not analyzed. That is, *interruptions* (those activities not bearing on the topic of the offer sequence) and *inserted sequences* (those interactions related to the topic of the offer sequence but tangential to the offer sequence itself) were noted but not recorded.

### Analysis of Attention, Interactional Setting, and Propositional Content

We recorded the presence or absence of attention and the background elements: location, configuration, thing(s), persons, and activity demonstration on the sensorimotor level at the time the presentation of the offer was made. The interactant, modality, and device that provided the attention and/or element were continuously recorded throughout the interaction. From this information attention and the background elements could be compared at the initiation and termination of an offer sequence.

### RESULTS: TYPES OF OFFER SEQUENCES AT DIFFERENT LEVELS OF DEVELOPMENT

Within the one-word period, the proportion of offer sequences attempted varied across levels by modality of initiation and by type. The ratio of sensorimotor-initiated offer sequences decreased rather dramatically

across levels: from 92% at Level I, to 33% at Level II, and finally to 25% at Level III. The fact that sensorimotor-initiated offer sequences decreased as linguistically initiated offer sequences increased suggests that the children were making the transition from sensorimotor to symbolic representation. If the linguistic message was provided simultaneously with the sensorimotor structure, the child had a means to understand the verbal message and to acquire more knowledge about language. A finer analysis of transfer offer sequences demonstrates that caregivers communicate an offer sequence with different degrees of redundancy at each level within the one-word period. At Level I, 91% of the 119 sensorimotor-initiated transfer offer sequences were conducted solely on the sensorimotor level, providing a verbal accompaniment only 9% of the time. During Level II, 53% of the time (9 out of 17 transfer offer sequences) the caregiver provided a linguistic message to accompany the sensorimotor communication. At Level III, caregivers did not provide redundancy by delivering relevant verbal messages along with the sensorimotor transfer offer presentation. This finding is not surprising, as we shall see, since the children were able to respond appropriately to linguistically initiated transfers by Level III (for more details see the analyses of each level). The sensorimotor-initiated participatory offer sequences, numbering only nine, also reflect more simultaneous redundancy at Level II than at Level I as well as no simultaneous redundancy at Level III. The effect on the success of the communication of the type and amount of redundancy that the caregiver provides is discussed in fuller detail in the following sections on the analysis of each level of linguistic development.

Lower percentages of transfer offer sequences were found as the child's linguistic development increased: 89% at Level I, 46% at Level II, and 35% at Level III. The converse is true for participatory offers: 11% at Level I, 54% at Level II, and 65% at Level III. Conceivably, the shift from transfer to participatory offer sequences might be attributed to some sort of skewed sampling of the activities in which the participants were engaged, since the amount of time spent at eating or playing was not controlled from taping to taping. However, at Level I at mealtime the caregiver often asked, "*Do you want milk?*"—initiating a transfer offer sequence; while at Levels II and III the question was "*Do you want to drink your milk?*"—initiating a participatory offer sequence. Similarly, in a play situation, Level I's "*Do you want the ball?*" was found at Levels II and III in the form of "*Do you want to play ball with Andy?*" As we have noted before (p. 14), participatory offer sequences are more abstract and often more complex syntactically and enactively than transfer offer sequences. In addition, participatory offer sequences refer to actions that are perceptually available only briefly, in contrast to the constant perceptual availability of entities. That is, the child's representation of a participatory offer sequence is perforce at a higher symbolic level of representation to encode the action or state. We suggest that the caregiver-initiated

offer sequences increase in complexity on the syntactic, sensorimotor, and representational levels along with the child's linguistic development. This is our explanation for the increasing proportion of participatory offer sequences as language proceeds.

A subtle shift of responsibility in interactions from the caregiver to the child is reflected in the change from transfer to participatory offer sequences. Feeding sequences illustrate the child's growing competence. During Level I the caregiver is usually still feeding the child; by Level II the child can manage to eat with little help from the caregiver. We can see that this change is mirrored in the linguistic communication. A transfer offer sequence makes explicit the uncertain elements (i.e., what the child might want) and implies what is taken for granted (i.e., that the caregiver will perform a transfer on the condition that the child wants an entity; that the child will do something with the entity). That is, in the example of "*Do you want milk?*" only *milk* is communicated on the linguistic level, while what the caregiver will do (perform the action that moves milk to mouth) and what the child will do (drink) goes unstated. By Level II, however, what the child might do with the object is also uncertain. Therefore, both the action (*drink*) and the entity (*milk*) are included in the linguistic offer of milk; for example, "*Do you want to drink your milk?*" In these examples what the child might do is displayed explicitly in the linguistic communication. During Level I the child's part is more passive and is expressed as the recipient of the entity, and only later, at Level II and beyond, as the recipient of an entity and as the actor to act upon it.

To a large extent offer sequences were consummated during the one-word period. However, participatory offer sequences were consummated less often than transfer offer sequences. Ninety-four percent of the transfer offer sequences and 68% of the participatory offer sequences were accomplished across levels. Linguistically initiated participatory offer sequences reveal some interesting differences across levels. At Level I, 6% of such offer sequences were immediately successful, 44% required some interactive work to be consummated, while 50% failed. During Level II, 10% were accomplished with no additional interactive work, 45% needed reworking to be fulfilled, and 45% were not successfully consummated. Finally, at Level III, 39% of the offer sequences proceeded with no delay, 54% entailed some work, and only 7% were not realized. Not only did caregivers produce more participatory offer sequences at each successive level of linguistic development, but also a greater proportion of participatory offer sequences were successfully consummated as the level of the child's competence increased. Since participatory offer sequences are more complex, as already discussed, it is not surprising that more are produced by caregivers and more are successful at the higher levels of linguistic competence. In sum, progressively more offer sequences are successfully communicated as the child's level of linguistic competence increases. In the following sections we will elaborate the characteris-

tics of the situation in which successful communication takes place within each level of the one-word period.

### Level I

The background information that provides the sensorimotor structure of offer sequences is of crucial importance to successful communication at Level I. During Level I, offer sequences are *immediately successful* only when the child is attending, the location and spatial orientation of the coparticipants are appropriate, and the entities and activity demonstration (when relevant) are available on the sensorimotor level. The immediately successful offer sequences were 89 transfer offers and one participatory offer sequence. *Unsuccessful offer sequences*, on the other hand, were comprised of five transfers and eight participatory offer sequences. In unsuccessful offer sequences, one or more elements were missing on the sensorimotor level. Elements found to be missing included the presence of entities, the child's attention, and appropriate configuration or location, as well as activity demonstrations. The caregiver did not employ attention-getting devices when the child was not attending to the object(s) or person(s), did not reoffer in the event all elements were present, and only provided missing elements in 2 of the 13 unsuccessful offer sequences. On these two occasions, some (but not all) elements were supplied. There was an average of one token of support per offer sequence. When attention-getting devices (recastings and upgrades) and sensorimotor information were provided, there was often a mismatch between what was missing and what was provided. Caregivers provided support as often on the linguistic level as on the sensorimotor level. In contrast to unsuccessful offer sequences, among *eventually successful offer sequences* the interactive work done by the caregivers was sensitive to the information necessary to complete the sensorimotor structure of the event. When the child's attention was missing, attention-getting devices were invoked 94% of the time (17 out of 18 occasions); when caregivers reoffered, 95% of the time (20 out of 21 instances) all elements were present on the sensorimotor level. If location, persons, and entities were initially present but the configuration, attention to the entity, or activity demonstration were initially missing, provision of these by the caregiver occurred before the offer sequence was consummated.

In sum, among eventually successful offer sequences, attention-getting devices were employed to get attention, reoffers were used when all sensorimotor elements were present, and sensorimotor elements were provided when missing. Overall, the caregiver provided more support for successful offer sequences (mean = 1.5 tokens of support per offer sequence) than for unsuccessful offer sequences. In contrast to unsuccessful offer sequences, *nonverbal* means were used by the caregiver to get attention, to recast offer

sequences, and to provide semantic information for almost all offer sequences; linguistic means were employed in only about half of the eventually successful offer sequences. At Level I, offer sequences that were consummated were those in which all elements were eventually made present on the sensorimotor level. Eventually successful offer sequences received more tokens per offer sequence and a larger ratio of sensorimotor input than offer sequences that failed to be realized.

## Level II

At Level II, offer presentations can be acknowledged when the sensorimotor structure of the offer sequence is not complete. In addition, the children are beginning to actively provide elements of the sensorimotor structure. At Level II there were nine *immediately successful offer sequences*; six had all elements present. The three exceptions were participatory offer sequences. In one (Fig. 1-2), Alice said "No" to "Do you wanna go bye-bye today?" Alice's behavior does not provide us with any evidence that she comprehended the offer presentation of going bye-bye sometime in the future, although her mother and sister took her "no" to be a rejection. In contrast, at Level III Jeri responded to a similar offer orientation, "Do you want to go in the car?" by saying, "Daddy ([daedi])" and "Key ([ki])." In the latter case Jeri's response is more convincing that she understood something about a relationship between Daddy, car, and key. Another exception is an immediate enactment (see Fig. 1-3). Jim turned over and looked at a picture as soon as his mother said, "Do you wanna look at (.) the picture?" The back of the picture was visible to Jim, and he had been looking at the photograph moments before. His response may have been quite coincidental, and thus not contingent on his mother's utterance. These exceptions are suggestive but do not provide strong evidence that children at Level II respond appropriately to offer sequences when many elements are missing.

*Unsuccessful offer sequences* at Level II included three transfer offer sequences and 13 participatory offer sequences. In the case of the unsuccessful transfer offer sequences, the caregiver reoffered instead of getting the child's attention to the object being proffered, or reoffered instead of providing the proper configuration for such an offer to be consummated. Unsuccessful participatory offer sequences were characterized by multiple missing elements, 11 out of 13 times. Configuration was missing when the offer sequence was abandoned 62% of the time, the object was missing 46% of the time, and attention to the object was lacking 62% of the time. In 4 of the 13 unsuccessful participatory offer sequences the caregiver attempted to provide missing information, while in the other nine no further effort was made. In those four offer sequences in which some information was supplied by the caregiver, twice as often the information was provided on the linguistic level

as on the sensorimotor. Evidently, when so much of the sensorimotor structure is missing, provision of referential information on the linguistic level cannot be utilized by the child.

*Eventually successful offer sequences* included 16 transfer offer sequences and 13 participatory offer sequences. Among transfer offer sequences, when the child was not attending to the object, the caregiver used an attention-getting device to obtain the child's attention 88% of the time (seven out of eight offer sequences); 75% of the time (six out of eight transfer offer sequences) the caregiver recast the offer after all sensorimotor elements were present. At Level II, for transfer offer sequences, the children can sometimes spontaneously supply initially missing elements, including reorientation of the body (80% of the cases), attention (60% of the cases), and location (40% of the cases). If the offer sequence is linguistically initiated the child may spontaneously turn to look at the object and/or supply the location, as in the transcript in Figure 1-10, where Lisa was asked, in the bedroom, "You wan some juice?" She went to the appropriate location, the kitchen, to drink juice. When the child spontaneously supplied an element initially missing on the sensorimotor level, it indicates that he or she has the capacity to respond to purely linguistic information and, in some cases, symbolize a referent physically removed from the current situation. Eventually successful participatory offer sequences were initiated 75% of the time with multiple elements missing at the sensorimotor level, including configuration, presence of entities, attention to entities, persons, location, and activity demonstration. By the time of their eventual success, the caregiver usually provided all the missing information, entities, persons, and activity demonstration on the sensorimotor level, along with redundant linguistic information. At Level II, however, there were exceptions. In response to an offer to play "row-row the boat" (Fig. 1-11), Alice sang the song to supply part (but not all) of the activity although her mother has not modeled the singing. On another occasion Alice put a block in a shape box. Her mother had said, "Do you wanna try this one right here?" but had not demonstrated the activity. That is, on rare occasions during Level II the child can acknowledge an offer presentation when elements are missing from the sensorimotor structure by supplying those parts. The child can apparently infer the missing parts from the incomplete sensorimotor structure and/or from the linguistic message. On the average two tokens of support were provided by the caregiver for each of the eventually successful offer sequences, in contrast to only one per offer sequence among unsuccessful offer sequences. Attention-getting devices, recastings, and background information were provided nearly twice as often on the linguistic level as on the sensorimotor level. That is, in contrast to Level I, linguistic elements are often provided at Level II. In addition, the caregiver does not always provide the entire sensorimotor structure. The children can sometimes spontaneously come to attention and can provide the location, configu-

ration, and one component of a complex activity on the sensorimotor level.

### Level III

At Level III, participatory offer sequences can be immediately acknowledged and subsequently enacted with less sensorimotor support than at previous levels. As the qualitative examples will illustrate, the behavior of the children at Level III provides evidence that the children have internal representations for activities such as rocking and singing. *Immediately successful offer sequences* include seven transfer offer sequences plus 10 participatory offer sequences. On the one hand, among the immediately successful transfer offer sequences all elements were present. The presence of all elements on the sensorimotor level might seem surprising at Level III. However, the fact that five out of the seven transfer offer sequences were initiated on the sensorimotor level accounts for the presence of such a large proportion of the elements since, by definition, in order to initiate an offer sequence on the sensorimotor level all elements must be present. On the other hand, among the immediately successful participatory offer sequences, 50% (5 out of 10 offers) were initiated with the activity absent on the sensorimotor level, along with one or more of the following absences: location (2 out of 10), configuration (3 out of 10), object absent (4 out of 10), attention to an object missing (4 out of 10), and persons (1 out of 10). Many elements were missing on the sensorimotor level among participatory offer sequences. These offer sequences were initiated 70% of the time on the linguistic level. As we have pointed out, linguistically initiated offer sequences can be initiated with some or all the information missing on the sensorimotor level. *Unsuccessful offer sequences* at Level III were similar to unsuccessful offer sequences at other levels; many elements were missing. There was simply a smaller proportion of participatory offer sequences that failed to be acknowledged at Level III. However, caregivers provided linguistic input five times as often as sensorimotor. Only one in every two offers receives sensorimotor support. At Level III, just as at prior levels, if the offer sequence is not understood, more linguistic input does not help. *Eventually successful offer sequences* at Stage III were composed of four transfer offer sequences and 15 participatory offer sequences. Caregivers provided additional redundant sensorimotor support as well as linguistic input to facilitate comprehension of linguistic messages 71% of the time before the child acknowledged the offer presentation. In particular, the caregiver communicated information about the configuration for 88% of the offer sequences in which configuration was missing on the sensorimotor level, about the presence of the object 33% of the time, about attention to the object 86% of the time, and about the activity 42% of the time. In contrast to unsuccessful offer sequences, among eventually successful offer sequences

caregiver input was evenly distributed between sensorimotor and linguistic input. Further, at prior levels, all elements were usually present, while at Level III each time a reoffer was made, elements were missing from the sensorimotor structure of the event. Eventually successful offer sequences were acknowledged 71% of the time with at least one element missing. This finding lends support to the claim that the children can represent the structure of the offer sequence independent of the sensorimotor structure supplied by the caregiver. Activity demonstrations were missing most consistently, 58% of the time, confirming that the children have some internal representation of the activity that they subsequently enact.

## QUALITATIVE DATA

In this section we present descriptive examples of specific offer sequences which exemplify the characteristics of offer sequences at the various stages. In selecting these examples, we have chosen offer sequences from each stage which reflect the new developments emerging at that particular level. We are assuming that development is cumulative; that is, that the cognitive abilities of a previous stage are subsumed and expanded upon in successive stages of development. When available, we present immediately successful offer sequences first, then unsuccessful offer sequences, and, finally, eventually successful offer sequences. By making comparisons between successful and unsuccessful offer sequences we can discover the differences between them. If there are differences we may be able to infer an explanation. Then we can look at eventually successful offer sequences to determine if these hypotheses are confirmed. That is, if what is present in a successful offer sequence and missing in an unsuccessful offer sequence is first missing and then provided in an eventually successful offer sequence, we will have some support for claiming that success is due to "making the absent present."

### Level I

The Level I child is able to respond appropriately to several different kinds of offer sequences, the simplest of which is a sensorimotor-initiated offer sequence of a concrete object (a sensorimotor transfer). This may or may not be accompanied by some verbal counterpart. As long as the Level I child is attending to the object, the offer sequence can be consummated. In this case, attending entails looking at the proffered object or responding to an auditory index (e.g., the caregiver scrapes the plate as she is scooping food). The baby's acknowledgement of the offer (Ib) elicits the mother's realization (IIa), and finally the baby enacts (IIb) the offer.

### Immediately Successful Transfer Offer Sequences

Examples of sensorimotor-initiated, immediately successful transfer offer sequences at Level I (see Fig. 1-1) occurred repeatedly with Jeremy (9 months). Jeremy was sitting in his high chair in the kitchen; his mother, Liz, was seated opposite him. Liz was scooping bananas from the dish; she extended the full spoon and held it about 8 inches from Jeremy's mouth (presentation: Ia). Jeremy's eye gaze followed the movement of the spoon from the bowl. When the spoon reached the extended position, Jeremy opened his mouth as an acceptance of the offer (acknowledgment: Ib). Liz then realized the offer by following through and lifting the spoon into Jeremy's mouth (realization: IIa). Jeremy consummated the transfer by closing his mouth over the spoon (enactment: IIb). Then the empty spoon was extracted from his mouth by the mother, who resumed scooping from the bowl, and the process was repeated.

If we consider this feeding sequence with regard to those features which seem relevant to an interaction, it is not surprising that this sequence was so successful. The child was fed in this same location every morning, with the same general physical configuration: That is, he was in the high chair and his mother was seated opposite or next to him; he was wearing a bib and was hungry; his special dish and feeding spoon were on the table. Furthermore, his mouth was empty and ready to receive food. In summary, we can say that all of the related objects were present; the appropriate people were there in the appropriate configuration, and they were in the proper location for this activity to occur. In addition, Jeremy was attending to the activity.

### Unsuccessful Transfer Offer Sequence

A similar offer sequence (see Fig. 1-4) was unsuccessful when Sandy's attention remained elsewhere while she was occupied finishing her last mouthful. Sandy was looking at the food she was touching in her dish during the time her mother, Jan, offered her a possible next spoonful of food. Jan watched Sandy attentively but did nothing to gain her attention. Jan retracted the spoonful of food. The food was held over the dish for several seconds while Sandy noisily continued to finish her last mouthful. Eventually, Jan abandoned the offer by putting the spoon down.

### Eventually Successful Transfer Offer Sequences

Sometimes feeding offer sequences are not immediately successful. Often the mother's verbal input has little to do with the ongoing feeding, but rather is about the day's program. In the transcript in Figure 1-5, when Jeremy's eye gaze wandered from the feeding activity, the mother called his name. She sought to regain his attention in order to get an acknowledgment of the offer. When the mother's attention-getting devices were successful,

TIME			MOTHER (Jan: J)			CHILD (Sandy: S)		
			nonverbal	verbal	eye gaze	eye gaze	verbal	nonverbal
	min	sec	frac					
	15	51	65				▽ ↓ food in dish	seated in high chair reaching food in dish
		52	05	seated, scooping food	((scraping))	< S		
				raises scooped food				
Ia			45	extends food toward S offers food				
			52	pauses				
		53	00	begins to retract spoon				
			34					retracts hand
			55	spoon hovers over dish				
		54	39				((•grunt))	

(continued)

TIME			MOTHER (Jan: J)			CHILD (Sandy: S)		
min	sec	frac	nonverbal	verbal	eye gaze	eye gaze	verbal	nonverbal
		64						↑, ↓ movement of left arm/hand near shoulder
	55	15					(~ lhh Δ ·hh)	
		67 90						
	57	82				> ↑ J		
	58	12						left hand extended toward J, ↑↑ movement (2x)
		37					((eating sounds))	mouth movements
		45	puts down spoon					
		75	reaches for milk		▽ ↓ milk			
	59	12						

Figure 1-4: Level I: Unsuccessful transfer offer

Kitchen  
L }

TIME			MOTHER (Liz: L)			CHILD (Jeremy: J)		
min	sec	frac	nonverbal	verbal	eye gaze	eye gaze	verbal	nonverbal
	8	18 23	seated in chair		▽ cereal	▽		seated in highchair
Ia		20 78	approaching J with spoon		> J			
	21	35	holding spoon out, pause					
	25 26	05 80		Because (1.0) guess what?/?				
	28	98		Jeremy?/?				
	29	08 33				< ↓ cereal		
Ib		91						mouth opens
		95		Guess what sweetie pie:?/?				approaches spoon
IIa	30	48	food in					
IIb	31	00						mouth closes over spoon

Figure 1-5: Level I: Eventually successful transfer offer



Jeremy continued to eat. In that case, the offer sequence was classified as eventually successful. Note that in all these examples, all elements of the offer structure described before were eventually present on a sensorimotor level. This was typical of offer sequences presented to Level I babies. The distinguishing feature of the successful ones was the child's focus of attention.

### Unsuccessful Participatory Offer Sequences

In the transcript in Figure 1-6, the mother, Liz (who was seated on the floor across from Jeremy), leaned toward him and asked, "*You wanna play patty-cake with Mo:mmy?*" (presentation: Ia). Jeremy's attention wandered back and forth between his mother, Lillian (a visitor, who had been recently trying to engage him in a game of peek-a-boo), and the toy he had been mouthing. Liz reoffered linguistically several times and supplied a partial demonstration by singing the patty-cake song and then by clapping her hands while singing. However, Liz did not place Jeremy directly across from her in the appropriate configuration for patty-cake, did not clap his hands together to show him his part, and did not exchange claps with him. Further, Liz was unable to sustain Jeremy's attention during her partial demonstration; he was preoccupied with his toy. Eventually Jeremy crawled away toward Lillian. Finally, Liz sat back up and withdrew her hands to her lap to signal a retraction of the offer. In this participatory offer sequence the necessary actors were present; but the child's attention was not focused on the activity, the child was not in the correct configuration, and only a partial demonstration of the activity was supplied. There was either insufficient support for the child to make an interpretation, or the child was not interested in participating.

### Eventually Successful Participatory Offer Sequences

At this level, the linguistically initiated participatory offer sequences which ultimately obtained success did so only after much work on the part of the caregiver (thereby classified as eventually successful offer sequences). This example (Fig. 1-7) involved calling on the phone. The mother's initial offer presentation to Jeremy was, "*D'ya wan call Da:ddy?*" (presentation: Ia). Calling someone on the phone is a complex activity involving at least three component actions: You must lift the receiver to your ear, dial the phone, and finally talk into the receiver.

When Jeremy's mother, Liz, first posed this question, they were both sitting on the floor; Jeremy's back was to his mother, and the telephone was on the floor between them. The question provoked no response, other than Jeremy crawling away from his mother toward the camera. Liz then gained his attention by calling his name twice. He responded by turning around to look at her. Liz raised the receiver to her own shoulder and proceeded to dial,

Family Room  
L J

TIME			MOTHER (Liz: L)			CHILD (Jeremy: J)		
			nonverbal	verbal	eye gaze	verbal	nonverbal	eye gaze
	30	49	30					$\Delta >$
		50	03					$\Delta$
		51	38 96	Jeremy/	$\nabla \mid J$			$\Delta$
		52	30		$> \mid$			$< \mid$
Ia			35	You wanna play patty-cake with Mo:mmy?/				
		53	83 90				toy in mouth	
		54	68	Wan play pa: ((high pitched)) ti-cake?/				
		55	16 83				clockwise turn, leans right: $\angle J$	$\wedge$

(continued)

TIME				MOTHER (Liz: L)			CHILD (Jeremy: J)		
	min	sec	frac	nonverbal	verbal	eye gaze	eye gaze	verbal	nonverbal
		56	13						drops toy
			28				> Lillian		
			70				> ↓ toy		
		58	20						sits up, toy in hand: U J
			48		((sing)) Patty- cake, patty-cake/				
	31	59 00	11 60						puts toy into mouth
			1 10				Δ ↑ Liz		
		2 3	31 00		Wanna do it?/		< ↓ toy ring		
			30						begins to drop toy
	31	03	46		Do you wanna play with Mo:mmy?/				
			71						toy drops into ring

[illegible]

Figure 1-6: Level 1: Unsuccessful participatory offer

$\mathbb{L} \subset \mathbb{R}$ 
 $\mathbb{R} \subset \mathbb{C}$

~~~~~ cord

|    | TIME |     |          | MOTHER<br>(Liz: L) |                        |          | CHILD<br>(Jeremy: J) |        |                            |
|----|------|-----|----------|--------------------|------------------------|----------|----------------------|--------|----------------------------|
|    | min  | sec | frac     | nonverbal          | verbal                 | eye gaze | eye gaze             | verbal | nonverbal                  |
|    | 24   | 27  | 47       |                    |                        |          | > ↓                  |        | on all fours, behind cord  |
| Ia |      | 28  | 22       |                    | D'ya wan call Da:ddy?/ |          |                      |        |                            |
|    |      |     | 97       |                    |                        |          |                      |        | extends hand to (cord)     |
|    |      | 30  | 19       |                    | brushes hair off face  |          |                      |        | extends hand toward camera |
|    |      |     | 29       |                    | drops hand             |          | ▽ ↓                  |        |                            |
|    |      | 31  | 35<br>80 |                    |                        | Jeremy?/ |                      |        |                            |
|    |      | 32  | 29       |                    |                        |          |                      |        | extends hand toward floor  |
|    |      |     | 79       |                    |                        |          | ▽                    |        | crawling toward camera     |

|  |          |          |  |  |                                                         |     |     |  |                                          |  |
|--|----------|----------|--|--|---------------------------------------------------------|-----|-----|--|------------------------------------------|--|
|  | 35       | 12       |  |  |                                                         |     |     |  | sits, turning: ↘ J                       |  |
|  |          | 39       |  |  |                                                         |     |     |  |                                          |  |
|  | 36       | 70<br>20 |  |  | Jeremy/                                                 |     |     |  |                                          |  |
|  |          | 69       |  |  |                                                         |     |     |  | clockwise head turn,<br>orients toward L |  |
|  |          | 94       |  |  |                                                         | V J | Δ L |  |                                          |  |
|  | 37       | 02       |  |  | D'ya wanna call?<br>Da:dɔː/?/                           |     |     |  |                                          |  |
|  | 38       | 24       |  |  | raises phone receiver                                   |     |     |  |                                          |  |
|  |          | 57       |  |  | to own ear                                              |     |     |  |                                          |  |
|  |          | 87       |  |  | You wanna call<br>((sharp rising intonation)) Da:dɔː/?/ |     |     |  |                                          |  |
|  | 38<br>40 | 90<br>09 |  |  | starting to dial                                        |     | ∇ l |  |                                          |  |
|  |          | 17       |  |  | leaning forward                                         |     | ∇ J |  |                                          |  |
|  | 41       | 00       |  |  |                                                         |     | ∇ l |  |                                          |  |

(continued)

| TIME        |     |          |  | MOTHER<br>(Liz: L)               |                                     |          | CHILD<br>(Jeremy: J) |        |                          |
|-------------|-----|----------|--|----------------------------------|-------------------------------------|----------|----------------------|--------|--------------------------|
| min         | sec | frac     |  | nonverbal                        | verbal                              | eye gaze | eye gaze             | verbal | nonverbal                |
|             |     | 60       |  |                                  |                                     |          | ▽ J                  |        |                          |
|             | 44  | 00       |  | sits back up, holding phone      |                                     |          |                      |        | ↑ <                      |
|             | 45  | 09       |  |                                  | Say hello ((high pitched)) Da:ddy:/ |          |                      |        |                          |
| Ib          |     | 32       |  |                                  |                                     |          |                      |        | clockwise head turn      |
|             |     | 57       |  | extends body of phone to J       |                                     |          | Δ L                  |        |                          |
|             |     | 79       |  | holding up receiver              |                                     |          |                      |        |                          |
| Ila<br>Ia'  |     | 95       |  | offers receiver to J             |                                     |          |                      |        |                          |
|             | 46  | 37       |  | smiling, crawling toward J: L< J |                                     |          |                      |        | J >                      |
|             | 47  | 02       |  |                                  | You wanna talk?/                    |          |                      |        |                          |
| Ila<br>Ib'  |     | 59<br>69 |  |                                  |                                     |          |                      |        | thrusts chin up toward L |
| Ila<br>Ila' | 48  | 19       |  | holding receiver to J's ear      |                                     |          |                      |        |                          |

|            |          |          |  |      |                                   |  |       |           |                              |
|------------|----------|----------|--|------|-----------------------------------|--|-------|-----------|------------------------------|
| Ila<br>Ib' |          | 39       |  |      |                                   |  |       |           | tilting head toward receiver |
|            |          | 45       |  |      | D'you wanna talk?/                |  |       |           |                              |
|            |          | 72<br>07 |  | sits |                                   |  |       |           |                              |
|            | 24<br>49 | 29       |  |      |                                   |  | ▽ I J |           |                              |
|            | 50       | 29<br>74 |  |      | Tell Daddy/                       |  |       |           |                              |
|            | 51<br>52 | 49<br>47 |  |      | Say ((high-pitched)) he(:)llo:/   |  |       |           |                              |
| Ilb        |          | 99<br>85 |  |      |                                   |  |       | (g?audet) |                              |
|            | 54<br>55 | 04<br>89 |  |      | Uh huh, he:llo: Da:ddy:/          |  |       |           |                              |
|            | 58<br>59 | 39<br>64 |  |      | He:llo: ((high-pitched)) Da:ddy:/ |  |       |           |                              |
|            |          |          |  |      |                                   |  |       |           |                              |

Figure 1-7: Level I: Eventually successful participatory offer

thus providing a demonstration of the first two component actions, the appropriate physical configuration for talking on the telephone. While she was dialing, she repeated the verbal offer, "D'ya wanna call Da:ddy? You wanna call Da:ddy?" Jeremy's gaze was still focused on his mother and the telephone. Liz then began to talk into the receiver, providing a demonstration of the final component action and thus completing a demonstration of the entire activity.

Jeremy continued to look at Liz; she held the phone body and offered him the receiver. His gaze continued to follow his mother's movements. Liz crawled closer to Jeremy to establish a more appropriate general configuration (in this case, the orientation between Jeremy and the phone). She then asked, "You wanna ta:lk?" (This particular offer presentation simplified the original offer presentation by making explicit one of the actions implied by the initial offer.) As Liz posed this question, she extended the receiver to Jeremy's ear. This is the appropriate specific configuration for the third action, talking. Liz used an imperative form to induce Jeremy to participate and then modeled Jeremy's part, "Tell Daddy/Say he(. )llo:"—providing a demonstration of the final component. At this point, Jeremy finally said, "[g?adei]" (enactment: IIb), which Liz accepted as partially satisfactory: "Uh huh, He:llo: Da:ddy:, He:llo: Da:ddy:."

Although the telephone was present and Jeremy was looking at it, this situation was certainly not sufficient for the offer sequence to be consummated. In fact, before the offer sequence succeeded at all, the mother provided not only the configuration but all of the implied constituent components of the activity. All Jeremy did to acknowledge the offer presentation was to sit attentively and then attempt a repetition of his mother's utterance (enactment: IIb), which was done much like a routine or performative.

In summary, we have found that at Level I, a child is capable of responding to a transfer offer sequence when all the relevant contextual and semantic information is presented and attended to on the sensorimotor level. The responsibility for providing the elements and ensuring the child's attention rests with the mother. A Level I child can respond to a participatory offer sequence under the same conditions. It is important to note that successful transfer offer sequences require the presence of and attention to the object on the sensorimotor level, while successful participatory offer sequences require a demonstration of the activity with the necessary objects and persons on the sensorimotor level. Interactions that do not fulfill these requirements are not successful.

## Level II

The Level II child can build on the abilities of the Level I child and can respond to more complex offer sequences with less sensorimotor support. We have also found that the burden of providing some of the support can now be


shouldered by the child. That is, the caregiver is no longer solely responsible for providing missing information.

## Immediately Successful Transfer Offer Sequences

As shown in Figure 1-1, immediately successful nonverbal transfer offer sequences occur at Level I. The transcript in Figure 1-8 is included as an example of the Level II caregiver providing redundant linguistic information. Lisa and her mother, Jill, were seated facing each other in Lisa's bedroom. Jill was looking at Lisa; Lisa was looking at her mother's hand. As Jill lifted up a toy telephone receiver and held it out toward Lisa (presentation: Ia), Lisa said, "Daddy" ([daedi]) and reached slowly for the phone (acknowledgment: Ib). Jill rotated the phone toward Lisa (realization: IIa) as she recast the offer verbally to "Telephone?" Lisa grasped the phone, placed it on her own shoulder, and put the receiver to her ear (enactment: IIb). Lisa's *no* was ambiguous, although, it occurred before the offer. In this transfer offer Lisa acknowledged the sensorimotor communication on the sensorimotor level by taking the phone, before her mother supplied a redundant, but incomplete, linguistic message. From this fragment we cannot determine if Lisa has internalized the sensorimotor structure of this transfer offer sequence. Only an appropriate response to a linguistic offer would support that contention.

## Unsuccessful Transfer Offer Sequence

Unsuccessful transfer offer sequences at Level II are characterized by inappropriate configuration or by the child not attending the object of the offer. In addition, the caregiver typically reoffers linguistically after a sensorimotor initiation of the offer sequence. An example is presented in Figure 1-9. Alice and Carla, her sister, were seated side by side in the living room facing their mother, Lila. Lila offered a toy cat to Alice (presentation: Ia). Alice, who had a playing card picturing a turtle in her hand, raised that hand toward the cat as Carla said, "Tur::tle:." Although Alice touched the cat briefly, she was distracted by Carla and retracted her hand. While her mother recast the offer presentation on the linguistic level by saying "Want ki:tty?" Alice looked down at the card in her own hand. Lila reoffered with, "Do you want the kitty?"—which was latched ( " ) to Carla's "What does the turtle say?" As Lila sat back, she retracted the toy cat and did nothing more to make her intent known. Carla subsequently played with the card. In this offer sequence Lila offered Alice a toy on the sensorimotor level at a time when Alice already had something else in hand. An already-full hand is not appropriate for grasping a new item. Recasting the offer on the linguistic level several times was not adequate to remedy the inappropriate configuration for grasping nor to regain Alice's attention. Alice did not spontaneously supply

| TIME |     |     | MOTHER<br>(Jill: J) |                                                                                     |        | CHILD<br>(Lisa: L) |                  |            |
|------|-----|-----|---------------------|-------------------------------------------------------------------------------------|--------|--------------------|------------------|------------|
|      | min | sec | frac                | nonverbal                                                                           | verbal | eye gaze           | verbal           | nonverbal  |
|      | 7   | 00  | 00                  | seated                                                                              |        | < L                |                  | > J's hand |
|      |     |     | 34                  | lifts phone receiver,<br>holds close to self                                        |        |                    |                  |            |
|      |     | 1   | 00<br>45            |  |        |                    | Daddy ((daedil)) |            |
| Ia   |     |     | 52                  | holds receiver out                                                                  |        |                    |                  |            |

[illegible]

Living Room

L C D A  
C

(Carla: C, older sister)

| TIME |     |     |          | MOTHER<br>(Lila: L)         |                                |                   | CHILD<br>(Alice: A) |        |                             |
|------|-----|-----|----------|-----------------------------|--------------------------------|-------------------|---------------------|--------|-----------------------------|
|      | min | sec | frac     | nonverbal                   | verbal                         | eye gaze          | eye gaze            | verbal | nonverbal                   |
|      | 29  | 53  | 00       | seated, leans forward       | —                              | Δ A<br>C: < cards | > card in C's hand  |        | seated, cards in right hand |
|      |     |     | 29       |                             | I've got the kitty right here/ |                   |                     |        | head turn counter-clockwise |
|      |     | 54  | 51<br>22 | holds out toy in right hand |                                |                   | > toy in M's hand   |        |                             |
|      |     |     | 37       |                             |                                | C: < toy          |                     |        |                             |
| Ia   |     | 56  | 76       | brings toy toward A         |                                |                   |                     |        |                             |
|      |     |     | 86       |                             | Give the [k]/                  |                   |                     |        |                             |
|      |     | 57  | 10<br>19 |                             |                                | C: < card         |                     |        |                             |

|    |    |       |                               |                                 |        |  |                    |                                        |  |
|----|----|-------|-------------------------------|---------------------------------|--------|--|--------------------|----------------------------------------|--|
|    |    | 51    | pauses                        |                                 |        |  |                    |                                        |  |
|    |    | 62 96 |                               | C: Tu::rtle::/                  |        |  |                    | raises hand                            |  |
|    | 58 | 11    |                               |                                 | C: < A |  |                    | hand, palm down, touches toy with card |  |
|    | 59 | 81 36 |                               | Want kitty/                     |        |  | l card in own hand | retracts hand                          |  |
| 30 | 00 | 00    | C: counterclockwise head turn |                                 |        |  |                    |                                        |  |
|    | 1  | 47 13 |                               | Do you want kitty?-/            |        |  |                    |                                        |  |
|    |    | 23    |                               | C: " What does the turtle say?/ |        |  |                    |                                        |  |
|    | 3  | 86 19 | sits back, retracts cat       |                                 |        |  |                    | touches card in left hand              |  |
|    |    |       |                               |                                 |        |  |                    |                                        |  |

Figure 1-9. Level II: Unsuccessful transfer offer



either. Instead she pursued her prior interest in the card. The mother's offer presentation was never acknowledged appropriately.

### Eventually Successful Transfer Offer Sequences

A Level II child can respond to a linguistically initiated transfer offer sequence although some referential elements are not tangibly present, without additional sensorimotor or linguistic support. This occurred when Lisa and her mother were in the bedroom playing (Fig. 1-10). The mother asked, "You wan some juice?" (Ia). The child responded, "Huh" then "[oe:]" and proceeded to walk out of the bedroom and run down the hall into the kitchen. Lisa's supplying sensorimotor information (location), demonstrated that she had internalized the sensorimotor structure of the offer sequence. In this household the kitchen is the appropriate place to drink juice. The mother did not immediately understand "[oe:]" to be juice nor that going to the kitchen denoted a possible acknowledgment. That is, missing referential elements impeded not only the child's interpretive skills but the caregiver's as well. If the mother had made the assumption that the child was operating in the "here and now" when communicating, she would expect the child to be referring to information present in the immediate situation. It would be momentarily difficult, at best, to interpret what the child might mean if the referents were not present. After expressing some befuddlement about the meaning of what Lisa had done, the mother recast the presentation when both participants were in the kitchen. The mother got some juice, poured it, and asked Lisa, "Would cha like some juice?" She answered, "Hm?/(2.2) Hm?" as she approached her mother. Lisa reached up for the juice (Ib), her mother gave it to her (realization: IIa), and she accepted the juice (enactment: IIb).

Lisa was not only able to supply the correct location, she evidently understood the lexical item *juice* and the communicative force of "You wan." Lisa was not in the kitchen (location), not close to or facing her mother (configuration), nor was there any juice (object) in sight. Lisa did not need to be looking at the object or her mother to be able to process this transfer presentation. Lisa was able to acknowledge a linguistically initiated transfer offer presentation without redundant sensorimotor information.

### Immediately Successful Participatory Offer Sequences

The immediately successful linguistically initiated participatory offer sequence at this level is one in which at least one of the necessary referential elements is missing on the sensorimotor level at the time the offer sequence is originally presented. One example (detailed in Fig. 1-11) of this occurred when the mother and the child were playing a game. The mother and the child were sitting across from each other on the floor. The mother had grasped the child by the shoulders and had pushed her back toward the floor. This activi-

| TIME |     |    | MOTHER<br>(Jill: J) |                                      | CHILD<br>(Lisa: L) |                |                   |
|------|-----|----|---------------------|--------------------------------------|--------------------|----------------|-------------------|
|      |     |    | nonverbal           | verbal                               | eye gaze           | verbal         | nonverbal         |
| Ia   | min | 26 |                     |                                      |                    |                |                   |
|      | sec | 22 |                     | You wan some juice?/                 | ▽                  |                |                   |
|      |     |    |                     |                                      |                    |                |                   |
|      |     | 23 |                     |                                      |                    | hʌ?/           |                   |
|      |     | 25 |                     |                                      |                    | oe:/           | walks out of room |
|      |     | 26 |                     |                                      |                    |                |                   |
|      |     | 27 |                     | J.R.: Hey where y going?/            |                    | noe:/          |                   |
|      |     |    |                     |                                      |                    |                |                   |
|      |     |    |                     |                                      |                    | oe:(m)u<br>(i) |                   |
|      |     | 29 |                     |                                      |                    |                |                   |
|      |     | 31 |                     |                                      |                    |                |                   |
|      |     | 32 |                     | J.R.: Go back there with your Mommy/ |                    |                |                   |
|      |     | 33 |                     |                                      |                    |                |                   |

(continued)



| TIME |     |          | MOTHER<br>(Jill: J)                 |                 |                        | CHILD<br>(Lisa: L) |        |           |
|------|-----|----------|-------------------------------------|-----------------|------------------------|--------------------|--------|-----------|
| min  | sec | frac     | nonverbal                           | verbal          | eye gaze               | eye gaze           | verbal | nonverbal |
|      | 40  | 13<br>78 |                                     | [o:]h terrific! |                        |                    | [o:]   |           |
|      | 41  | 08<br>69 |                                     | *Watcha got?/   |                        |                    |        |           |
|      | 42  | 09       |                                     |                 | ▽ ! pop-<br>sicle mold |                    |        |           |
|      | 43  | 36       |                                     |                 |                        |                    | mo:/   |           |
|      |     | 51<br>89 | ((during this in-<br>terval,        |                 | ▽ !                    |                    |        |           |
|      | 44  | 33       | J pours some<br>juice, off camera)) | ((noi[se]))     |                        |                    |        |           |
| 27   | 44  | 61<br>89 |                                     |                 |                        |                    | [mo:]  |           |

|    |          |          |  |                                    |   |  |       |                                                       |
|----|----------|----------|--|------------------------------------|---|--|-------|-------------------------------------------------------|
| 45 | 44<br>81 |          |  |                                    |   |  | mo:/  |                                                       |
| 46 | 39       |          |  |                                    |   |  |       | counterclockwise<br>turn, walks toward<br>drawer: U L |
| 53 | 56       |          |  |                                    | Δ |  |       | at drawer                                             |
| 54 | 36       |          |  | Would cha like<br>some jui:ce?/    |   |  |       |                                                       |
|    | 64       |          |  |                                    | < |  |       | counterclockwise<br>turn: > L                         |
|    | 55       | 13       |  |                                    | ▽ |  |       | counterclockwise<br>turn: L                           |
|    | 59       |          |  |                                    |   |  | hm ?/ |                                                       |
| 56 | 13       |          |  | ((sounds of ob-<br>jects falling)) |   |  |       |                                                       |
|    | 36       |          |  |                                    |   |  |       | counterclockwise<br>turn, walks →: C L                |
|    | 57       | 04       |  |                                    | > |  |       |                                                       |
|    | 58       | 79<br>08 |  |                                    |   |  | hm ?/ |                                                       |

|     | TIME |     |      | MOTHER<br>(Jill: J) |                                 |          | CHILD<br>(Lisa: L) |        |                             |
|-----|------|-----|------|---------------------|---------------------------------|----------|--------------------|--------|-----------------------------|
|     | min  | sec | frac | nonverbal           | verbal                          | eye gaze | eye gaze           | verbal | nonverbal                   |
|     |      |     | 44   |                     | Mama'll give you<br>some juice/ |          |                    |        |                             |
|     |      | 59  | 46   |                     |                                 |          | A J                |        | stops                       |
|     | 28   | 01  | 81   | approaches Lisa     |                                 |          |                    |        |                             |
| Ib  |      | 3   | 04   |                     |                                 |          |                    |        | reaching up for<br>juice    |
| IIa |      | 4   | 44   | gives glass to Lisa |                                 |          |                    |        |                             |
| IIb | 28   | 04  | 73   |                     |                                 |          |                    |        | takes glass, opens<br>mouth |
|     |      | 5   | 81   |                     |                                 |          |                    |        | drinks                      |
|     |      |     |      |                     |                                 |          |                    |        |                             |

Figure 1-10: Level II: Eventually successful transfer offer

|    | TIME |     |          | MOTHER<br>(Lisa: L)      |                         |          | CHILD<br>(Alice: A) |                         |                               |
|----|------|-----|----------|--------------------------|-------------------------|----------|---------------------|-------------------------|-------------------------------|
|    | min  | sec | frac     | nonverbal                | verbal                  | eye gaze | eye gaze            | verbal                  | nonverbal                     |
|    | 7    | 11  | 70       | seated                   |                         | < A      | > L                 |                         | seated                        |
|    |      |     | 81       |                          | Now I gotcher arm/      |          |                     |                         |                               |
|    |      | 12  | 23       | touching A's<br>shoulder |                         |          |                     |                         |                               |
|    |      |     | 57<br>80 |                          |                         |          |                     |                         | counterclockwise<br>head turn |
|    |      | 13  | 60<br>75 |                          |                         |          |                     | ae/((high-<br>pitched)) |                               |
|    |      | 14  | 30       | grasps other<br>shoulder |                         |          |                     | A C L<br>C              |                               |
|    |      | 15  | 78<br>34 |                          | And this arm/           |          |                     |                         |                               |
|    |      | 16  | 44       | lays A way back          |                         |          |                     |                         |                               |
| Ia |      | 17  | 10<br>65 |                          | Wanna make<br>row-row?/ |          |                     |                         |                               |

(continued)

| TIME |     |          |  | MOTHER<br>(Lila: L) |        |          | CHILD<br>(Alice: A) |                                                      |                                             |
|------|-----|----------|--|---------------------|--------|----------|---------------------|------------------------------------------------------|---------------------------------------------|
| min  | sec | frac     |  | nonverbal           | verbal | eye gaze | eye gaze            | verbal                                               | nonverbal                                   |
|      | 18  | 10       |  |                     |        |          |                     |                                                      |                                             |
| Ib   |     | 44       |  | pulls A toward L    |        |          |                     | ((singing))<br>wa (.5) wa/                           |                                             |
|      |     |          |  |                     |        |          |                     |                                                      |                                             |
| IIa  | 19  | 50<br>23 |  | rocking A           |        |          |                     |                                                      |                                             |
|      |     | 33       |  |                     |        |          |                     |                                                      | head bobs forward<br>loosely as L pulls her |
|      | 20  | 05       |  |                     |        |          |                     | ((singing))<br>ae (•hhh)(.7)<br>wi (.4)wi(.4)<br>wi/ |                                             |
|      |     |          |  |                     |        |          |                     |                                                      |                                             |
|      | 21  | 23       |  |                     |        |          |                     |                                                      | head does not bob<br>forward                |
|      |     |          |  |                     |        |          |                     |                                                      |                                             |
| IIb  | 23  | 50<br>52 |  |                     |        |          |                     |                                                      | rocking herself                             |
|      |     |          |  |                     |        |          |                     |                                                      |                                             |

Figure 1-11: Level II: Immediately successful participatory offer

ty became, but was not necessarily intended as, a demonstration. When the caregiver pushed the child away from her, they were not playing row-row the boat. As we see, the mother asked, "*Wanna make row-row?*"—that is, play "row-row your boat" (Ia)—and then pulled Alice toward her. Pulling the child toward the caregiver is common to "pulling up" and "row-row." The child responded "[wa (.5) wa]" (Ib). The mother rocked the child (realization: IIa), and the child began to rock back and forth by herself, still holding hands with her mother and singing "[ae(-hhh)i(.7) wi (.4) wi (.4) wi]" (consummation: IIb). Here she spontaneously provides the missing song. In this case all but one of the necessary referential elements were present before the mother initiated the offer sequence. The necessary participants were present, they were in an appropriate location and configuration, and they were participating in an activity which very closely resembled that of the offer, and as such could serve as a demonstration. The child provided the missing component of this complex activity, the song.

#### Unsuccessful Participatory Offer Sequences

To show how certain elements are necessary at this level for an offer sequence to be acknowledged, we give an example (Fig. 1-12) of an unsuccessful participatory offer sequence that occurred when Jim and his mother were in the backyard. Jim and his mother were seated on the grass. Jim was facing the camera; his mother, Samantha, was at right angles to Jim looking to the left side of the video screen. While Jim's mother said, "*Do you wanna go swimming with Brookie today (.3) in the poo:l?*" (presentation: Ia), she turned her head back toward Jim and then looked down at her hands. Jim, meanwhile, looked down at the pages he was turning in a book. He glanced toward the pool; his mother followed his gaze. Next Jim absently lifted another page in his book. Samantha said, "*Wanna go in the poo:l?*" She watched as Jim turned to look at the pool again. Samantha responded to his glance, saying, "*Yea:h the pool is over the:re.*" Jim continued lifting pages in the book. In a high-pitched, soft voice his mother said, "*Do you wanna go in the poo:l (.2) today?*" She cocked her head, then softly prompted him with, "*Hm?*", and finally nodded her head up and down affirmatively. After waiting several seconds, Jim's mother said, "*Say ye:s!*" and then nodded her head affirmatively. Although Jim was looking down and touching his book, his mother continued to nod. Jim said something that sounded like "[ (bΛ) p (Λ) j. ]". His mother said, "*Ye:s!*" quite emphatically. Jim followed with "[ (pΛpΛ) ]", which received another affirmative head nod from his mother and a subsequent "*Poo:l yea:h!*" Jim's attention was on the book again. Samantha looked at Jim and said, "*What do ya do: in the pool?*" An unintelligible "[ (nm:) ]" was heard from Jim. Leaning toward Jim his mother asked, "*Do you swi:m?*" There was a slight pause, and she repeated, "*Swi:m?*"

S C U J

| TIME |     |      | MOTHER<br>(Samantha: S)        |                                                                   |               | CHILD<br>(Jim: J) |        |                                          |
|------|-----|------|--------------------------------|-------------------------------------------------------------------|---------------|-------------------|--------|------------------------------------------|
| min  | sec | frac | nonverbal                      | verbal                                                            | eye gaze      | eye gaze          | verbal | nonverbal                                |
| 18   | 42  | 03   | seated on blanket on grass     |                                                                   | ▽ —           | ▽                 |        | seated on blanket on grass, holding book |
| 1a   |     | 29   |                                | Do you "wanna" go swimming with Brookie today (.3) in the poo:l?/ |               |                   |        |                                          |
|      | 43  | 20   |                                |                                                                   |               | > ↓ book          |        | turns page                               |
|      |     | 29   | counterclockwise shoulder turn |                                                                   |               |                   |        |                                          |
|      | 44  | 28   |                                |                                                                   | > ↓ own hands | > (pool)          |        |                                          |
|      | 45  | 98   |                                |                                                                   | >             |                   |        | lifts page                               |
|      | 47  | 60   | clockwise shoulder turn        | Wanna go in the poo:l?/                                           |               |                   |        |                                          |
|      | 48  | 44   |                                |                                                                   |               | ▽                 |        |                                          |
|      | 49  | 08   |                                |                                                                   | ▽             |                   |        |                                          |

|  |          |          |  |                                                            |  |          |                |                       |  |
|--|----------|----------|--|------------------------------------------------------------|--|----------|----------------|-----------------------|--|
|  |          | 58       |  |                                                            |  |          |                |                       |  |
|  |          | 89       |  |                                                            |  | > ↓ J    |                |                       |  |
|  | 50       | 74       |  | Yeah, "the pool's over there/                              |  |          |                |                       |  |
|  | 51       | 70<br>71 |  |                                                            |  |          |                | lifts page/holds open |  |
|  | 53       | 89       |  | Do you((high-pitched)) wanna go in the poo:l (.2) toda:y?/ |  |          |                |                       |  |
|  | 54       | 46       |  |                                                            |  |          |                |                       |  |
|  | 56       | 88<br>98 |  | "Hm?/                                                      |  |          |                |                       |  |
|  | 57       | 89       |  | nods head vertically                                       |  |          |                |                       |  |
|  | 59<br>00 | 56<br>31 |  | "Say yes:l/                                                |  |          |                |                       |  |
|  |          | 53       |  | nods head vertically                                       |  |          |                |                       |  |
|  |          | 98       |  |                                                            |  |          | (b/Λ)p (Λ) (u) |                       |  |
|  | 1        | 38       |  |                                                            |  | ▽ ↓ book |                | touches book          |  |





Then there was a muffled grunt, "[oə]," from Jim. His mother responded with "No: (.3) huh?" to end the sequence.

This unsuccessful offer sequence, like many others, was characterized by the absence on the sensorimotor level of many referential elements and by the inappropriate or insufficient remediation of this lack of propositional content on the sensorimotor level. At the time of the initial offer presentation, few referents were physically present: Jim was not dressed for swimming, he was not in the pool, there was no demonstration of swimming, Brookie was not present, and *today* was not in Jim's lexicon. In short, the only referential elements present were Jim and the pool. Jim's mother did not take Jim's glance at the pool at an acceptable acknowledgment of her offer presentation to "go swimming with Brookie in the pool today." Samantha simplified the offer presentation to "Wanna go in the pool?" She noticed Jim's second glance at the pool when she said, "Yeah the pool's over there." It is possible that the reoffer was recast to get a glance similar to the one that had been done just before. That is, knowing what he could do, his mother made a reoffer to which the glance would look contingent. However, the glance was not taken to be an acknowledgment of the offer presentation since Jim's mother repeated the offer presentation again at 18:53:89 in a high-pitched, soft voice. Further, Jim's mother prompted him with a soft "Hm?" and then supplied his part. First she nodded her head affirmatively, and then she told him to "Say yes!" She took Jim's "verbalizations" and made them look contingent. Two utterances with bilabials (b, p) were treated as if Jim had said "pool," while a subsequent nasal sound was transformed into "swim." Finally, Jim's grunt, "[oə:]," was treated as a possible negative response to "Do ya swim?" when Jim's mother said, "No: (.3) huh" in a very flat voice, and/or this was a noticing of his absent response to the original offer. Her lower lip protruded and the corners of her mouth lowered, expressing, perhaps, some doubts about the veracity or appropriateness of his response, since he "swims." When Jim's mother recast the initial offer presentation, she simplified her offer presentation linguistically by omitting various combinations of *Brookie*, *swimming*, and *today*. She did introduce the notion that what one does in the pool is swim when no acknowledgment of the offer presentation was forthcoming. However, reference to this activity was made only on the linguistic level; there was no demonstration of swimming. Jim's mother did not supply any other referential information either on the linguistic or sensorimotor level. Jim was evidently not sufficiently sophisticated to provide these missing elements by himself. Since insufficient referential information was provided, the offer sequence was never consummated.

### *Eventually Successful Participatory Offer Sequences*

When the referential elements are not present at the time of initiation of the verbal participatory offer sequence, these elements can be made present

by one of the participants. The offer sequence then can be consummated. An example is the eventually successful offer sequence transcribed in Figure 1-13. Alice and her mother were sitting next to each other on the floor. The mother was holding a doll in one hand. As the mother reached into the toy box, she asked, "Do ya wanna comb the baby's hair?" (Ia). Alice stood up and watched her mother's hand emerge from the toy box holding a comb. The mother said, "Here's a comb." Alice watched as her mother began to comb the doll's hair. The mother commented, "A::h(m)." Alice stepped toward her mother and extended her hand. The mother reached up and described her action, "Comb Alice's hair." (This utterance did not have a rising yes/no intonation contour nor a falling imperative contour but a flatter, declarative intonation (see Bolinger, 1975, for a discussion of intonation). Thus, this utterance was not heard as a continuation of the offer presentation. Alice leaned forward and picked up the doll (Ib). Because an object (comb) being offered was required by the activity, a nonverbal transfer offer sequence was embedded within the participatory offer sequence (marked Ia' and so on). The mother then held out the comb, offering it to Alice (IIa Ia'). Alice reached for the comb (IIa Ib'). The mother extended the comb further toward Alice (IIa IIa') as Alice grasped the comb (IIa IIb') with imperative (falling) intonation saying, "Here, comb Mommy's hair." Alice then began to comb the doll's hair (IIb) and then combed her mother's hair.

This offer sequence is complex; at the time of presentation, several referential elements were missing: the proper configuration, the objects, and the activity. Although one object was present, the doll, neither the comb nor the doll were in the child's possession. Without the necessary objects, no demonstration was possible. The mother provided the objects and a demonstration of the specific activity. However, it was Alice who took the initiative and helped herself to the doll. Alice was also responsible for supplying the proper configuration—she approached her mother, who had the doll and the comb. The demonstration itself is interesting because it is not an exact replica of the activity to be performed, as in the example at Level I (Fig. 1-7), where Jeremy was asked, "D'ya wan call Dad:dy?" (on the phone). The mother did, indeed, comb the doll's hair (exact demonstration of offered activity), but she subsequently combed Alice's hair. In a sense, the demonstration served as a generalization to the class of objects which could be acted upon in this manner. This idea of expanding the class of objects was then continued verbally by the mother when she told Alice to comb her (the mother's) hair. Alice, in fact, complied. After Alice completed the initial offer presentation by combing the doll's hair, the remainder of the sequence was spent with Alice's mother directing Alice to comb the available heads in the room (i.e., the mother's, Alice's, and the two dolls').

Eventually successful offers at Level II serve to illustrate the symbolization capabilities of these children and to display the requirements for comprehension at this level. They are apparently able to represent symbolically the

Living Room  
A ∩ C  
L toybox

| TIME |     |      |  | MOTHER<br>(Lila: L)                     |                                      |          | CHILD<br>(Alice: A) |        |                        |
|------|-----|------|--|-----------------------------------------|--------------------------------------|----------|---------------------|--------|------------------------|
| min  | sec | frac |  | nonverbal                               | verbal                               | eye gaze | eye gaze            | verbal | nonverbal              |
| 2    | 21  | 56   |  | seated, holding doll                    |                                      | < A      | ∇                   |        | seated                 |
|      | 22  | 58   |  |                                         |                                      |          | > † doll            |        |                        |
|      |     | 90   |  | counterclockwise turn, reaches into box |                                      | > † box  |                     |        |                        |
| 1a   | 23  | 23   |  |                                         | (Do ya) wanna comb the baby's hair?/ |          |                     |        |                        |
|      |     | 46   |  |                                         |                                      |          | > L's hand          |        | stands up, holding hat |
|      |     | 90   |  |                                         |                                      |          |                     |        |                        |
|      | 24  | 00   |  | holding out doll                        |                                      | < A      | > (comb)            |        |                        |
|      |     | 66   |  |                                         | Here's a co:mb/                      |          |                     |        |                        |
|      |     | 90   |  | arm in box, pulls out comb              |                                      |          |                     |        | smiles                 |

|    |    |    |    |                            |                     |        |       |  |                                      |
|----|----|----|----|----------------------------|---------------------|--------|-------|--|--------------------------------------|
| 25 | 26 | 50 |    |                            |                     | ∇ comb |       |  |                                      |
| 26 | 12 |    |    | smiling, combs doll's hair |                     |        | > † L |  |                                      |
| 27 | 61 | 43 |    |                            | A:::h(m)/           |        |       |  |                                      |
|    | 73 |    |    |                            |                     | < † A  |       |  |                                      |
|    | 93 |    |    |                            |                     |        | > †   |  | arm extended, steps toward L: AC ∩ L |
| 28 | 70 |    |    | reaches up, combs A's hair |                     |        |       |  |                                      |
|    | 73 |    |    |                            | Comb A:lice's hair/ |        |       |  |                                      |
|    | 88 |    |    |                            |                     |        |       |  | leans forward toward doll            |
| 1b | 2  | 29 | 30 |                            |                     |        |       |  | takes doll, drops hat                |
|    |    | 16 |    | sits up                    |                     |        |       |  |                                      |

| TIME        |     |     | MOTHER<br>(Lila: L) |                          |        | CHILD<br>(Alice: A) |          |                     |
|-------------|-----|-----|---------------------|--------------------------|--------|---------------------|----------|---------------------|
|             | min | sec | frac                | nonverbal                | verbal | eye gaze            | verbal   | nonverbal           |
| Ila<br>Ia'  |     |     | 51                  | holds out comb           |        |                     |          |                     |
| Ila<br>Ib'  |     |     | 70                  |                          |        |                     |          | reaches toward comb |
| Ila<br>IIa' |     |     | 90                  | extends hand closer to A |        |                     |          |                     |
|             |     | 31  | 15                  | [shaded area]            |        |                     |          |                     |
| Ila<br>IIb' |     |     | 20                  |                          |        |                     |          | grasps comb         |
|             |     |     | 40<br>80            |                          |        |                     | > I doll |                     |
|             |     |     | 88                  | drops hand               |        |                     |          |                     |
| IIb         |     |     | 90                  |                          |        |                     |          | combs doll's hair   |
|             |     |     |                     |                          |        |                     |          |                     |

Figure 1-13: Level II: Eventually successful participatory offer

referent of a concrete noun; for example, "juice" in the transcript (Fig. 1-10) in which Lisa ran into the kitchen where the juice was kept. However, there is no evidence that the children are able to internally represent the referent of a verb or any linguistic representation of an entire complex activity. When a caregiver demonstrates an activity, almost all the necessary satellite elements to produce the activity must be present on the sensorimotor level. From these examples, we can see that the child is now a more active participant in supplying contextual and referential information. At Level I, the mother is the sole provider of the structure; at Level II, the child is assuming part of the responsibility, albeit enactively. Instances included the occasion when Alice picked up the doll (object) in order to comb its hair, the instance when Alice sang "row-row" (component of an activity), and the time when Lisa ran into the kitchen (location) for the juice (object). The fact that the children can supply missing sensorimotor contextual and referential information serves as evidence that at Level II the children have internalized the sensorimotor structure of an offer sequence.

### Level III

In addition to earlier achievements, the caregiver and Level III child can produce an immediately successful linguistically initiated participatory offer sequence when some elements are missing on the sensorimotor level. Within the age range studied, this is the most advanced level of development in responding to offer sequences. The Level III child is capable of symbolizing not only referents for the various nominal expressions but also the action relationship that holds between them.

#### Immediately Successful Participatory Offer Sequences

An example (Fig. 1-14) of this level of sophistication is taken from the second tape of Jeri, the most advanced of the children. She and her mother were sitting on the bed and playing. There was a doll, Nancy beside them. The mother lifted up the doll and, as she fixed the doll's dress, asked, "Wanna rock Nancy ta sleep?" (Ia). Jeri shook her head affirmatively (Ib) as her mother offered the doll to Jeri (IIa, Ia'). While Jeri was nodding her head, the mother finished her offer, saying with yes/no question intonation, "Si:ng Nancy a song?" The question intonation contour of "Si:ng Nancy a song?" identified this utterance as part of the offer "Wanna rock Nancy ta sleep?" The latter was either an afterthought with "wanna" ellipted or the second conjunct of a conjoined question with the conjunction "and" ellipted. At this point the doll, Nancy, was not in the appropriate configuration for Jeri to rock the doll, nor had there been a demonstration of singing or rocking. Jeri reached for the doll (IIa Ib'), the mother released the doll (IIa Ia'), and

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(continued)

| TIME |     |      |    | MOTHER<br>(Mitzi: M)                                                                  |        |          | CHILD<br>(Jeri: J) |             |                         |
|------|-----|------|----|---------------------------------------------------------------------------------------|--------|----------|--------------------|-------------|-------------------------|
| min  | sec | frac |    | nonverbal                                                                             | verbal | eye gaze | eye gaze           | verbal      | nonverbal               |
|      | 28  | 90   |    | inserted sequences:<br>kissing doll,<br>playing peek-a-boo,<br>looking at doll's back |        |          |                    |             |                         |
|      | 5   | 1    | 61 |                                                                                       |        |          |                    |             | puts doll in own lap    |
| I Ib | 2   | 67   |    |                                                                                       |        |          |                    | ((singing)) | rocks and sings to doll |
|      |     |      |    |                                                                                       |        |          |                    |             |                         |

Figure 1-14: Level III: Immediately successful participatory offer

Jeri took the doll (IIa IIb') and put it into her lap. Jeri then provided the proper position for rocking. The offer sequence was completed when Jeri rocked the doll in her arms and sang to it (IIb).

The mother gave no demonstration of the activity mentioned but, in fact, performed a totally different activity on the doll (i.e., fixed its dress). In this offer sequence, we can conclude that Jeri knew what "rocking Nancy" means, independent of some sensorimotor demonstration, since Jeri provided both the configuration for rocking and the activity. Jeri must have had some internal representation of the meaning of "singing to a doll" as well. Between Jeri's taking of the doll from her mother and the consummation of the offer, 30 seconds elapsed. These were filled with other activities involving the doll: kissing her, playing peek-a-boo, and looking at the doll's back. This ability to sustain the topic of the offer sequence while participating in other, inserted activities is a new development, an ability first presenting itself at this third stage.

### Other Sequences

Unsuccessful participatory offer sequences and eventually successful offer sequences do not differ appreciably at Level III from Level II and, therefore, are not described. During the third level, a child can respond appropriately to any type of offer sequence, sensorimotor or linguistic, transfer or participatory. The child brings her/his own personal symbolic system to bear and is no longer dependent on the sensorimotor support that her or his mother previously needed to supply.

## CONCLUSION

What does the caregiver do during the one-word period to facilitate the toddler's transition from sensorimotor to linguistic communication? In order to answer this question we selected an interactional unit, offer sequences, to serve as a paradigm for studying caregiver-child interaction. On the basis of diary evidence, six children were selected for this study who were at varying levels of semantic development within the one-word period. We analyzed video records of spontaneous mother-child communication at home as a naturalistic experiment.

Huttenlocher (1974) has suggested that pairing linguistic communication with objects and events is probably crucial to comprehending the linguistic code, while Bruner (1974/1975) has emphasized the importance of familiar interactive (sensorimotor) routines in this process. Messer's research (1978) provides empirical evidence that caregivers do refer to the objects which they are manipulating during joint play with children of 11, 14, and 24

months. This synchrony of linguistic message and object manipulation occurs a robust 73–96% of the time. Similarly, in book-reading interactions with a child 8–18 months old, pictures and labels were supplied simultaneously by the caregiver (Ninio and Bruner, 1978). Further, Sachs and Truswell (1978) suggest that familiar routines facilitate the child's learning of linguistic regularities by linking verbal instructions to actions and actions to objects. Specifically, the ability to comprehend two-word utterances by children who were limited to saying one word at a time was attributed to their frequent participation in such well-practiced interactions. Finally, a note of caution: Familiar routines can facilitate erroneous acquisitions as well as felicitous ones. First, if the caregiver's input does not accurately describe the event, the child will acquire it just as easily as correct input. And second, generalizations by the child to other situations are sometimes more creative than apt (Ferrier, 1975).

We found that caregivers use the sensorimotor structure of, perhaps, the most prototypic routine, an offer sequence, to help children make the transition from sensorimotor to linguistic communication. Caregivers of Level I children initially presented most offer sequences solely on the sensorimotor level. By Level II, linguistically initiated offer sequences had risen greatly in frequency, but a large number of offers were presented simultaneously on the sensorimotor and linguistic levels. This cross-modal redundancy presents the child with a sensorimotor translation of the linguistic message, thus helping him or her to crack the linguistic code. Finally, at Level III, linguistically initiated offer sequences continue to rise while cross-modal redundancy declines. Messer (1978) has also found that cross-modal redundancy was provided less frequently to more verbally sophisticated children. Caregivers of Level III children sometimes act as though, when it comes to offer sequences, the linguistic code has been cracked. The simultaneous presentation, at Level II, of information linguistically and extralinguistically may be a key factor in helping the child make the transition from sensorimotor to linguistic communication in the comprehension of offer sequences. Successful offers at Level I had to present the entire structure of the offer sequence on the sensorimotor level, in an appropriate physical situation, to a child who was paying attention. At Level II, fewer sensorimotor elements were required for a successful transfer offer sequence, but the more complex participatory offer sequences usually still required a complete sensorimotor presentation for their successful communication. Finally, at Level III, participatory offer sequences could be comprehended with far fewer elements present on the sensorimotor level. As the child's linguistic knowledge and representational capacities increase, the necessary sensorimotor cues decline in number, and the child bears an ever greater share of responsibility for successful communication.

There appears to be a paradox at Level II. On the one hand, we argue (and present data to support the contention) that cross-modal redundancy

may facilitate the transition to linguistic comprehension. On the other hand, the data also show that the sensorimotor structure of the event is sometimes partially missing at Level II. The children in our sample remained at Level II approximately 8 months. Longitudinal data at several intervals within Level II might clarify the paradox. It may be the case that cross-modal redundancy occurs more during early Level II than in late phases of Level II, and/or that redundancy depends on the familiarity of the interaction. That is, in early Level II the caregivers might display cross-modal redundancy when initiating most offer sequences. As familiarity with the interaction and competence increase, redundancy might be expected to decrease.

Our findings demonstrate that the sensorimotor structure of an event helps create a context in which the caregiver's communicative intent can be understood. During the one-word period the responsibility for providing the sensorimotor structure of the event subtly shifts from the caregiver to the child, in tandem with the child's increasing ability to internally represent events. At the beginning of the one-word period, provision of the sensorimotor structure of an interaction by the caregiver creates the shared knowledge of the event. This shared knowledge is the basis for successful communication. During the middle level, the child and the caregiver often jointly provide the sensorimotor structure. By the end of the one-word period, we have found evidence that the child can internalize the sensorimotor structure of offer sequences. The child is no longer limited to the information provided by the immediate situation but can bring his or her own knowledge of the world to bear upon the interpretation of an ongoing event. Thus, linguistic messages can be comprehended and responded to appropriately at the end of the one-word period despite the fact that some facets of the background information are absent at the sensorimotor level. (See Wertsch, Hickmann, McLane, & Dowley, 1978; Hickmann & Wertsch, 1978, for the transition from other-regulation to self-regulation in problem-solving situations.)

The syntactic and semantic complexity of caregivers' speech to children at the one-word period and the ability of children to respond appropriately to more complex messages increase along with the child's semantic competence. At the earliest level, 90% of the offer sequences are distributed among the syntactically and semantically simple transfer offer presentations, "Do you want O?" The proportion of participatory offer presentations, "Do you want to do A?"—which are more syntactically and semantically complex—increases five- to sixfold during the middle and late levels of the one-word period. In a similar vein, Bruner, Roy, and Ratner (this volume, Chap. 2) found that the production of syntactically and semantically more complex request sequences for supporting action or for joint action emerges later than requests for objects. In our study, not only is a greater proportion of more complex participatory offer sequences produced at the later levels, but more of them are successfully consummated.

In examining the relationship between caregiver and child speech, sev-

eral researchers (Cross, 1977; Newport, 1976; Newport, Gleitman, & Gleitman, 1977) have generally not found significant correlations between the syntactic complexity of caregivers' speech and the increasing language abilities of the child. Newport's data come from mother-child dyads, with children ranging from 19 to 32 months. Further, Moerk (1978) found nonsignificant correlations between MLU and a heterogeneous set of caregiver utterances (e.g., directives, repetitions, imperatives, etc.).

Although both Newport and Cross agree that a mother's utterances do become longer as the child's linguistic and psycholinguistic abilities increase, specific measures of syntactic complexity (e.g., propositional complexity and preverb complexity) are not "finely tuned to . . . the child's linguistic . . . abilities" (Cross, 1979, p. 173). Newport (1975) attributes the increasing length of caregiver utterances to the replacement of previously deleted constituents (e.g., function words). Cross, on the other hand, suggests that the mother's increasing mean length of utterance (MLU) primarily reflects increased semantic content, and that it only secondarily and indirectly reflects syntactic complexity. In their 1977 study, Newport et al. did find a relationship between the development of the child's morphology and caregiver input, but no direct syntactic relationship that would support a "fine tuning" hypothesis.

In our study, we are actually concerned with the child's comprehension or receptive abilities, not her or his production. Therefore, our results may not be exactly comparable to those of Cross, Newport, and Moerk. However, our results do indicate increases in both the semantic and the syntactic complexity of the caregiver's input to the child, along with a concomitant increase in the child's ability to comprehend and respond to at least the greater semantic complexity of these syntactically more complex messages. The differences in results between our study and the others may be attributed to a difference in data selected for analysis. Their data base included a heterogeneous set of caregiver-to-child utterances, while a homogeneous subset of communicative acts, offer sequences, served as a basis for our study. Perhaps combining all speech acts together obscures the changes that are occurring. Concurrently, our results indicate that, if it has previously been difficult to find relations between environmental input and the language acquisition process, this is because the input considered has been entirely linguistic. The present study demonstrates a strong relationship between input and the development of comprehension abilities when sensorimotor input and its relationship to linguistically presented information is also taken into account.

Several researchers (Kaye, 1976; Shotter, 1978; Snow, 1977; Wertsch, 1978, 1979; Wood, Bruner, & Ross, 1976) have noticed that caregivers treat children's behavior as if a child performs at higher levels of complexity than the child's actual performance. While negotiating the emergent meaning of an interaction, the caregiver appears to have a "bag of tricks"; this "bag of

tricks" can make the child's subsequent behavior look contingent upon the caregiver's prior actions (Wikler, 1976). The caregiver leaves spaces for the child to take part and then fits what the child spontaneously does into ongoing activities, usually within well-practiced routines. In essence, the caregiver unwittingly takes the child from where the child is to where the child will be by providing a basis for a shared structure. In most cases, of course, the illusion of the child's competence comes true. However, Wikler (1976) has described a delusional system in the family of a 5-year-old retarded girl that was based upon a very similar set of strategies. In this case, acting as if the child performed at a higher level of complexity was not adaptive at all. Her family developed a means of embedding her behavior in a network of action and talk that masked her clinical mental level and perpetuated a delusion of competence. With normal children these caregiver practices serve to provide a bridge for the child to acquire more complex behavior. Thus, in the transition from sensorimotor to linguistic communication the caregiver weaves the child's behavior within a web of interaction that allows old forms to take on new functions, which in turn provides new meanings for the child.

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## NOTES

<sup>1</sup>Cole (1979), Levine (1979), Ervin-Tripp (1979), and Baddedly (1979) have called for research grounded in everyday activities to counter the limitations inherent in laboratory research of the past decades. Experimental research has told us, with great precision, how children behave in unnatural situations. The generality of such results is thus quite limited. Schatz and her colleagues (1978, 1979) have called for and are attempting a rapprochement between laboratory experiment and naturalistic research. This is an important step. However, as Ervin-Tripp (1979) has noted, there is a weakness when testing the importance of variables that appear to be critical in naturalistic data; researchers must be careful that the design of laboratory experiments in the

home does not transform the phenomena into rare or never-occurring events. As Cole, Hood, and McDermott (1978) suggest, what is crucial is the "distinction between sampling the occurrence of psychological tasks in different environments and sampling environments within which to engineer psychological tasks" (p. 36). Further, we agree with Ervin-Tripp that the nature of the interaction is lost if naturalistic data are treated by laboratory data reduction methods (e.g., sampling). Bronfenbrenner (1976) has called for ecologically valid research that fulfills three criteria: (a) that the real-life situation maintains its integrity, (b) that the activities are true to the coparticipants' social and cultural milieu, and (c) that the analysis of the activities be in agreement with that of the coparticipants.

We believe that our naturalistic experiment and analytic methods meet these criteria of ecological validity and, therefore, are a preliminary attempt to deal with the limited generalizability of results from laboratory experiments to everyday life. We do not claim to have resolved this issue. We submit our data and descriptions in the hope that our method will contribute to the development within psychology of methods that will reveal the organization of everyday activities.

<sup>2</sup>Offer sequences are not necessarily restricted to presentations of the utterance type "Do you want to?" that is characteristic of our caregiver-child data (Schegloff, personal communication, 1979). However, this corpus is composed of tokens of this type exclusively.

<sup>3</sup>The offer presentations produced by this group of caregivers included offers in which *do* and *do you* had been elided; for example, "You want a cookie?" as well as "Want a cookie?"

<sup>4</sup>In general, in conversation one speaker talks at a time (Sacks et al., 1974). However, speakers can and do anticipate the completion and content of other coparticipants' turns (Sacks et al., 1974; Jefferson, 1973). Occasions of overlap and joint talk provide evidence for these skills.

<sup>5</sup>Recent work on the development of linguistic comprehension (Chapman, 1977; Macnamara, 1977) agrees with this view of the child becoming decreasingly dependent on extra-linguistic cues in the age period under examination.

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