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Explicit Introductions in Lexical Acquisition: A Case Study

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Viewing the process of lexical acquisition as a joint activity, this study proposes an alternative to the dominant approaches to lexical acquisition. Based on longitudinal data, it discusses the various types of conversational exchanges in which new words are introduced in everyday interaction. By exploring the full range of explicit lexical introductions, this study also points out the limitations of many experimental studies. In particular, the types of introduction often examined in experimental studies—namely, adult-initiated labeling, anchoring, and explanation—account for only 8% of all the explicit introductions identified in this study. Other types of explicit introductions, such as repairs, are examined in the context of introducing verbs, adverbs, adjectives, and prepositions. I suggest that by using experiments to determine if there is a correlation between the rate of uptake and the type of introduction, it is possible to explain why words belonging to certain grammatical categories are learned before others.

One of the most controversial issues in the study of lexical acquisition is the "mapping problem"—that is, the mapping of meanings onto word-forms. According to E.V. Clark (1993, p. 43), this problem involves three interrelated tasks: First, children need to isolate the word-forms of their language, then they must create potential meanings, and finally, they must map meanings onto the forms. This process of lexical acquisition continues until children's form-meaning mappings approximate the adult ones. To study the mapping problem, researchers often adopt one of the following three approaches: (a) the constraints approach, exemplified by Markman and Hutchison (1984), which focuses on the innate knowledge that children bring to the task of word-learning and the types of constraints or assumptions that guide children's mapping of forms onto meanings; (b) the input approach (e.g., Snow & Ferguson, 1977), which pays close attention to the input that children receive and treats parents' language as data relevant to theories of lexical development; and (c) the social convergence approach (e.g., Nelson, 1988), which emphasizes adult-child collaboration in lexical acquisition.

The constraints approach has been most strongly advocated by Markman and Hutchinson (1984). It is an attempt to solve the ostensive labeling problem that Quine (1960) raised: When an adult points at a certain object and provides the child with a label, how does the child know that the label refers to the whole object rather than some attribute or part of the object, or what its relation to other objects is? To solve this problem, it has been suggested that children use various conceptual and lexical constraints to determine the referents of words (e.g., Markman & Hutchinson, 1984; Markman & Wachtel, 1988). These constraints, however, have

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been seriously challenged. For instance, Clark and Grossman (1998) questioned the empirical basis of the mutual exclusivity constraint—that is, the constraint which claims that children treat all labels as if they were mutually exclusive. They found that with regard to inclusion relations, children in their study were able to follow pragmatic directions to use two or more terms for the same referent. They argued that "some of the constraints that have been proposed reflect coping strategies that children rely on when they do NOT receive adequate pragmatic directions" (Clark & Grossman,1998, p.16, original emphasis).

Another problem is that the strong version of the constraints approach assumes that constraints are built-in. If these constraints are innate, they should apply from the beginning of the language learning process in order to be maximally useful, rather than maturing at a later point, after word-learning is well underway. However, as Nelson (1988, p. 231) pointed out, many of these experiments were carried out with children who had several years of word-learning experience. It is then difficult to determine whether initial constraints on word-learning are innate or are acquired in the course of language acquisition. Finally, by assuming that children rely on innate constraints, constraints theorists tend to undermine the importance of pragmatic information that adults give to children in lexical acquisition.

While some researchers tend to focus on the innate constraints that guide children to make form-meaning mappings, those who adopt the input approach emphasize the role of input in children's word-learning process. In the past, many studies were conducted to investigate the characteristics of child-directed speech and their influence on child language development (e.g., Snow & Ferguson, 1977). The characteristics that are often cited are: slower rate of speech, shorter utterances, reliance on formulaic expressions (such as, *where's..., look at..., here comes...* and *let's play with...*), pausing between utterances, repetitions, a higher than usual pitch, and exaggerated intonation contours. Although it is difficult to find strong evidence to support the claim that child-directed speech has a causal role in children's language acquisition, there have been some demonstrations of connection between input and syntax acquisition (Hoff-Ginsberg & Shatz, 1982). Recently, there have also been studies on the role of metalanguage directions in lexical acquisition. Researchers (e.g., Callanan, 1990; Clark & Grossman, 1998) have shown that children are guided in their learning of new words by the pragmatic information that adults offer. Furthermore, in a study which examined teaching and learning measures of 16 mother-child and sibling dyads in a picture categorization game, Pérez-Granados and Callanan (1997) found that siblings' teaching styles directed target children to make the correct choices—for instance, siblings would put the cards in the correct categories themselves or direct the target children to put the cards into the correct categories without labeling them—while mothers labeled the objects and provided information to help target children make choices on their own (e.g., *These are things you use in the kitchen and those are things you use outside* for utensils and tools.). The mothers' strategy seemed to be more

effective than the siblings': Target children labeled objects and categories more with mothers than with siblings. This study showed that children's uptake was determined by the type of pragmatic directions that the mothers or siblings provided.

The input approach thus provides a reasonable means to make the mapping problem tractable, but it also has several limitations. First of all, until recently, the form of child-directed speech has received more attention than the content of lexical introductions. Even now, studies on pragmatic directions have focused on nouns for object categories at basic, superordinate, and subordinate levels. Terms for actions, events, and descriptions are not usually discussed. Another limitation is that most of these studies deal with labeling and anchoring (e.g., the adult may say: *this is...*, *this is a kind of...*, etc. to introduce a new word). Other strategies (such as repairs and implicit repairs) that are used to introduce new words are often neglected. In addition, the child's role in lexical acquisition is rarely taken into consideration. Since children do not learn new words solely by means of ostensive labeling and they start taking an active role in learning new words at a very young age, lexical acquisition should be viewed as a collaborative process. Finally, most of these studies are experiments that involved picture categorization tasks or book-reading tasks. It is unclear what other kinds of pragmatic directions children receive in natural settings. Although experiments are important, they do not give us the full range of settings in which lexical acquisition takes place.

The third approach—the social convergence approach—has been vigorously advocated by Katherine Nelson, especially in Nelson (1985) and Nelson (1988). According to this approach, children form initial form-meaning mappings, and during the course of development, they refine the mappings through social interaction, so that the mappings become closer to the adult ones. Researchers who adopt the social convergence approach argue that the process of lexical acquisition involves three facets of development (Nelson, 1998, p. 241):

> (a) A child interacting with the world of people and things and trying to make sense of it, forming representations of events and concepts of objects, (b) Parents, siblings and other adults interacting with the child linguistically and nonlinguistically in many different contexts, including play and caretaking, focused on the child or on other people and activities, (c) Within these contexts, words being used that have conventional meanings in the parent language, children being introduced to words in situations where their use is appropriate and their reference often thereby transparent.

This approach has the merit of focusing on adult-child collaboration and the different kinds of social settings in which lexical acquisition takes place. Nevertheless, it does not explicate clearly the role that adults' pragmatic and metalinguistic directions play in the process of lexical acquisition. Furthermore, with regard to the question of what forms word-learning activities take in everyday interaction,

this approach has little to offer. Most importantly, studies that empirically support this approach still need to be conducted.

The above overview shows that the three approaches have provided some important insights into the mapping problem. By combining these insights, we can conclude that lexical acquisition is a joint activity which consists of two important elements. The first is adult-child collaboration: Both adults and children participate in lexical acquisition.[1] The second element is input. In their interaction with children, adults introduce new words and offer pragmatic directions to guide children to make form-meaning mappings. Both adults' input and children's role in lexical acquisition should receive equal attention (see also Clark, E.V. in press). However, the three approaches have also left many crucial questions unanswered, for instance:

1. Research on lexical acquisition has often been carried out in experimental settings. As a result, the ways in which words are introduced to children in everyday interaction are not clearly understood. The crucial question is: What are the differences between lexical introductions in experimental settings and those in natural settings?

2. Although it has been shown that the ways in which words are introduced to children can influence the rate of uptake, few studies have looked at the range of lexical introductions in natural settings. In other words, what are the different types of lexical introductions that adults use in everyday interaction? (The constraints approach, in particular, focuses on only one type of lexical introduction, ostensive labeling.)

3. Although it is claimed that input is essential to children's lexical development, researchers often tend to focus on the input that children receive for learning labels for objects (that is, nouns). What kinds of lexical introductions are used for other categories of words, such as verbs, prepositions, adjectives, and adverbs?

4. Does the type of lexical introductions that care-givers use tend to vary according to the child's age?

This article is an attempt to answer these questions by looking at lexical acquisition as a joint activity. I examine the process of lexical acquisition of one of the children in the CHILDES database. Focusing on explicit introductions (defined in the following section), this study aims to show the complexity that is involved in how words are introduced in natural settings.

THE STUDY

Explicit Introductions

The analysis is based on the diary data (1973-75) of Stan Kuczaj's son, Abe (from 2;4.– 5;0.), in the CHILDES database (Kuczaj, 1976). Approximately one hour of Abe's spontaneous speech in his home environment was recorded each week (two half-hour sessions per week) from age 2;4 to 4;1, and one-half hour of spontaneous speech was recorded each week from 4;1 to 5;0. This corpus was

chosen because it differs from the others in the database in several respects. First of all, although Kuczaj collected the data for his dissertation on verb inflections, the interactions that were recorded did not take place in experimental settings; rather, they were everyday interactions between Abe and his parents. Unlike the other corpora in the database, no outside experimenter was present and the participants in the interactions were all familiar to the child. Therefore, this corpus is ideal for the study of lexical introductions in natural settings.[2]

Since joint activity is the main focus of the approach I adopt in this study, it is important to define the notion of joint activity and to identify the process through which caregivers introduce new words to children in everyday activities. First of all, joint attention is a prerequisite in all joint activities. As H.H. Clark (1996) argues, joint activities

> range from planning a party or transacting business to playing chess or playing in a string quartet, and they have properties of their own. They take the coordinated actions of two or more participants in particular roles. They each have an entry and an exit, and most emerge in sections and subsections. Most establish a dominant goal, and the participants advance toward that goal one increment at a time. Each of these increments adds to the common ground of the participants, changing what they take to be the current state of the activity. (p. 58)

In other words, a joint activity has several essential components: coordinated actions, participants, goals, procedures, and boundaries. If caregivers' introduction of new words is regarded as joint activity, the participants are usually the caregiver and the child—the former provides inputs (i.e., introduces new words) to the latter or the latter solicits lexical introductions from the former. However, the other components—goals, procedures, and boundaries—tend to vary from one situation to another.

With regard to goals, whether introduction of new words is the dominant goal depends on the situation at hand. In general, lexical introductions can take two main forms:

1. *Implicit introductions*: In the first case, an adult can introduce a new term by means of implicit directions. During the course of everyday interaction, parents may use words that are not familiar to the child. Very often, the dominant goal of the activity at hand is not to introduce a new word to the child; rather, it is to ask the child to perform a certain action, such as eating, cleaning, and picking up toys. Lexical introduction is secondary in this type of joint activity. The adult assumes that the child can infer that the new term refers to the object that they are both attending to.

2. *Explicit introductions*: In the second case, however, lexical introductions become explicit during ongoing interaction. Sometimes, the care-giver may ask the child what a certain object is or the child may ask the adult to provide the label for an unfamiliar object (e.g., the child may say: *what is this?*). In other words,

explicit lexical introduction can be part of the ongoing interaction. At other times, the child may not use a word in the adult-conventional way. The ongoing activity may then be interrupted for lexical introduction to take place. The main goal of explicit introductions is to introduce a new word to the child. It is often clearly demarcated and the number of forms that explicit introductions can take is rather limited.

To clarify the distinction between explicit and implicit introductions, let us take the word *rabbit* as an example. In an explicit introduction, the adult may pick up a toy rabbit and say to the child, "This is a rabbit." In this case, the main goal of the activity at hand is to teach the child the word *rabbit*. In an implicit introduction scenario, however, the adult may pick up several toys and try to figure out which the child would like to play with; he or she may then say, "Would you like to play with the rabbit?" The dominant goal of the activity is to ask the child to pick a toy, rather than to teach the child a new word.

Because implicit introduction does not have any clear boundaries, it is difficult to identify this type of lexical introduction in observational data. The focus of this study is explicit introductions of nouns, verbs, adverbs, adjectives, and prepositions.[3] It is arguable that implicit introductions are more common than explicit ones in natural settings. However, this study is not meant to be exhaustive. Rather, what it shows is only the tip of the iceberg: There are many ways through which caregivers introduce new words to children and some types of introductions may be more effective than others. In a similar vein, I do not attempt to make any sweeping generalizations based on this case study. Instead, the discussion on explicit introductions in this article aims to show the various forms that explicit introductions can take in natural settings. It is a step toward identifying an alternative solution to the mapping problem. These issues are further discussed in the last section of the article.

This study has four main goals: (a) to delimit the forms of explicit introductions; (b) to identify the type of explicit introduction that is associated with each kind of label—that is, labels for objects, actions, events, and descriptions; (c) to understand the roles that care-givers and children play in explicit introductions; and (d) to determine whether certain types of explicit introduction are more common than others in each age range. I argue that children play a pivotal role in lexical acquisition. Previous studies are inadequate because they do not take into account children's contribution to lexical acquisition. Furthermore, different forms of explicit introduction are used to perform different functions—that is, different forms are used to introduce different classes of words, and the type of introductions used tends to vary from one age range to the other.

A Typology of Introductory Episodes

Three hundred seventy-six tokens of explicit introductions were identified in the Abe corpus. To understand the roles that children and caregivers play in the explicit introduction of unfamiliar words, it was necessary to classify the introduc-

tory episodes that were found in the data. By introductory episodes, I mean the conversational exchanges in which caregivers introduce new words to the child explicitly. A typology of introductory episodes provides a standard for comparing exchanges found in observational data with those in experimental settings. Due to the nature of experimental design, introductory episodes found in studies of lexical acquisition are overwhelmingly initiated by the adult. An exchange such as Example 1 is not uncommon. In the experiment from which the following interaction was extracted, the parent was asked to teach the child the superordinate-level category *machine*:

Example 1 (from Callanan, 1990)

M: What do think you a machine is?
C: Maybe it looks like a bacuuming thing.
M: Yeah. There's lots of different kinds of machines, though, don't forget. There's...some machines type.
C: Yeah.
M: The typewriter is a machine. And some machines clean.
C: Yeah.
M: The vacuum cleaner (basic-level) is a machine, you're right. And some, uh, what else do some machines – the lawnmower (basic-level) is a kind of machine.
C: Yeah! It vacuumings the, um, grass!
M: It does! Yeah, it does vacuum the grass. It cuts the grass too. And then it throws it back.
C: Yeah.
M: You know, there's lots of kinds of machines. Machines, machines do work for us usually.

(M = Mother; C = Child; Labels added by Callanan)

One of the goals of this study is to investigate how common this type of exchange is in everyday interaction—do caregivers teach children new words in the same way in natural settings? What percentage of introductory episodes are adult-initiated and what percentage are child-initiated? By seeking answers to these questions, I hope this study will shed some light on the similarities and differences between introductory episodes in everyday interactions and those in experimental settings.

Five types of introductory episodes (which can be either adult- or child-initiated) were identified in the Abe corpus. The initiation of an episode can by marked in five different ways:

Type I: An introductory episode can begin with a *child's information-seeking question* (e.g., *what is this?, that?, what are you doing?, what color is this?,* and other verbal and non-verbal cues, such as pointing at an object). In this case, the introductory episode is child-initiated. In a typical exchange in which an information-seeking question is used, the child often asks for the term that he or she is not familiar with (see example below). The adult's answer to the child's informa-

tion-seeking question can be followed by the child's acknowledgement or immediate uptake. The child's acknowledgement can be a simple *yes*, *oh*, *uhhuh*, or any other linguistic signal that indicates his or her receipt of the information from the caregiver. On the other hand, the child's immediate uptake refers to his or her use of the unfamiliar term in the utterance following the caregiver's turn. Sometimes, however, neither acknowledgement nor uptake follows the caregiver's utterance. In this case, the caregiver's answer is the last turn of the introductory episode. It is possible to infer that the child understands what the caregiver said, accepts it and moves on with the conversation (this is labeled as move-on in Demetras, Post, & Snow, 1986):

A typical episode:
a. Child's *information-seeking* question
b. Adult's response
c. Acknowledgement/uptake/0

Example 2: Abe019.cha line 213, 2;7.0

ABE:	what's that, Stan?	(Information-seeking question)
FAT:	that's a magazine subscription.	(Adult's response)
ABE:	that's for me?	(Move-on)
FAT:	uhhuh, and for Karen and Rob and Rich.	

(FAT = Father)

Type II: On the other hand, when a *child's clarification question* (e.g., *what does X mean?* or *what is X?*—note that the target word is often used in the clarification question) appears at the beginning of an introductory episode, the child makes the adult's implicit introduction explicit. In other words, the question makes it clear that the child is not familiar with a word that the adult uses in the previous utterance. Similarly, the adult's response can be the last turn, or the end of the exchange can be marked by the child's acknowledgement or immediate uptake (see Example 3 below):

A typical episode:
a. Child's *clarification* question
b. Adult's response
c. Acknowledgement /uptake/0

Example 3: Abe007.cha line 169, 2;5.20

MOT:	you have to wait until we get to the movie house.	
ABE:	what movie house?	(Clarification question)
MOT:	where we go to see the movie.	(Adult's response)
ABE:	oh.	(Acknowledgement)

(MOT = Mother)

Type III: The initiation of an introductory episode can also be marked by *the adult's explicit or implicit repair* of the child's previous utterance. In this case, the

introductory episode is adult-initiated. In an explicit repair, the adult often interrupts the conversation flow to tell the child explicitly that the term he or she has chosen is not the adult-correct term. In an implicit repair, however, the adult continues the conversation, but he or she replaces the child's term with the adult-conventional term in the next utterance. In other words, the conversational flow is not interrupted and the child is not corrected explicitly (the differences between implicit repairs and explicit repairs are further discussed below).[4] In either case, the end of the exchange can be marked by the child's acknowledgement or immediate uptake, or the adult's repair can be the only utterance in this type of episode (see Example 4):

A typical episode:
a. Adult's *repair* of child's previous utterance
b. Child's acknowledgement/uptake/0

Example 4: Abe024.cha line 151, 2;7.15

ABE:	I don't hang my yellow fish hang my yellow fish, Mom.	
MOT:	well, I already hung one gold fish over there.	(repair)
ABE:	hang this gold fish.	(uptake)

Type IV: The beginning of the fourth type of introductory episode—also adult-initiated—is marked by an *adult's information-seeking question* (e.g., *what is this?* or *do you know X?*). In this case, the adult asks the child for a label unfamiliar to the child. Very often, the adult knows the answer to the question, but he or she may take this as an opportunity to introduce a new word to the child. This type of exchange is often mentioned in experimental studies on lexical acquisition (e.g., Callanan, 1990). Again, the adult's response may be the final turn of the exchange, or the exit of the episode can be marked by the child's acknowledgement or immediate uptake (see Example 5):

A typical episode:
a. Adult's *information-seeking* question
b. Child's response (*yes, no* or *I don't know*)
c. Adult's clarification/response (*X is...*)
d. Acknowledgement/uptake/0

Example 5: Abe026.cha line 255, 2;7.26

FAT:	what's this?	(Information-seeking question)
ABE:	I don't know.	(Child's response)
FAT:	a hyena.	(Adult's answer)
ABE:	a hyena.	(Uptake)

Type V: Finally, the initiation of introductory episodes that belong to Type V in this classification is marked by an *adult's clarification question*—that is, a question that asks for the clarification of a concept or, in this case, a label that is men-

tioned in the previous utterance (e.g., *Do you mean X?*). An explicit repair can sometimes be embedded in the adult's clarification question. In other words, the adult interrupts the conversational flow and offers the adult-correct term to replace the one that the child uses in the previous utterance. The clarification question is often followed by the child's response (e.g., *yes, yeah, oh*) (see Example 6):

A typical episode:
a. Adult's *clarification* question
b. Child's response

Example 6: Abe50.cha line 277, 2;10.22

ABE:	you undo my foot?	
FAT:	you want me to untie your shoe?	(clarification question)
ABE:	yeah my shoe hurry my foot hurts.	(response)

It is important to note that introductory episodes that belong to Types I and II are child-initiated, while those classified as Types III, IV, and V are adult-initiated.

Forms of Explicit Introductions

As mentioned before, a typology of introductory episodes provides us with a means for comparing the conversation exchanges in which new words are introduced in everyday interactions with those in experimental settings. In a similar vein, a typology of explicit introductions is essential, because it allows us to investigate whether some word-classes (e.g., nouns, verbs, and adjectives) are more likely to be introduced to children in a certain way. Whether an introductory episode is adult- or child-initiated, the adult often needs to offer various directions (in the form of explicit introductions) to guide the child to make form-meaning mappings. Explicit introductions are needed, because they help children learn unfamiliar words during the course of the ongoing interaction. Furthermore, they are one way to rectify the discrepancies in common ground between the adult and the child. These discrepancies arise when the presupposed knowledge is not shared—for example, the adult may mistakenly assume that the child knows a certain word, or the child falsely believes that his or her usage of a certain word is the same as the adult-conventional one. In these cases, explicit introductions play a pivotal role in the process of lexical acquisition.

Similar to explicit introductory episodes, explicit introductions can take different forms: The simplest way to guide children to make form-meaning mappings is *labeling*. For example, the adult can pick up a toy monkey and say, "This is a monkey." In this case, no additional information (other than the label) is provided to the child (see Examples 7 and 8):

Example 7: Abe03.cha line 47, 2;5.7
ABE: what's that?
FAT: that's the microphone. (labeling)
ABE: I want to touch it!
FAT: go ahead you can touch it be careful # ok.

Example 8: Abe50.cha line 349, 2;10.27
FAT: what's it called?
ABE: I don't know.
EDN: do you have a word for that sound?
ABE: uhhuh.
MOT: it's called gulping? (labeling)
ABE: gulping.

Anchoring is another strategy that adults adopt to introduce new words to children. When introducing a new term, the adult can anchor the new term to another one. If the unfamiliar term is a noun, the anchoring term can be a label at the same or a different level. Expressions such as *part of, kind of, sort of, same as,* and *similar to* are used to indicate the relationship between the terms. An example is "A spaniel is a kind of dog" or "Your dog Bobbie is a spaniel." Notice that in the latter case, the word *spaniel* is anchored to the basic-level term (*dog*) and a proper name (*Bobbie*) (see also Example 9). A term for an object can also be anchored to the label of one of its parts. In Example 10, Abe's father introduces the word *swordfish*. Notice that he also points out the salient part (the nose) of the swordfish. Furthermore, if the unfamiliar term is a verb or an adjective, the anchoring term can be a synonym or an antonym (see Example 11):

Example 9: Abe26.cha line 387, 2;7.26
ABE: why you got hairs in your whiskers?
FAT: I have hairs in my whiskers?
ABE: uhhuh.
FAT: whiskers are a certain type of hair, Abe. (anchoring)
ABE: why?
FAT: I'm not sure.

Example 10: Abe63.cha line 222, 3;0.25
ABE: what is this thing with a, a, uh, um, this thing right here?
FAT: that's a sword fish he sure has a long nose; doesn't he? (anchoring)
ABE: yeah.

Example 11: Abe165.cha line 21, 4;2.9
ABE: now can I do my sticker book?
FAT: ok.
ABE: first I'll do number three (ex)cept we need a dry towel.
FAT: a dry one or a wet one? (anchoring)
ABE: a dry, uh, a wet one, Daddy.

The next form of explicit introduction is *explicit repair.* Explicit repair is similar to labeling. However, in an explicit repair, the adult explicitly rejects the term that the child uses in the previous turn and replaces it with the adult-correct one. In other words, an explicit repair is the adult's correction of the child's use of a certain word. In an explicit repair, the conversation flow is interrupted and expressions such as *no, it is not X, but it is Y*, are often used. Example 12 shows the use of an explicit repair in a conversation exchange:

Example 12: Abe024.cha line 179, 2;7.15
Abe: a fish, mom?
Mother: It's not a fish, it's a sequin. (explicit repair)

Explicit repairs embedded in clarification questions (ERC) represent the fourth form of explicit introduction. This type of introduction is similar to the previous one. The main difference is that in this case, the adult substitutes something for the term used by the child in the previous utterance, but at the same time, he or she asks the child to make sure that the suggested term is what the child intends to say (e.g., *Do you mean X [instead of Y]?*) (see Example 13):

Example 13: Abe 152.cha line 61, 3;11.25
ABE: why don't you go any day?
FAT: do you mean every day? (ERC)
ABE: yeah why don't you go with us every day?
FAT: well, sometimes I just don't feel like going.

The fifth form of explicit introduction is *implicit repair* (see Jefferson, 1982). Implicit repairs are similar to explicit repairs in that the adult substitutes the term chosen by the child in the previous utterance with the adult-correct one. However, the major difference is that unlike explicit repairs, implicit repairs do not involve an interruption in the conversation flow. Instead, the adult indicates an implicit acceptance of the term used by the child. In other words, the adult does not explicitly reject the term used by the child, but offers an alternative instead. In an implicit repair, the conversation continues without pausing for correction or clarification (see Example 14):

Example 14: Abe066.cha line 176, 3;1.5
ABE: That thing is for checkers, right? That thing is for checkers.
MOT: Right, that's a checker board. (implicit repair)

Finally, the sixth form of explicit introduction is *an explanation* (Examples 15 and 16). Rather than simply labeling an object or event, the adult can explain what a certain term means, or sometimes he or she can specify the function of a certain object, for example:

Example 15: Abe013.cha line 47, 2;6.6
ABE: Mama, what's on here?
MOT: this is a brochure which tells us that our street will be repaired and that we have to move our car. (explanation)

Example 16: Abe006.cha line 58, 2;5.16
MOT: it's hot so you can sleep in the nude if you want to.
ABE: what nude?
MOT: nude is when you sleep without any clothes on. (explanation)
ABE: uh that nude? me walk around nude.

Age and Types of Introductory Episodes

To determine the role that Abe and his parents played in lexical introductions, I examined the distribution of adult- and child-initiated introductory episodes for each age range. As mentioned before, introductory episodes that belong to Types I and II are child-initiated, while those that belong to Types III, IV, and V are adult-initiated. Table 1 (next page) shows the distribution of adult- and child-initiated introductory episodes for each age range. In general, there were more child-initiated episodes (51.3%) than adult-initiated ones (48.7%). Child-initiated episodes were slightly more significant from age 2;4 to age 2;12, but adult-initiated episodes became more common from age 3;1 to age 4;3. The increase in the percentage of adult-initiated episodes can be attributed to the fact that the percentages of adults' repairs (Type III introductory episodes) and adults' clarification questions (Type V introductory episodes) increased after age 3;1. (See Table 2, next page; the reason why the percentages of these two types of introductory episodes increased is discussed towards the end of this section). However, starting from age 4;4, child-initiated episodes again became more prevalent. Notice that this change may be due to the small number of tokens in these age ranges (4;4-4;6, 4;7-4;9, 4;10-4;12): The number of explicit introductions decreased drastically from age 4;4 onwards.

There are two possible reasons for the decrease in the number of explicit introductions after age 4;4. First of all, as his linguistic competence (defined in the broadest sense of the word) began to mature, Abe might rely more on implicit introductions than on explicit introductions. In other words, he might become better at making inferences based on implicit introductions. Another reason is that approximately one hour of Abe's speech was recorded each week from age 2;4 to age 4;1, but only one-half hour of his speech was recorded each week from 4;1 onwards. Therefore, the smaller number of explicit introductions identified in the transcripts after age 4;1 may correspond to the smaller body of data from these age ranges. In any case, the small number of tokens makes the results from age 4;4 onwards unreliable (see Table 1, next page).

Table 2 shows the distribution of introductory episodes in each age group. Notice that Type IV introductory episodes are the least common overall, while Types I and III were the most frequent. It appears that at an early age (2;4-3;3),

Table 1: Age and Child- Versus Age-initiated Introductory Episodes

Child- versus Adult-initiated Introductory Episodes			
Age	Adult-initiated	Child-initiated	n
2;4-2;6	23.1% (6)	64.3% (20)	26
2;7-2;9	38.3% (18)	61.7% (29)	47
2;10-2;12	35.7% (20)	64.3% (36)	56
3;1-3;3	66.0% (33)	34.0% (17)	50
3;4-3;6	54.4% (43)	45.6% (36)	79
3;7-3;9	51.9% (27)	48.1% (25)	52
3;10-3;12	71.4% (15)	28.6% (6)	21
4;1-4;3	68.7% (11)	31.3% (5)	16
4;4-4;6	44.4% (4)	55.6% (5)	9
4;7-4;9	40.0% (6)	60.0% (9)	15
4;10-4;12	0.00% (0)	100% (5)	5
Total	48.7% (183)	51.3% (193)	376

Each shaded cell represents the type of introductory episode (adult- or child-initiated) with the highest percentage of occurrences in a given age range.

Abe actively sought explicit introductions from his parents. From age 3;3 onwards, however, Type I introductory episodes became less significant. It might suggest that Abe's vocabulary and his command of language after age 3;3 allowed him to communicate with his parents reasonably well. As a result, instead of asking for the precise label in each case (Type I introductory episodes), Abe might depend on circumlocutions, familiar terms, and generic labels, such as *things*, (see Example 17). Through repair, his parents would then provide him with the more appropriate term (see Example 18—the more appropriate term *fangs* replaces *teeth*). Consequently, Type III introductory episodes became more common. Furthermore, recall that the mapping problem involves both the initial mapping of meanings onto word-forms, as well as the fine adjustment which continues until children's form-meaning mappings approximate the adult ones. Since children's initial mappings are often initiated by their information-seeking questions, it might be argued that Type I episodes are associated with initial "fast-mapping." Similarly, as adults use repairs to replace the child-selected term with the adult-correct one, Type III

episodes are linked to ongoing "fine adjustment." Accordingly, Table 2 indicates that while initial mapping took place at the earlier ages, the adjustment of form-meaning mappings became more prominent from age 3;1 onwards.

Example (17): Abe93.cha line 82, 3;4.12
FAT: what did we do when we got there?
ABE: we climbed two steep hills and the bigger one was so big and then we were through climbing and then, and then I saw a way to get down (ex)cept it was really steep and maybe we could be lost in the leaves and we were scared so...so...so then I saw a new way to get down and that was a rock part and then that was a dirt part.
FAT: that's right all those were different ways to get down (un)til you found a dirt path then what did we do? (implicit repair)
ABE: I don't know.

Table 2: Age and Type of Introductory Episodes

	Introductory Episodes					
Age	Child's Information-seeking Question	Child's Clarification Question	Adult's Repair	Adult's Information-seeking Question	Child's Clarification Question	n
	(Type I)	(Type II)	(Type III)	(Type IV)	(Type V)	
2;4-2;6	**46.1% (12)**	23.1% (6)	26.9% (7)	3.9% (1)	0.00% (0)	26
2;7-2;9	**55.3% (26)**	8.5% (4)	19.2% (9)	6.4% (3)	10.6% (5)	47
2;10-2;12	**39.3% (22)**	25.0% (14)	21.4% (12)	1.8% (1)	12.5% (7)	56
3;1-3;3	**32.0% (16)**	2% (1)	**32.0% (16)**	14.0% (7)	20% (10)	50
3;4-3;6	25.3% (20)	18.9% (15)	**26.6% (21)**	5.1% (4)	24.1% (19)	79
3;7-3;9	25.0% (13)	23.1% (12)	19.2% (10)	3.9% (2)	**28.9% (15)**	52
3;10-3;12	23.8% (5)	4.8% (1)	**47.6% (10)**	0.00% (0)	23.8% (5)	21
4;1-4;3	12.5% (2)	18.8% (3)	12.5% (2)	12.5% (2)	**43.8% (7)**	16
4;4-4;6	**33.3% (3)**	22.2% (3)	22.2% (2)	0.00% (0)	22.2% (2)	9
4;7-4;9	**40.0% (6)**	20.0% (3)	20.0% (3)	0.00% (0)	20.0% (3)	15
4;10-4;12	40.0% (2)	**60.0% (3)**	0.00% (0)	0.00% (0)	0.00% (0)	5
Total	127	64	92	20	73	376

Each shaded cell represents the type of introductory episode with the highest percentage of occurrences in a given age range.

Example (18): Abe103.cha line 53, 3;5.23
ABE: do rattlesnakes have lots of teeth?
MOT: they have two fangs to protect themselves. (implicit repair)

Age and Forms of Implicit Introductions

Table 3 shows that labeling is the most common form of introductions from age 2;7 to age 3;9. Observe that anchoring—the form of introduction that explicates the relationship among terms at two or more levels—was the least common in all age ranges. One of the reasons for the small number of tokens of anchoring is that, in many cases, the relationship among terms at different levels is not relevant to the situation at hand (see Example 19). As a result, Abe's parents might not consider it necessary to bring in terms at other levels when introducing a new label. On the other hand, when Abe is confused with the relationship between terms at different levels or when the relationship becomes more salient, the caregiver may deem it appropriate to bring in labels at other levels (see Example 20 and Example 9 reproduced below). Furthermore, anchoring (and other introductions, such as explanations) may become more important when several related terms (e.g., in the same domain) are introduced at the same time. In Example 21, Abe and his father are reading a book with pictures of creatures that live in the sea (*mermaid*, *swordfish*, and *whales*). To help Abe further distinguish among these objects, Abe's father uses anchoring (i.e., linking an object to its salient part—e.g., the nose of the swordfish and linking a basic term, *whale*, to a term at the subordinate level, *Great Blue Whale*) and explanation (*that's a mermaid half a fish and half a girl*).

Example 19: Abe03.cha line 48, 2;5.7
ABE: what's that?
FAT: that's the microphone. (labeling)

Example 20: Abe90.cha line 200, 3;4.1
FAT: did you have a good time while we played softball?
ABE: no.
FAT: how come?
ABE: because you took so long when you were playing baseball you weren't playing softball you were playing baseball...not softball you shouldn't say softball.
FAT: softball is a type of baseball. (anchoring)
ABE: oh.

Example 9: Abe26.cha line 387, 2;7.26
ABE: why you got hairs in your whiskers?
FAT: I have hairs in my whiskers?
ABE: uhhuh.
FAT: whiskers are a certain type of hair, Abe. (anchoring)
ABE: why?
FAT: I'm not sure.

Example 21: Abe63.cha line 221, 3;0.25
Reading a book:

ABE:	what is this thing? (picture in book)	
FAT:	that's a mermaid half a fish and half a girl.	(explanation)
ABE:	that's a mermaid hey!	
ABE:	where's my thing?	
ABE:	where is my cornbread?	
FAT:	it's right there.	
ABE:	oh, what is this thing with a, a, uh, um, this thing right here?	
FAT:	that's a sword fish	
	he sure has a long nose; doesn't he?	(anchoring)
ABE:	yeah what is this thing?	
FAT:	that's a whale...a Great Blue Whale.	(anchoring)

Based on Table 3, another observation can be made. Explicit repairs embedded in clarification questions became more frequent from age 3;7 onwards. As discussed in the previous section, Abe might depend more on circumlocutions, familiar terms (which might not be the adult-correct ones) and generic labels after

Table 3: Age and Introductions

	Forms of Explicit Introductions						
Age	Anchoring	Explanation	Explicit Repair	Explicit Repair-Clarification Question	Implicit Repair	Labeling	Total
2;4-2;6	7.7% (2)	23.2% (6)	3.9% (1)	0.00% (0)	34.6% (9)	30.8% (8)	26
2;7-2;9	4.3% (2)	8.5% (4)	4.3% (2)	10.6% (5)	14.9% (7)	57.5% (27)	47
2;10-2;12	7.1% (4)	23.2% (13)	17.9% (10)	12.5% (7)	10.7% (7)	28.6% (16)	56
3;1-3;3	0.00% (0)	12% (6)	10.0% (5)	20.0% (10)	20.0% (10)	38.0% (19)	50
3;4-3;6	2.5% (2)	22.8% (18)	13.9% (11)	21.5% (17)	13.9% (11)	25.3% (20)	79
3;7-3;9	0.00% (0)	25% (13)	5.8% (3)	26.9% (14)	15.4% (8)	26.9% (14)	52
3;10-3;12	0.00% (0)	9.5% (2)	9.5% (2)	33.3% (7)	28.6% (6)	19.1% (4)	21
4;1-4;3	6.3% (1)	12.5% (2)	6.3% (1)	37.5% (6)	6.3% (1)	31.3% (5)	16
4;4-4;6	0.00% (0)	44.4% (4)	0.00% (0)	22.2% (2)	22.2% (2)	11.1% (1)	9
4;7-4;9	0.00% (0)	33.3% (5)	6.7% (1)	20.0% (3)	13.3% (2)	26.7% (4)	15
4;10-4;12	0.00% (0)	60.0% (3)	20.0% (1)	0.00% (0)	0.00% (0)	20.0% (1)	5
Total	2.9% (11)	20.2% (76)	9.8% (37)	18.9% (71)	16.5% (62)	31.7% (119)	376

Each shaded cell represents the form of introduction with the highest percentage of occurrences in a given range.

age 3;7. Through repair, his parents would then provide him with the more appropriate label. As a result, repairs—especially explicit repairs embedded in clarification questions—became more common.

Type of Introductions and Adult- Versus Child-initiated Episodes

Table 4 shows that explicit introductions were slightly more common in child-initiated episodes (51.3%) than in adult-initiated ones (48.7%). By definition, explicit repairs embedded in adults' clarification questions are adult-initiated. In addition, explicit and implicit repairs often occur in adult-initiated episodes, because it is usually the adult who provides the adult-correct term to replace the one used by the child. In other words, the introductory episode is initiated by the adult, because he or she is the one who initiates the introduction of an unfamiliar term to the child. However, when it is the adult's repair of his or her own utterance, it can be either child- or adult-initiated. In Example 22, for instance, the initiation of the introductory episode is marked by the child's clarification question. The question is then followed by the adult's repair of her own previous utterance. In this case, the repair is child-initiated.

Example 22: Abe14.cha line 57, 2;6.10

MOT:	I have to get a sliver out.	
ABE:	huh?	(child's clarification question)
MOT:	I have to get a thorn out of my foot.	(adult's self-repair)

The other three types of introductions are more pertinent to the discussion because, theoretically, they are as likely to be adult-initiated as child-initiated. However, all of them were actually more often initiated by the child than by the adult—72.73% of anchoring tokens, 90.79% of explanation tokens, and 84.87% of labeling tokens in the data were child-initiated. Contrary to what Quine (1960) implies and along the lines of what Nelson (1988) has argued, adults attend to the object or event that the child is focusing on in introductory episodes. In other words, the adult often needs to figure out what the child is paying attention to rather than the other way round.

Word-class and Forms of Introductions

Table 5 shows that nouns (40.9%) were most commonly introduced through labeling, while adjectives, verbs, adverbs, and prepositions were introduced mostly through implicit repairs (adjectives—27.8%; verbs—27%; adverbs—9.1%; prepositions—40%) or explicit repairs embedded in clarification questions (adjectives—29.6%; verbs—29.7%; adverbs—63.64%; prepositions—40%). What the results show is that different classes of words tend to be introduced in different ways. Notice the small number of adverbs (descriptions), adjectives (descriptions), prepositions (location, etc.) and verbs (events, actions) introduced through explicit introductions. It is possible that most words belonging to these classes are intro-

duced through implicit introductions—that is, they are embedded in the introducing utterances.

Table 4: Forms of Introductions and Adult- vs. Child-initiated Introductory Episodes

Adult- vs. Child-initiated Introductory Episodes			
	Adult- initiated	Child- initiated	Total
Anchoring	27.3% (3)	**72.7% (8)**	11
Explanation	9.2% (7)	**90.8% (69)**	76
Explicit Repair	**83.8% (31)**	16.2% (6)	37
Explicit Repair-Clarification Questions	**100.0% (71)**	0.00% (0)	71
Implicit Repair	**85.5% (53)**	14.5% (9)	62
Labeling	15.1% (18)	**84.9% (101)**	119
Total	48.7% (183)	**51.3% (193)**	376

Each shaded cell represents the type of introductory episode with the highest percentage of occurrences for each form of introduction.

Table 5: Word-class and Introductions

	Form of Introduction						
Word-class	Anchoring	Explanation	Explicit Repair	Explicit Repair-Clarification Question	Implicit Repair	Labeling	Total
Adj.	3.7% (2)	20.4% (11)	11.1% (6)	**29.6% (16)**	27.8% (15)	7.4% (4)	54
Adv.	0.00% (0)	18.2% (2)	9.1% (1)	**63.6% (7)**	9.1% (1)	0.00% (0)	11
N.	3.4% (9)	20.5% (55)	9.7% (26)	13.0% (35)	12.6% (34)	**40.9% (110)**	269
Prep.	0.00% (0)	0.00% (0)	20.0% (1)	**40.0% (2)**	**40.0% (2)**	0.00% (0)	5
V.	0.00% (0)	21.6% (8)	8.1% (3)	**29.7% (11)**	27.0% (10)	13.5% (5)	37
Total	11	76	37	71	62	119	376

Each shaded cell represents the form of introduction with the highest percentage of occurrences for each word-class.

DISCUSSION

Since one of the main goals of this study is to determine the differences between lexical introductions in everyday interaction and those in experimental settings, a brief review of the ways through which words are introduced in experiments is in order. First of all, one of the most common methods used in experimental studies is the direct introduction of words by the experimenter. In a study that investigated children's use of mutual exclusivity to constrain word meanings, for example, Markman and Wachtel (1988, pp. 131-132, Study 2) introduced a puppet to 30 children (from 3;0 to 4;3) and told them:

> We are going to help teach Froggy some new things today. I'm going to show you some pictures and Froggy will ask you some questions about them. Some of Froggy's questions will be very easy but some may be pretty hard, so just try your best. I have lots of pictures, so we can have lots of fun playing this game." After the experimenter labeled each object for the children, the puppet would ask them: "Which one is the X? This whole thing or just this part?"

A similar method was also used by Tomasello and Barton (1994). In one of their experiments (Study 1), Tomasello and Barton examined 40 two-year-old children's learning of new words in two conditions: an ostensive condition, and impending condition. In the ostensive condition, the experimenter gave the model "I'm (You're) *plunking* Big Bird. I'm (You're) *plunking* him" at the same time that she or the child dropped the character into a chute. In the impending condition, on the other hand, the experimenter held the puppet away from the action station and gave the language model "I'm going to (Can you) *plunk* Big Bird. I'm going to (Can you) *plunk* him," and then did the action or let the child do it (Tomasello & Barton, 1994, p. 641). Furthermore, experimenters sometimes use a puppet as a prop to introduce new words to children. In a study which tested the hypothesis that a basic level constraint guides preschool children's mapping of meanings onto word-forms, Callanan, Repp, McCarthy, and Lapzke (1994, p. 114) introduced a puppet to 45 preschool-aged children (from 3;0 to 5;0) and told them that the puppet wanted "to teach you some new words." The puppet would then give children a new word and show them a picture: "For example, the puppet might want to teach the word 'lepidopteron,' in which case he would show the child a picture of a monarch butterfly and say 'this is a lepidopteron'" (Callanan, et al., 1994, p. 114).

Other studies on lexical introduction tend to use book-reading activities or picture categorization tasks. Callanan (1990) looked at the different ways through which terms at basic, subordinate, and superordinate levels are introduced. Fourteen mother-child pairs (from 2;3 to 4;2) were chosen, and the mothers were provided with the names of the concepts to be taught and with pictures which they might use while teaching the concepts. Although the experimenter tried to ensure that the interactions in the experiment would resemble everyday conversations,

some structure was given to the task by asking parents to talk about certain words provided by the experimenter. As Callanan (1990, p. 109) pointed out, "Though this structure means that the procedure is not completely naturalistic observation, parents and children seemed very comfortable with the task, and the interchanges seemed similar to parent-child conversations while reading picture books." In another study (Pérez-Granados & Callanan, 1997), the authors looked at the differences between mothers and older siblings in the ways through which they introduce new words to children. Sixteen sibling dyads and their mothers (target children: from 2;8 to 5;2; older siblings: from 5;9 to 7;7) were chosen. In the experiment, children were introduced to two troll dolls and were asked to play a game in which they would sort pictures of objects into two superordinate categories. In two separate sessions, older siblings and mothers were asked to help the target children, so that they could sort the pictures into the two categories. They were also told that they could talk about the pictures in any way they would like (Pérez-Granados & Callanan, 1997, p. 125).

The types of introductory exchanges described above are different from the introductory episodes identified in this study in two ways. First of all, lexical introductions in everyday interaction can be adult-initiated or child-initiated, and the initiation of introductory episodes can be marked by the child's clarification question, the adult's information-seeking question, the adult's repair, and so on. By design, all the lexical introductions in the experimental studies mentioned above were adult-initiated: Caregivers were asked to teach children specific terms or the experimenter used a specific language model (e.g., "I'm *plunking* Big Bird" in Tomasello & Barton, 1994) to introduce a new word to the children. In this study, on the other hand, more than half of the introductory episodes identified (51.3%; see Table 4) were child-initiated rather than adult-initiated. Recall Quine's (1960) "problem of radical translation" which sets forth the case for indeterminacy in inferring meaning from reference. This problem poses the following question: How can a child (or a linguist) who observes a native speaker uttering "gavagai" as a rabbit runs by be certain that "gavagai" means "rabbit," instead of the action of running, the rabbit's ear, the color brown, or something like "there" or "look" (Clark & Sengul, 1978)? In tackling this well-known problem, many researchers tend to favor abstract constraints that children place on possible word meanings and the innate knowledge that children bring with them to the process of lexical acquisition. What is often ignored is the *joint activity* that is often involved. This study shows that children often actively seek lexical introductions from adults and interact with adults to negotiate meanings of unfamiliar words. As a result, children's role in lexical acquisition cannot be ignored (see also Bloom, Margulis, Tinker, & Fujita, 1996). The introductory episodes discussed in this study were also very different from the prototypical scene assumed by many researchers. Many lexical introductions in everyday interaction are child-initiated—that is, the child does not guess what the adult intends to refer to; rather, it is the adult who tries to figure out what the child focuses on and then supplies an appropriate word. Undoubt-

edly, many words are also introduced through implicit directions, but children may make these implicit directions explicit through the use of clarification questions (i.e., Type II introductory episodes). It is possible that children have some kind of cognitive mechanism that works like a spotlight (see Clark, E.V. 1982)—they focus on words, concepts, objects, actions, and other aspects of the world that they find interesting and attempt to form representations of these entities. Nevertheless, they do not try to understand every unfamiliar word in adults' speech. Rather, when encountering words, objects, and actions that interest them, they actively ask for lexical introductions and metalanguage directions from adults.

Furthermore, the experimental studies described above only examine a few types of introductions—namely, adult-initiated labeling, anchoring, and explanation. These three kinds of introductions together accounted for only 8% of all the explicit introductions identified in this study. In particular, the type of lexical introduction discussed in Quine (1960), adult-initiated labeling (*This is X.*) represents only 5% of all the explicit introductions. In fact, even if we look at labeling alone, an overwhelming majority (85%) is child-initiated. This raises the following question: Given the small percentages of these types of lexical introduction in natural settings, how much can experimental studies tell us about the process of lexical acquisition in everyday interaction? This study is a step toward understanding the process of lexical acquisition in everyday activities, in that it illustrates the complexity that is involved in how words are introduced in natural settings.

In addition, although it is claimed that input is essential to lexical acquisition, researchers often focus on the input that children receive for learning labels for objects. This study points out that labeling—the most often studied form of introduction—is used mostly for nouns. On the other hand, verbs, adjectives, prepositions, and adverbs are introduced mostly through repairs (implicit repairs, explicit repairs, and explicit repairs embedded in clarification questions). It is possible that word-classes other than nouns rarely appear in explicit introductions; rather, they may be introduced through implicit introduction. As a result, they were not identified in this study. It is then important to see if the difference in the way different word-classes are introduced can affect the rate of uptake. Provided that the form of introduction determines the rate of uptake, this may explain why certain words (e.g., nouns) are often learned before others (e.g., verbs and adjectives).

Finally, I have shown that the form of lexical introduction used most frequently tends to vary from one age range to another. As Abe grew older, the most common means through which new words were introduced kept changing. Although labeling was more prominent from age 2;4 to 3;9, repair became more significant afterwards. The small number of explicit introductions after age 4;4 also indicates that at an older age, the child might become better at making inferences based on implicit introductions, and as a result depend less on explicit intro-

duction for lexical acquisition. This longitudinal study thus appears to shed some light on the developmental process of lexical acquisition.

DIRECTIONS FOR FUTURE RESEARCH

This study is not meant to be exhaustive. I have attempted to show the complexity that is involved in how words are introduced to children in natural settings. Furthermore, I argue that different forms of lexical introductions are used for different classes of words and that the way in which parents introduce new words changes according to the child's age. Future observational studies can examine whether the categorization of explicit introductions that I have proposed in this paper applies in other cases as well. In particular, it will be beneficial to examine whether there is individual variation in the way parents introduce new words to children and whether the types of introductory episodes are different when an outside experimenter is present during the recording (as in the case of Adam, Eve, and Sarah in the CHILDES database). It is possible that the presence of an outside observer may change the way parents introduce novel words.

There is also ample reason to believe that the form of introduction used is also determined by the social situation. For instance, I have alluded to the fact that anchoring and explanation are more frequent in book-reading tasks. In these cases, children are often presented with objects in the same domain and parents often need to provide additional information—for example, in the form of clarifying the relationship among different terms—to help children distinguish them. Therefore, looking at how words are introduced in different social situations is the next step toward understanding the complexity involved in the process of lexical acquisition.

Finally, experimental studies are needed to determine if there is a correlation between the rate of uptake and the type of introduction. Are target words in child-initiated introductory episodes more likely to be taken up by children than those in adult-initiated ones? In general, is explicit introduction more "effective" than implicit introduction? Do certain forms of lexical introductions (e.g., anchoring, explanation, and labeling) have a higher rate of uptake than others (e.g., implicit repairs)? Clark and Grossman (1998) offered strong evidence that children as young as 2;2 understand if a speaker repairs something. In other words, from the information provided by a repair, they are able to understand what should be discarded or retained. Furthermore, in a study of the role of adult input in children's category evolution, Banigan and Mervis (1988) found that labeling was less effective than explanation, in that children who only heard the labels were least likely to learn them. By determining if there is a correlation between the rate of uptake and the form of introduction, it is possible to explain why words belonging to certain grammatical categories (e.g., nouns) are learned before others in English.

Gentner (1982) claimed that nouns are universally predominant in children's early vocabularies. Recently, this claim has been seriously challenged. Choi and

Gopnik (1995) found that Korean children as young as 1;3 use verbs productively with appropriate inflections, and for six of the nine children in their study, the verb spurt occurred before the noun spurt. Tardif (1996) found that Mandarin-speaking children produced more verbs than nouns in their naturalistic speech (see also Tardif, Shatz & Naigles, 1997). To explain why nouns are learned before verbs in English but not in Korean or Mandarin, several reasons have been suggested: For instance, Korean- and Mandarin-speaking mothers may provide more verbs and fewer nouns than American mothers, and they may also engage in activity-oriented discourse significantly more than their American counterparts (Choi & Gopnik 1995; Tardif 1996). However, in addition to the interactional qualities of the language learning situations, the difference may also be due to the ways through which words in different languages are introduced to children. Recall that the findings of the present study show that nouns were introduced mostly through labeling, while other word-classes, such as verbs, adjectives, and prepositions, were introduced mostly through repairs and implicit introductions. Experimental studies can be used to examine whether anchoring, explanation, and labeling have a higher rate of uptake than repairs and implicit introductions. If this is indeed the case, the form of introductions used may explain why nouns are often learned before words belonging to other grammatical categories in English. It will then be necessary to examine how nouns, verbs, adverbs, adjectives, and prepositions are introduced in languages such as Korean and Mandarin. It is possible that whether children learn nouns or verbs first depends on how different classes of words in different languages are introduced to children in natural settings. The study of lexical acquisition as a joint activity can thus give us a better understanding of lexical acquisition and offer a more elaborate and radical solution to the "mapping problem."

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NOTES

[1] Although much lexical acquisition stems from peer collaboration, it might be argued that at least in Anglo white middle-class families in the U.S., adults provide most of the linguistic input that children receive at the earlier ages. However, the relative importance of the linguistic input from adults, siblings, and peers in language acquisition (defined in the broadest sense of the term) tends to vary from one culture to another (Ochs & Schieffelin, 1984).

[2] Reading through the transcripts, I believe that the data in the Abe corpus are truly representative of

natural interaction, and the adults (i.e., Abe's parents) did not make any conscious efforts to elicit target linguistic features from Abe during the recording. Although Kuczaj's (1976) dissertation focused on the production of verb inflections (i.e., *-ing, -s,* and *–ed*), these linguistic features are common enough in spontaneous speech that it was not necessary to use any elicitation methods.

[3] Since this paper focuses on lexical acquisition, articles and grammatical morphemes are not discussed.

[4] The term "repair" is used somewhat differently here than in Schegloff, Jefferson, and Sacks (1977).

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