VII. GENERAL DISCUSSION

The topic of this monograph is children's first uses of their first verbs. In the past decade and a half, the study of verb development has burgeoned, including experimental investigations of early verb comprehension and verb learning, studies of production using samples of spontaneous speech, and a diary study of one child's early verb use (e.g., Fisher & Gleitman, 2002; Hirsh-Pasek & Golinkoff, 2006; Lieven, 2006; Tomasello, 1992; Tomasello & Merriman, 1995). There have not, however, been studies of several children in the very earliest stage of verb production that would provide a more generalizable description of early verb use than can a study of a single child. This absence of detailed documentation of the beginning of verb use was a significant gap in the data on verb development because there are disputes regarding the nature of early language representation and, indeed, the nature of the language acquisition process addressable by data on how children use their very first verbs. The present study was designed to fill this gap.

Starting before their children's production of any verbs, eight mothers kept records of their children's first 10 uses of 34 target verbs that the previous literature suggested should be among children's first verbs. For each instance of verb use, the mothers recorded the full utterance in which the verb appeared and also noted whether the utterance containing the verb served the function of a command or description, who or what was performing the verb action, and who or what was the object of the verb action. These diary records were coded to provide measures of the pragmatic, semantic, and grammatical flexibility of children's first verb uses. Our discussion of these data and of their theoretical implications is organized around the following questions:

1. To what extent are children's early verb uses *conservative* versus *flexible* in pragmatics and semantics?

2. To what extent are children's early verb uses *conservative* versus *flexible* in grammar?

3. To what extent is early flexibility particularly characteristic of only some (i.e., light, or pathbreaking) verbs?

4. To what extent are the flexibility of meaning and form related?

5. What are the theoretical implications of the observed pragmatic, semantic, and grammatical flexibility of children's first verb uses?

TO WHAT EXTENT ARE CHILDREN'S EARLY VERB USES CONSERVATIVE VERSUS FLEXIBLE IN PRAGMATICS AND SEMANTICS?

Pragmatic Flexibility

The data of this study suggest that children's early verb use is pragmatically flexible. All of the children produced at least some of their first verbs in both commands and descriptions, and the majority of the verbs were used as both commands and descriptions, by the same child (and these two functions captured >98% of the childrens recorded utterances). Thus, neither any child nor any verb appeared to be completely context bound in use and, by inference, in mental representation. There was, however, variation among verbs such that some verbs were used only in descriptive utterances, not commands; no verbs were used only in commands. The variation by verb can be attributed to differences in the verbs' inherent meanings and the suitability of these meanings for the command function (e.g., "Need" is not a sensible command). For all of the target verbs for which both commands and descriptions are plausible functions, children produced both commands and descriptions within the first 10 instances recorded. Furthermore, verbs used as commands were used with multiple addressees, suggesting that the children had representations of verb meaning that were sufficiently abstract to apply to multiple actors. Although we did not explicitly assess the situations in which children used their verbs, the fact that the verbs with the highest number of addressees were the ones with more general meanings (i.e., the light verbs *come*, *go*, *look*, *put*) suggests that the children were applying the verbs across situations. This flexibility of use across situations, combined with the verbs' use to multiple addressees, argues against an account of early verb use as context bound. This discovery of the flexibility of verb use across addressees and, probably, situations was possible only because of the diary method employed. Unlike the researcher recording a sample of conversation in a single setting, the mother keeping a diary observes children's verb uses in multiple settings with multiple conversational partners and potential addressees. Indeed, the addressees of the children's utterances included parents, siblings, other relatives, characters in television shows, and pets.

Semantic Flexibility

The data from this study also reveal semantic flexibility from the beginning of verb use, where semantic flexibility is defined as the use of a verb to refer to multiple appropriate actions enacted by different actors and on different affected objects within the first 10 instances of the child's production of that verb. (The actors and objects need not have been expressed in the utterance; the point is that the child's use indicates that his or her representation of the meaning of the verb is not restricted to something that a single actor does or something that is done to a single object.) Six of the eight children in this study used at least one of their verbs in reference to more than one action, and more than one third of the verbs produced (38%) were used to refer to multiple actions. A total of seven verbs (*come*, *cut*, *go*, *open*, *put*, *take*, *wash*) were produced in reference to multiple actions by at least half of the children.

All eight children in this study used at least some of their verbs with multiple actors within the first 10 uses of those verbs, and most of the target verbs produced by these children (73%) were used with multiple actors within the first 10 uses. Moreover, the children's very first use of approximately half of their verbs was in reference to an actor other than themselves. Where actor extendability was limited, the limitations seemed to reflect verb meaning rather than linguistic limitations within the child. Children have little access to others' wants, needs, and likes, so *want*, *need*, and *like* were used primarily in self-reference. Other restricted actor uses may reflect restricted occasions to use particular verbs (e.g., *roll* is used only when there is a ball and thus *ball* is the only actor to appear with *roll*) (Naigles & Hoff, 2006).

Affected object flexibility was even greater than actor flexibility: All children used at least some verbs in reference to actions with more than one affected object, and 90% of the transitive and alternating verbs were used to refer to an action on more than one affected object. There were more affected objects per verb in children's first 10 instances of use than there were actors per verb; the time elapsed between first verb use with a different affected object was less than the time between first verb use and first use with a new actor, and all children showed a higher degree of affected object flexibility than actor flexibility. Thus, most of the time, children did not restrict their talk about two-argument relations to a single patient or theme; instead, they used their verbs in relation to up to eight different patients or themes within 10 uses. These are the first findings in the early verb-learning literature to document such a high level of semantic flexibility in production. They are consistent with the evidence of early flexibility from studies of verb comprehension using unconventional or novel affected objects (e.g., Naigles & Hoff, 2006). It is possible that the asymmetry between

actor and affected object flexibility reflects a difference in the underlying representations of the actor and affected object roles such that children are more reluctant to extend a verb to a new actor than to a new patient or theme. However, we think a practical explanation is more likely: In the child's world, there exists a wider variety of possible affected objects than actors. That is, actors in children's worlds are mostly animate beings and these consist of family and friends. In contrast, affected objects are primarily inanimate objects, and these include all kinds of food, toys, household items, and so on. The set of possible affected objects is just bigger than the set of possible actors.

Importantly, actor flexibility and affected object flexibility patterned together—they were combined in the composite measure of semantic flexibility in the analyses of the intercorrelations among verb use measures; their zero-order correlation was both positive and significant, $r(n = 8) = .831$, $p = .011$. The finding that children who demonstrated more and earlier affected object flexibility also demonstrated more and earlier actor flexibility suggests that there was no tradeoff in which cognitive resources allocated to one area resulted in fewer resources available for the other. Moreover, the children who were early verb learners overall were also the ones showing more semantic flexibility, indicating that semantic flexibility is not a property of verb learning at a later developmental stage.

The present finding of actor flexibility in children's first verb uses is at odds with Huttenlocher et al.'s (1983) report that toddlers preferred to use verbs in reference to themselves; however, the discrepancy is explicable in terms of the difference in methods used. Huttenlocher et al. sampled dyadic mother–child interaction in a single setting, and thus only two possible actors were available. The diary method, in contrast, was able to tap uses across the day and across different settings in which other participants may be available. The fact that many instances of actor flexibility in our data set involved siblings or pets, who are not usually included in recording sessions, adds further credence to this methodological explanation. In fact, each child demonstrated actor flexibility with at least one verb by describing the action of his/her pet. Furthermore, the present findings of actor flexibility are consistent with the findings of comprehension studies, which show that toddlers can extend familiar and newly taught verbs to new actors and/or agents (Naigles & Hoff, 2006; Naigles et al., 2005; Poulin-Dubois & Forbes, 2006).

However, the children's extension of new verbs to new actors was not instantaneous. On average, children had a verb in their lexicon for half a month and used it three times before extending it to a new actor. Thus, it is still possible that Poulin-Dubois and Forbes's (2006) finding (see also Maguire et al., 2006) that 20-month-olds do not consistently match just-learned verbs to their actions when these are performed by new actors may

indeed reflect an initial reluctance children have (within the 10 minutes usually provided) to extend a novel verb's action to a new actor. And perhaps the contrast between Naigles et al.'s (2005) findings that children do extend verb meanings and other researchers' findings that they do not suggests that presenting the verbs with different actors, as Naigles et al. did during training, helps children make their own extensions. In the real world, most children would experience most common verbs with multiple actors well before the onset of speech; therefore, it seems that if such experience is the crucial factor for actor extendability then most children would have had this experience and be able to generalize to new actions presented with only one actor. So why were the 1-year-olds in the present study more flexible in production than others have demonstrated in comprehension? A likely possibility is that 1-year-olds are simply less efficient learners, such that (in the absence of experiencing multiple actors) they need more time with the teaching stimulus (more than the 18 or so seconds usually provided in experimental settings), or possibly more time after teaching, to consolidate the representation before extending the verb to an action performed by a novel actor. Context-bound use, then, may be more a function of the amount of experience or time with particular verbs rather than a property of the overall course of verb learning.

These findings also cast doubt on Golinkoff et al.'s (1995) proposal that the principle of extendability that children apply to new nouns must be relearned for verbs. The speed with which our eight children demonstrated action, actor, and affected object flexibility (within 10 to 16 days of the first use of that verb) suggests that whatever principle was acquired for noun learning was easily and rapidly transferred to use with verbs. Stated in more general terms, the picture of early flexible verb use suggested by the present data contrasts with those descriptions in the literature that paint early word use, in general, as context bound. While instances of underextension are attested, underextended usage may be more characteristic of nouns, whose acquisition begins earlier in English, than of verbs. Our data show that early verb use is not typically context bound.

TO WHAT EXTENT ARE CHILDREN'S EARLY VERB USES CONSERVATIVE VERSUS FLEXIBLE IN GRAMMAR?

The data from this study show clearly that within their first 10 instances of producing a verb in spontaneous speech, children demonstrate flexibility in the syntactic environments in which those verbs appear. The children used multiple frames with two thirds of their verbs, and these first verbs were used in different frames, on average, by two thirds of the children. On average, children's first change in syntactic frame took place within half a

month of the first verb use; thus, there was no extended period of frozen form use. On average, only 12% of such frame changes included the use of negation (range 0–36% across children; on average, 1.8% of utterances included negation markers); therefore, most of the frame flexibility observed involved children's flexibility in the argument structure of the verb. Morphological flexibility, reflecting just the children's uses of verbal suffixes, occurred at a much lower rate. Some children did not use any inflections with their verbs (most of the morphological forms that were used were "-ing") and examples of past tense or third-person singular use were rare. Changes—the addition or subtraction of such a morpheme—took close to a month to be observed after the first use.

Another measure of flexibility in verb use was the extent to which verbs were used with different lexical items in the preposition slot or in the subject or object positions. Children demonstrated flexibility in filling all these grammatical slots with multiple lexical items. In particular, the children showed lexical subject flexibility, in which a verb was used with at least two different subjects, with approximately one third of their verbs; just over one third of the children used verbs with multiple subjects. Lexical object flexibility was demonstrated by verbs for just under half of the children and by children for just under half of their verbs. Preposition flexibility was seen in five of the six children who produced prepositions at all. Tellingly, these indicators of lexical flexibility cohered with the other measures of grammatical flexibility in forming a composite grammatical flexibility score.

Finally, our analyses of individual differences in syntactic flexibility (Figures 10–18) investigated the developmental course of syntactic flexibility in each child. Contrary to the conservative-child hypothesis, fewer than half of our children ($n = 3$) demonstrated initial conservative verb-only use followed by later syntactic flexibility (i.e., after using verbs for 4–5 months). More tellingly, five children demonstrated use of verbs with arguments from the start of verb acquisition; for two of these children, syntactic flexibility with multiple verbs was evident within the first 6 weeks of verb use. For the others, syntactic flexibility in the use of one verb appeared during the first period and more verbs came to be used with flexibility during the subsequent 8 weeks—and almost always before the age of 2 years.

In addition to these measures of grammatical flexibility, we also applied to the present data corpus-based measures of productivity that have been employed in the literature (Ingram, 1989; Shirai, 1998). We found that using the more stringent criterion—that a frame must be used with five different verbs to be considered productive—the number of productive frames children had at 24 months was positively correlated with the overall measure of grammatical flexibility of their verb use. This correlation is consistent with the argument that flexibility is an indicator of productivity. We found that many of the children who achieved 3-Verb or 5-Verb

productivity with a given frame (e.g., using VO with three or five different verbs) did so before the age of 24 months; three children even achieved such productivity with almost all of the relevant frames before 24 months of age. Across the entire corpus of first uses of first verbs, we found that the children used the SV and VO frames with >60% of their target verbs, the SVO frame with almost half of their target verbs, and the VP and V-ing frames with fewer, but still multiple verbs. Thus, well before 36 months of age—and frequently even before 24 months of age—the children provided evidence that their frames were not necessarily restricted to specific lexical items.

The measures of productivity and flexibility employed in the present study are only indirect measures of hallmark productivity, as we were unable to assess how any of the children's utterances diverged from their input. Indeed, the children had likely heard these verbs used flexibly by the adults around them. The picture of early verb use that these measures reveal, however, is in stark contrast to the description of early verb use that has been the basis for claims that young children are *not* productive verb users. With a variety of different measures, some assessing children's verb use across frames and others assessing children's frame use across verbs, these eight children have demonstrated that their early verb use was flexible rather than restricted and thus more consistent with an account of children's early verb use as reflecting abstract underlying knowledge than with a description of early verb use as strict imitations of input. The abstract knowledge need not be innate, as the traditional generativist position would hold. Rather, children's flexible verb usage may reflect children's learning that flexibility is general characteristic of verb use from the evidence of flexible uses of particular verbs in their input. Put another way, children's flexible verb uses may reflect learning from input, but it is learning that is more abstract than learning the multiple uses of individual verbs modeled in the input.

TO WHAT EXTENT IS EARLY FLEXIBILITY PARTICULARLY CHARACTERISTIC OF ONLY SOME (i.e., LIGHT, OR PATHBREAKING) VERBS?

The picture of early grammatical flexibility of verb use suggested by the present data was not limited to only some verbs. There was no evidence of a special pathbreaking role for light verbs in early grammatical development. Light verbs were neither the earliest verbs produced, nor were they, as a class, the verbs with the earliest or greatest syntactic or morphological flexibility. Of the 11 verbs produced before the age of 620 days (on average), some were light (*come*, *go*) but others were not (*throw*, *sit*, *see*, *push*, *open*, *lay*, *fall*, *eat*, *bite)*. Moreover, when the children are considered individually, only

one child consistently demonstrated an advantage for light verbs, such that her first use of each frame and first instances of grammatical flexibility were shown for light verbs. Only sporadic evidence of a light verb advantage was found for three other children, and for the other four children none of their light verbs showed more grammatical flexibility than heavy verbs that emerged at the same age. When the frames were considered individually, only the SVO frame consistently appeared first with a single verb, and this verb (*want* for six of the eight children) was hardly the most semantically transparent. For all other frames, the verbs that appeared first varied widely across children and were neither consistently semantically transparent nor consistently highly frequent in the input. Taken together, then, our findings do not support the proposals (e.g., Chenu & Jisa, 2006; Goldberg, 1999; Ninio, 1999) that light verbs are the primary promoters of grammatical development.

There were, however, several indications in our data that the children did use light verbs differently than heavy verbs. Light verbs appeared more frequently in commands and less frequently in descriptions than did heavy verbs. Moreover, light verbs were used with multiple addressees more than heavy verbs; they were also used with more different affected objects than heavy verbs, and there was a trend in the same direction for a greater use of different actors with light than with heavy verbs. Finally, light verbs appeared with direct objects and in SVO frames more frequently than heavy verbs did, and they were used with more and earlier lexical object flexibility than heavy verbs. All of these findings derive in a straightforward fashion from differences in the meanings of light and heavy verbs. The association of light verbs with commands can be attributed to the behavior of three verbs in particular, *come*, *go*, and *look*, which seem likely to be commonly used as commands in input as well. In contrast, the heavy subclass included more verbs referring to internal states (*like*, *need*, *cry*), which could not be used as commands. Furthermore, the more general verbs in the light verb subclass can apply to more different situations and so can be used with more different actors, affected objects, and addressees. That is, anyone can *go* or *come* and anything can be *brought* or *taken*, whereas only eatables can be *eaten* and only animates can *eat*. And because heavy verbs refer directly and obviously to specific events in the world, their direct objects can be omitted because of common ground between speaker and hearer whereas these forms need to be retained with more general verbs. The children seemed aware, at some level, of the need of the addressee to have some affected objects made more explicit than others (see also Matthews et al., 2006). If such objects are required more with light verbs by the dictates of common ground, then, because of base rates, more different NPs should be used. Thus, the grammatical advantage of light verbs, appearing more with objects and in SVO frames, is directly traceable to the semantic/

pragmatic requirements of those verbs in usage, not to their unique mapping onto the semantics of specific frames. This is consistent with Snedeker and Gleitman's (2004) suggestion that light verbs, because of their applicability to such a wide variety of situations, must be the products rather than the engines of early grammatical acquisition.

TO WHAT EXTENT ARE THE FLEXIBILITY OF MEANING AND OF FORM RELATED?

Semantic flexibility and grammatical flexibility of verb use were related, both as properties of children and as properties of verbs. The children who showed more semantic flexibility in their first verb uses (indexed by a composite of multiple measures) also showed more grammatical flexibility (also indexed by a composite score). Among the target verbs in this study, those that were used with grammatical flexibility by more children were also used with multiple actors by more children. Thus, these findings extend theoretical accounts of the relations between early verb syntax and verb semantics in a couple of ways. The findings suggest that it is not just knowing a certain number of verbs (Marchman & Bates, 1994) but also having the understandings that underlie semantic flexibility of verb use that supports the acquisition of verb grammar (Naigles et al., 2005). The findings also suggest that the relationship between semantic flexibility and syntactic flexibility is reciprocal. In particular, the finding that semantic flexibility and syntactic flexibility were related as properties of verbs, in addition to being related as properties of children, supports the syntactic bootstrapping hypothesis: Verbs used with more grammatical flexibility are verbs with more elaborate semantic representations as well.

The semantic and grammatical flexibility of verb use did, however, differ in their relations to the age at which the child began to use verbs and to when the verb appeared in the children's speech. Children who began verb use at a younger age showed, on average, greater semantic flexibility in their verb use. Children may become early verb learners, then, if they have early acquired the ability to extract verb referents from their observed contexts. In contrast, these earlier verb learners did not show greater—or lesser—grammatical flexibility in their early verb uses, nor did they achieve a greater—or lesser—number of productive frames by the age of 24 months compared with children who began to use verbs later. Earlier verb learners, then, may be specifically precocious in their ability to extend their verb *meanings* in multiple ways, but they are neither advanced nor behind other children in their ability to use those verbs in multiple ways in terms of *grammar*. Among verbs, however, the picture is a bit different: Those verbs that appeared earlier in the children's speech were used with grammatical flexibility (in their first 10 uses) by fewer children than were later-appearing

verbs, but age of appearance showed no relation to the proportion of children who used a verb with semantic flexibility. Thus, the data present a picture in which children who begin to use verbs earlier use their first verbs with a similar degree of grammatical flexibility as children who begin later, but verbs that are used earlier than other verbs are used with grammatical flexibility by fewer children. Less grammatical flexibility, then, is a property of earlier-learned verbs but not of earlier-verb-learning children. It is important to point out, though, even the earliest-learned verb (*open*) was used with grammatical flexibility by almost 30% of the children. Overall, we found no evidence that there exist early-learned verbs, or early-starting children, that are *consistently* inflexible.

THEORETICAL IMPLICATIONS OF THE OBSERVED PRAGMATIC, SEMANTIC, AND GRAMMATICAL FLEXIBILITY OF CHILDREN'S FIRST VERB USES

The data from this diary study indicate that 1-year-old children use their newly acquired verbs flexibly, in multiple situations, with multiple actions, actors, affected objects, and paths or locations. These findings are at odds with models of acquisition in which children's verb meanings are initially conservative (e.g., Golinkoff et al., 1995; Maguire et al., 2006). The present data show that 1-year-old children also use their verbs in different sentence frames, with different subjects, objects, and prepositions, and (somewhat) with different morphology, all within the first 10 instances of use. Such flexible use suggests as well that children younger than 2 years do not, in fact, manifest the restricted use that inspired the Verb Island Hypothesis. These findings are more consistent with the generativist view of child language acquisition (e.g., Chomsky, 1981; Gleitman & Fisher, 2002) than with the positions that children are conservative language users and that 2-year-olds do not have abstract syntax (e.g., Goldberg, 1999; Lieven, 2006; Tomasello, 2000).

However, in the present data, fully flexible and productive verb use was not evident in all children from the moment verb use began. On average, the percent of verbs that children used flexibly varied from 16% (morphology) to 30% (lexical subjects) to 38% (actions) to 46% (lexical objects) to 50% (addressees) to 66% (syntax) to 73% (actors) to 90% (affected objects). Every child produced *some* verbs in the same way (i.e., conservatively) on the pragmatic, lexical, and/or grammatical measures for all of their first 10 instances. Even when verb uses were flexible across the first 10 instances, they were rarely flexible by the second instance. Thus, children were swift to show some kinds of flexibility and productivity but did not demonstrate all kinds of flexibility and productivity instantaneously. Moreover, some children appeared to be swifter and/or more flexible and productive than others.

There are two possible, and not mutually exclusive, sources of this variability in the flexibility with which children use their first verbs. A generativist would argue that the children had full grammatical knowledge from the beginning but that a variety of personality, pragmatic, and contextual factors limited children's expression of that underlying grammatical knowledge. That is, some children are more interested than others in talking about new things, and to new people, than other children (Nelson, 1973; Reznick, Corley, & Robinson, 1997); some verbs afford more flexible use than others and sometimes the occasions for the use of a verb may be limited. Consistent with this position, comprehension studies, where such pragmatic-, semantic-, and personality-based influences should not apply, indicate that most toddlers demonstrate significant generalization of most newly introduced lexical items (e.g., Gertner et al., 2006; Naigles et al., 2005; Poulin-Dubois & Forbes, 2006). Future comprehension investigations could further solidify these findings by extending the semantic and grammatical properties studied (e.g., to novel affected objects, and to [in the relevant languages] PPs and case markers).

Also consistent with the present data, though, is a model in which grammatical knowledge is not fully present from the beginning. Some grammatical understandings are achieved before any verb use in production resulting in the flexibility that is observed, but some grammatical understandings develop after production begins. The clear frame differences and individual differences in these data suggest that the correct description of children as verb learners will contain elements of both the rapid generalizer and conservative-child accounts, in different measure for different children, different verbs, and different frames (see Maratsos, 2007, for a similar argument in a different domain). When all the supportive factors are in place (e.g., the verbs have been used flexibly in the input, the child is feeling talkative, the situation is new and interesting but not too new and interesting, and possibly the frame is more transparent), children are more likely to be swiftly flexible and productive—and possibly even show generalization to novel instances, although such latter demonstrations are unlikely to be manifest in spontaneous speech. When the supportive factors are not in place, children may be more likely to be conservative, and some supportive factors may be more available for some verbs than for others. Differences among children in their speech processing abilities may also lead to variation in the onset or rate of flexibility, productivity, and generalization, consonant with other recent findings that early perceptual factors predict later language measures (Fernald, Perfors, & Marchman, 2006; Kuhl, Conboy, Padden, Nelson, & Pruitt, 2005; Newman, Bernstein Ratner, Jusczyk, Jusczyk, & Dow, 2006).

Thus, one position consistent with our data is that abstract grammatical categories are learned from input, but the process of learning begins early,

before speech production at all or before production of the relevant linguistic frame or construction. As summarized by Gerken (2007; see also Naigles, 2002; Saffran & Thiessen, 2007), researchers have demonstrated that considerable knowledge about the patterns—at varying levels of abstractness—of a given language are accrued during the first 12–18 months of life. If children have indeed been actively processing their input language for over a year by the time they produce their first verbs, then perhaps it is not surprising that they should show the level of productivity and flexibility that our data reveal (see also Snyder, 2007, for a concurring view from a more generativist framework). Similarly, if grammatical development awaits the achievement of a threshold of lexical development, it is a threshold that children achieve very early.

The present findings have some further implications for accounts of the process or processes that underlie language development. The observed intercorrelations between the grammatical flexibility and semantic flexibility of verb use (Tables 25 and 26, chapter VI) suggest there may be some common learning processes and/or common experiences that support both semantic and grammatical development. The correlations by verb, in particular, suggest that syntactic properties of verbs reveal their semantic possibilities, and vice versa. For example, learning quickly that *open* can be used with multiple affected objects might enable children to quickly understand that it should also appear with grammatical objects; learning quickly that *run* does not involve affected objects effectively limits its grammatical uses and distinguishes them from those of *open*. Another way to think about this is that whatever input enables verbs' semantics to be learned quickly also enables their grammatical aspects—the information relevant for meaning is also relevant for grammar. The input interpretation is consistent with the findings of Naigles and Hoff-Ginsberg (1998), who found that verbs used with more syntactic diversity by mothers are the ones used more frequently and with more syntactic diversity by children 10 weeks later.

The present findings suggest that the relevant question for future research, then, is not *whether* children—toddlers, even—can be flexible and productive with syntactic frames and extend lexical semantic meanings. Clearly, they can. The issue is really, *how early in development*, and *how quickly upon meeting a new verb*, do they do this and what factors influence this process.

LIMITATIONS

This study is, of course, limited by the fact that we have investigated the development of only a small number (34) of verbs and have tracked their development for only their first 10 uses. In particular, our exclusion of

make and *do* from the targeted verbs limits our conclusions about the grammatical contributions of light verbs, as these have been proposed as the pathbreakers for the transitive frame (Goldberg, 1999; Ninio, 1999). However, our verbs were chosen because previous data indicated that these 34 were among the earliest produced by 1-year-old English learners (e.g., Naigles & Hoff-Ginsberg, 1998); therefore, we do not anticipate that many other verbs would elicit earlier use and/or flexibility. Moreover, when the first uses of *make* were examined for two of the children, whose mothers recorded them at their own initiative (Mae and Stacey; see Tables 20 and 23, respectively), there was no evidence that *make* functioned as a pathbreaker for either one.

The generalizability of the present findings is also limited by the fact that we have only included eight children, although an *n* of 8 is large for the individual data analytic approach employed in this study. Because the current method excluded, for different reasons, both children who were extremely talkative and those who talked very little (see chapter II), the range of behavior of American English-learning toddlers at large is probably wider than seen here. It is likely that both more and less swiftly flexible children exist. Our conclusions might also be limited by the fact that we relied on the parents to note each of the first 10 instances of these 34 verbs, including self-repetitions. However, we have reason to believe that these eight mothers carried out just this task. First, we talked to each parent every week, once their child had begun producing verbs, giving them weekly reminders of how to report the relevant aspects of their children's verb use to the diary pages. Mothers who were not able to do this were quite open to telling us. Only the children whose mothers were able to carry out the task in the manner prescribed are included in the study. Moreover, if our documented child variations reflected only maternal variation in keeping the diary, then children should differ, consistently, in how speedy or slow they were to reach 10 instances, or in how flexible they were on all measures. That is, if some mothers were consistently more conscientious or more attuned to their child's speech, then some children should show precocity on all measures whereas other children should be consistently slow. In contrast, though, all of our children produced all 10 instances of at least some verbs in a very short period of time and all also took a very long time to reach 10 instances of other verbs (chapter III).

Finally, it is possible that, because they were listening for their children's use of these verbs, the mothers might have been more likely to use those verbs, themselves. More frequent use by mothers, though, would only have led to earlier use by the children, not to more or less flexible or productive use. That is, there is no reason to expect that more frequent use by mothers would have also meant more diverse use by mothers—in fact, we would argue that the folk theories of language "training" held by most middle-class mothers would lead them to less diverse uses (i.e., repetitions of the

same verb phrases). Thus, it seems quite unlikely that the mothers' keeping of diary records altered the development under study.

CONCLUSIONS

The overall picture of the functions, meanings, and grammar of verbs when they first appear in children's speech is one of flexible use. Children use their verbs in utterances that serve multiple communicative functions, with multiple actors and affected objects, and in multiple syntactic frames. This picture contrasts with descriptions in the literature of early verb use as restricted and context bound. Part of the explanation for these differing descriptions of early verb use may be in the unique nature of the database for the present analyses. Our database provided the completeness of sampling that is characteristic of diary studies, but our database included several children. Thus, our data reveal that whereas individual children can have restricted uses of individual verbs, restricted use is not a stage of language development through which all children pass. Like children's overextensions (e.g., calling strange men *Daddy*; Rescorla, 1980) and over regularizations (e.g., *goed*) (Marcus, Pinker, Ullman, Hollander, Rosen, & Xu, 1992), instances of context-bound and grammatically restricted verb use may be more salient than they are frequent.

The present findings argue that children are not as conservative language learners as some theories of language acquisition would have them be, either in meaning or in structure. At least for verb learning, they do not start small, with verb-specific grammars, but instead begin in the middle, with some flexibility and productivity manifested by the time they begin to use verbs at all. Children quickly match their input, observing from the very beginning of language use the subcategorization distinctions in the target language. Within their first 10 uses of newly acquired verbs children show that their grammars include *categories* of verbs, which are differentiated by grammatical privileges of occurrence. They do not appear to have a single category, *VERB*, in which all verbs are treated equally, nor do they seem to have 34 separate and isolated verb-specific representations. To reveal these findings, we had to develop a new method—a diary that targeted only verbs and that asked mothers to record only their child's first 10 instances of use. By restricting the aspects of language use, we made the diary tractable for data collectors such that more children could be studied. By using the diary method, we were able to collect uses in almost all of the contexts in which children talk. And by asking for 10 successive instances, we were able to demonstrate that—and track how—children's very first uses changed.