

# Children's Mastery of the Transitive Construction\*

Nitya Sethuraman  
Indiana University

Judith C. Goodman  
University of Missouri

## 1. The role of verb consistency for learning syntactic patterns

Considerable work suggests that children learning English learn the meaning associated with argument structure. Children hearing *He gorp*ed *him the book* can infer that *gorp* has the meaning of transfer (e.g., *give, throw, hand*). Goldberg et al. (2004) posited that hearing a verb used highly frequently in a particular syntactic pattern helps children learn to associate the meaning of that verb with that syntactic pattern. This association between particular verbs and argument structure, which we call "verb consistency", is the first step in learning the meaning of different argument structures. In support of this idea, Goldberg et al. found that mothers use particular verbs most frequently in specific syntactic patterns. For example, mothers of 28-month-old children used 39 different verbs in the SUBJECT VERB LOCATION pattern, but one verb, *go*, occurred in this pattern 39% of the time. Further, 76% of all uses of *go* were in the SUBJECT VERB LOCATION pattern. Similarly, a single verb, *put*, occurred most frequently (40% of uses) in the SUBJECT VERB OBJECT LOCATION pattern, and 94% of all uses of *put* were in the SUBJECT VERB OBJECT LOCATION pattern. In addition, children were sensitive to this consistency: When they began to produce these syntactic patterns, they produced the same verbs in these patterns far more frequently than others (see Table 1).

TABLE 1: TWO MOST FREQUENT VERBS USED IN TWO PATTERNS BY 28MO-OLD CHILDREN AND THEIR MOTHERS (DATA FROM GOLDBERG ET AL. 2004)

Group	Subject Verb Location	Subject Verb Object Location
<b>Mothers, 28mo</b>	353 uses 39 verbs <b><i>go</i> 39%</b> <i>come</i> 15%	250 uses 43 verbs <b><i>put</i> 40%</b> <i>take</i> 7%
<b>Children, 28mo</b>	224 uses 25 verbs <b><i>go</i> 54%</b> <i>get</i> 6%	51 uses 12 verbs <b><i>put</i> 31%</b> <i>get</i> 16%

Goldberg et al. suggest that children learn to associate the meaning of specific verbs used with high frequency in a particular syntactic pattern with the meaning of the pattern. Further, this facilitates learning the syntactic pattern.

## 2. Verb consistency in the transitive construction

One potential problem with this view is the transitive construction, which is used with a wide range of verbs and may not have one particular verb used most frequently. No one verb stands out in the transitive as a possible stepping stone to argument structure (e.g., Goldberg et al. 2004, Sethuraman 2002, Tomasello 2003).

---

\* We would like to thank Linda Smith, Aarre Laakso, and the IU Cognitive Development Lab for helpful comments and discussion.

It is unclear based on children's production of transitive utterances whether children associate the transitive pattern with a particular verb meaning. Ninio (1999) demonstrated that a variety of verbs are used first in the transitive by young children, and children continue to use a particular set of verbs for some time prior to adding other verbs. She analyzed the early uses of SUBJECT VERB OBJECT and VERB OBJECT patterns in two SVO languages, Hebrew and English, and found that children use a variety of verbs in these patterns, including *want, take, give, put, make/do, bring, find, get, see, hear, eat, and drink*. Ninio also finds that the more verbs children use in the SUBJECT VERB OBJECT pattern, the faster they add new verbs to that pattern. She argues that this early set of verbs might "represent the most appropriate prototype for the relevant syntactic combination. These verbs break the path for other verbs to follow without having to undergo the same difficult process of learning everything from scratch" (1999: 646-647).

This data raises the question of what constitutes consistent verb usage. Must a single verb be associated with a pattern or might a set of verbs facilitate learning? It also raises the question of how verb consistency might influence acquisition. Goldberg, et al. (2004) suggest that the reason hearing one verb most predominantly used in a particular pattern is useful is that the word meaning becomes associated with the syntactic pattern. This suggests that if multiple verbs are associated with the pattern from the outset, the pattern may be polysemous. To answer these questions, we must establish whether young children hear the transitive pattern used consistently with a particular verb. If the transitive pattern is instead associated with many verbs, it is important to determine what factors affect its acquisition. It may be that children cannot latch onto a single verb in learning the transitive pattern.

### **3. Input and the acquisition of the transitive pattern**

We examined two corpora for the verbs that parents and children use in the transitive pattern. We examined these verbs with the idea that the transitive pattern could be associated with more than one distinct meaning and that specific verbs might be used consistently with different meanings.

#### *3.1 Corpora*

We examined mothers' and children's speech in the Bates corpus (Bates et al. 1988, MacWhinney 2000). This corpus consisted of speech of 28 mothers and their children, at ages 20- and 28-months-old, observed longitudinally in the home for 15 minutes. Mother/child interaction consisted of free play, snack time, and story time. We examined the speech of mothers and children at both ages.

Our other corpus is the Goodman Longitudinal Study (Bates & Goodman 1997). It includes 28 children from 12 to 30 months of age. The sessions were one hour long once a month and consisted of a 10-minute free play session followed by a variety of experimental tasks designed to assess language and social development. The visits were recorded on audio and videotape. Sessions were transcribed using CHAT conventions (MacWhinney 2000) for the 22 children who had missed no more than one session at the ages of 18, 20, 22, 24, 26, 28, and 30 months.

We analyzed the transcripts from both the Bates and the Goodman longitudinal corpora for uses of the transitive SUBJECT VERB OBJECT pattern. We included only complete utterances that contained a lexical verb of English and followed English word order. We also did not include the following types of utterances in the analyses: incomplete, imitation, self-repetition, routines, unintelligible, ambiguous, involving "made up" verbs, idiomatic or set phrases, and unclassifiable utterances. Set phrases such as *thank you, wait a minute*, etc. were also discounted as being idiomatic phrases children often learn unanalyzed.

### 3.2 Verbs used by mothers and children in the transitive pattern

We first looked at *all* the verbs used in the SUBJECT VERB OBJECT pattern by children and their mothers in the Bates Corpus. Both mothers and children use a variety of verbs in the transitive pattern, and no single verb is used consistently in this pattern. These data are presented in Table 2:

TABLE 2: VERBS USED IN THE TRANSITIVE (BATES CORPUS)

<b>20mo mothers</b>	<b>28mo mothers</b>	<b>20mo children</b>	<b>28mo children</b>
165 uses 33 verbs	668 uses 69 verbs	4 uses 3 verbs	247 uses 51 verbs
<i>do</i> 25% <i>get</i> 12% <i>see</i> 8% <i>find</i> 7%	<i>do</i> 24% <i>have</i> 10% <i>get</i> 8% <i>eat</i> 7%		<i>get</i> 12% <i>want</i> 11% <i>eat</i> 6.5% <i>do, have</i> 6%

Neither mothers nor children use one specific verb most frequently in this pattern. The most common verbs used in this construction overall by both children and their mothers are *get*, *do*, *want*, and *have*, but *eat*, *see*, and *find* also occur frequently. Although the children use the same verbs as their mothers, the order of frequency doesn't match. The predominant verb used by mothers to both their 20-month and 28-month-old children is *do*; however, *get*, *want*, and *eat* are all more frequent than *do* for the 28-month-old children. Looking more closely, we see that the mothers' most frequent uses of *do* are of the form *you do it* and *what are you doing?* It is possible that the children rely upon other verbs besides *do* because its meaning is so abstract (p.c. Adele Goldberg).

The SUBJECT VERB OBJECT syntactic pattern is very different from the patterns examined by Goldberg et al. in which one central verb was used most frequently by both children and adults. In contrast, at least three or four different verbs are all used frequently in the SUBJECT VERB OBJECT pattern. Perhaps this should not be surprising: The SUBJECT VERB OBJECT pattern is associated with a wide range of meanings (Davis 1996, Dowty 1991, Goldberg et al., 2004).

It is important to note that several of the verbs used most frequently in the transitive have related meanings, namely *want*, *get*, and *have*. It could be that the meaning of *want* and its related verbs gives its semantics to the construction as a whole (p.c. Anat Ninio). However, we still see other unrelated verbs used frequently in this pattern, such as *do*, *see* and *eat*.

It is possible that each of the highly frequent verbs is associated with a different meaning of the transitive and that children use more than one central verb to latch onto the pattern. This hypothesis would be supported if parents use more than one central verb in the transitive pattern, using each central verb with a different meaning. Linking each verb to a distinct meaning could help children learn polysemous constructional meanings.

### 3.3 Examining separate meanings of the transitive

To assess whether the transitive pattern makes use of more than one central verb each of which is associated with its own meaning, we used two coding systems to divide up the uses of the transitive into separate senses. The first coding system is based on Tomasello (2003), who examined the 50 most frequent verbs used in transitive utterances. He divided the verbs used into four meaning categories: having objects, moving/transforming objects, acting on objects, and psychological activities. Verbs used in each of these categories are listed in Table 3:

TABLE 3: FIRST 50 VERBS USED IN THE TRANSITIVE (TOMASELLO 2003: 150)

<b>Having objects</b>	<b>Moving/ Transforming objects</b>	<b>Acting on objects</b>	<b>Psychological Activities</b>
<i>get, have, want, need, buy, keep, hold, use</i>	<i>take, find, put, bring, drop, make, open, fix, break, cut, close</i>	<i>do, eat, play, write, read, drink, draw, wash, wear, catch, hit, ride, turn, throw, bite, push, touch, help</i>	<i>see, like, say, know, watch, tell, show, mean, hear, hurt, try, love, thank</i>

The second coding system uses semantic relations based on Langacker (1991, 1999). We coded for relations of Agent/Patient (e.g., *I hit him*), Experiencer/Zero (e.g., *I want that*), and Agent/Mover (e.g., *I brought it*). Early verbs used in each category are listed in Table 4:

TABLE 4: VERBS USED IN THE TRANSITIVE BY CHILDREN AGES 18-22 MONTHS USING A CODING SYSTEM BASED ON SEMANTIC RELATIONS (DATA FROM GOODMAN CORPUS)

<b>Agent/Patient</b>	<b>Experiencer/Zero</b>	<b>Agent/Mover</b>
<i>bang, bite, break, catch, color, ding, do, drink, eat, get, have, help, hit, hold, hug, hurt, kiss, let, pick, play, poke, reach, read, show, spank, take, tickle, touch, wash, wear</i>	<i>find, hate, hear, know, like, look, love, need, see, want, watch,</i>	<i>blow, bring, drop, dump, give, open, push, put, throw, turn,</i>

#### 4. Results and Discussion

We examined whether parents and children are using the transitive in specialized ways, namely whether speakers are using different verbs with different meanings of the transitive. We found that all groups and ages showed essentially the same trends. Therefore for simplicity and because of space constraints, we only present here data from the older mothers in the Bates corpus and the oldest children in the Goodman corpus. We first examined the mothers' and children's uses of the transitive using Tomasello (2003)'s four meaning categories:

TABLE 5: MOST FREQUENT VERBS USED IN SUBJECT VERB OBJECT (CODING SYSTEM 1 BASED ON TOMASELLO 2003)

	<b>Having Objects</b>	<b>Moving objects</b>	<b>Acting on objects</b>	<b>Psych activities</b>
<b>28mo Mothers (Bates)</b>	164 uses 7 verbs <i>have 40%</i> <i>get 32%</i>	117 uses 23 verbs <i>take 22%</i> <i>make 21%</i>	289 uses 23 verbs <i>do 55%</i> <i>eat 17%</i>	98 uses 16 verbs <i>see 35%</i> <i>tell 12%</i>
<b>30mo Children (Goodman)</b>	500 uses 8 verbs <i>want 44%</i> <i>have 23%</i>	156 uses 20 verbs <i>open 28%</i> <i>make 15%</i>	470 uses 48 verbs <i>do 55%</i> <i>eat 6%</i>	171 uses 17 verbs <i>see 38%</i> <i>like 15%</i>

Although several verbs are used with each meaning category, one or two verbs are more frequent than others for each<sup>1</sup>. This suggests that children might use verb consistency to facilitate acquisition of the transitive, but that they might associate more than one meaning with this syntactic pattern.

We then examined the mothers' and children's uses of the transitive using the coding system based on Langacker's semantic relations. Table 6 below shows the two most frequent verbs used in the transitive pattern by mothers and children:

TABLE 6: MOST FREQUENT VERBS USED IN SUBJECT VERB OBJECT (CODING SYSTEM 2 BASED ON LANGACKER 1999)

	<b>Agent/Patient</b>	<b>Experiencer/Zero</b>	<b>Agent/Mover</b>
<b>28mo mothers (Bates)</b>	519 uses 43 verbs <b>do 31%</b> <i>have</i> 13%	111 uses 12 verbs <b>see 31%</b> <i>want</i> 28%	38 uses 14 verbs <b>turn 26%</b> <i>close</i> 16%
<b>30mo Children<sup>2</sup> (Goodman)</b>	785 uses 57 verbs <b>do 33%</b> <i>have</i> 15%	389 uses 13 verbs <b>want 57%</b> <i>see</i> 17%	115 uses 20 verbs <b>open 38%</b> <i>push</i> 9%

Again, we see that many verbs are used in each meaning category, though one or two tend to occur with greater frequency than the others. Thus, it is possible that one way children learn the transitive pattern is to associate it with several meaning categories. The children would learn these prototypical meanings based on consistent verb usage.

Verb consistency is unlikely to be the whole story, however. First, although one or two verbs tend to be more frequent, their use is not overwhelming the pattern. Rather, both mothers and their children use many different verbs with each meaning category. Second, no agreement exists as to what the meaning subcategories are. Rather, we've used two different coding systems and more could be designed. It would be desirable to know *a priori* whether a small set of distinct meanings really is associated with the transitive pattern and just what that set is.

If verb consistency is not the whole story, what other variables might affect children's acquisition of the transitive pattern? One possibility suggested by Tomasello and his colleagues is that children are making use of another kind of regularity in the pattern—that provided by pronoun usage.

---

<sup>1</sup> It is important to note, however, that while children may be sensitive to verb consistency within a particular frame, in some cases the verb may not cue a prototypical transitive meaning. In "Acting on Objects", *do* is the most frequent verb used. But upon looking at these uses more carefully, most of them are not prototypically transitive. Some uses of *do* are clearly transitive, such as *do a curtsy*, *do a baseball*, *do bonking sounds*, and *do a burpy*. However, most uses of *do* in the SUBJECT VERB OBJECT pattern are *do it*, *do that*, *do this*, and *do what?*, which are much more ambiguous in meaning and not prototypically transitive. In these examples, *it*, *that*, *this*, and *what* are part of the meaning of *do* itself and refer to the action represented by *do* (p.c. Ronald Langacker). The twenty-two children studied in the Goodman corpus produce *do* with an actual noun phrase (e.g., *do a curtsy*) only 7.0% of the time (47/678 uses). They produce *do* with a more abstract noun phrase (e.g., *do more*, *do another one*, *do one*, *do this/that one*, *do this/that thing*, *do all*, *do next one*, *do something*) 3.2% of the time (22/678 uses). The most frequent uses of *do* are as the forms *do it*, *do that*, *do this*, and *do what* which are produced 89.8% of the time (609/678 uses). Mothers' uses of *do* are similarly very rarely transitive.

<sup>2</sup> Eight uses of *give*, *show*, and *tell* as Agent/Recipient (e.g., *give him*) are omitted from this table. Although these uses do, strictly speaking, fall in the SUBJECT VERB OBJECT pattern, they are not prototypically transitive because they do not include a direct object (*him* is an indirect object).

#### 4.1 Role of pronouns in learning the transitive

One variable influencing the acquisition of syntactic patterns is that children may pay attention to highly frequent verbs in the input. Unlike other syntactic patterns, however, the SUBJECT VERB OBJECT pattern has more than one meaning and several highly frequent verbs. Thus, each meaning may be learned separately just as the multiple meanings of polysemous words are. Another important cue for children learning the transitive may be widespread use of pronouns in both subject and object positions. The regularity provided by pronouns may be important for children learning the transitive.

Pronouns may provide English-learning children with important information about syntactic patterns. Because there are a limited number of them and they occur with high frequency in parental input, they are easy markers for children to attend to. Pronouns provide children with morphological information (e.g., *I* vs. *me*, *he* vs. *him*). In addition, pronouns may provide children with syntactic information about the form of a construction. Dodson & Tomasello (1998) and Childers & Tomasello (2001) suggest that the transitive schema is structured around a "pronoun frame" (e.g., *He \_\_\_ it, I \_\_\_ it, you \_\_\_ him*), giving children a highly focused type of input that cues them onto the transitive. In other words, pronouns may provide children learning English with cues that help them identify transitive utterances.

In addition, Lieven and her colleagues (Lieven et al. 1997, Pine & Lieven 1993) point out that much of children's early word combinations are of the form "frames with slots", such as *here's a \_\_\_\_\_* and *more \_\_\_\_\_*. These frames with slots account for 60% of children's early multiword utterances. Similarly, children may be highly attuned to pronoun frames in the way that they use other frames with slots.

Transitive utterances with pre- and post-verb pronouns may serve as frames that children come to recognize while the small sets of verbs associated with particular meanings may help children learn what the transitive pattern can convey. We suggest that pronouns, in combination with high frequency verbs, may help children learn the transitive pattern.

#### 4.2 Pronouns are associated with particular verb classes

Laakso & Smith (2004) examined co-occurrence relationships between nouns and verbs in parental speech. They examined 59,977 utterances from 123 CHILDES transcripts selected randomly from various corpora. Clauses with no verbs, questions, passives, and copulas were excluded. 12,377 clauses remained for analysis.

They examined the most frequent subjects and objects used by parents in child-directed speech to children ages 1;4 – 6;1. Out of a total of 371 subjects and 907 objects, the most frequent subjects were: *you, I, we, it, he, they, she, that, what, mommy*. The most frequent objects were: (*clause*), *it, that, you, them, one, what, this, me, him*.

In addition, they suggest that pronouns help with learning verbs. Pronouns appear to systematically partition important classes of verbs. In particular, they note that when the object of the utterance is *it*, the verb class tends to encode motion or transfer (e.g., *turn, throw, push, hold, break*). *I* is more likely to be the subject of epistemic verbs (e.g., *bet, guess, think, see*), whereas *you* is more likely to be the subject of deontic verbs (e.g., *like, want, need*).

In a further analysis, we examine Laakso & Smith's data to find the most frequent subjects and objects in the transitive pattern. Out of a total of 39 total subjects and 172 total objects, the most frequent subjects were *you* (44%), *we* (17%), *I* (15%), *he* (5%), *they* (4%), *it* (2%), *me, she, mommy* (1%), *that, us, lady* (.7%). The most frequent objects were: *it* (21%), *you* (4.3%), *one* (4%), *him* (3.4%), *what* (3%), *them, thing* (2.6%), *some* (2.2%), *that* (1.7%), *this, car* (1.4%)

Out of 416 SUBJECT VERB OBJECT uses, 39% were Pronoun\_Pronoun frames and 50% were Pronoun\_Noun / Noun \_ Pronoun frames. The most frequent Subject\_Object pairs (out of 250 frames) were: 13% *you \_ it*, 3% *I \_ it*, and 2% *we \_ it*. No nouns were used in the top ten frames.

The transitive pattern appears to be different from other patterns examined by Goldberg et al. (2004), in that there is no one verb that is used most frequently. However, we suggest that transitive utterances that are anchored by pronouns together with the high frequency verbs that occur in them provide children with important information about transitivity and the meanings of transitive utterances.

## 5. Conclusion

There are many regularities available to children learning argument structure. Some syntactic patterns are associated with highly frequent verbs, which may help children learn these patterns. The transitive pattern is not as straightforward, because no one verb is used most frequently in SUBJECT VERB OBJECT. Rather, the transitive pattern seems to include several meaning categories each loosely associated with one or two frequent verbs. We suggest that children pay attention to both highly frequent verbs and other highly frequent lexical items. Syntactic patterns are generally linked to highly frequent lexical items— in some cases verbs, in some cases pronouns. Children may learn the transitive pattern by paying attention to pronouns and frequently occurring pronoun frames as well as the highly frequent verbs that occur with those pronouns and pronoun frames.

## References

- Akhtar, Nameera & Michael Tomasello (1997). Young children's productivity with word order and verb morphology. *Developmental Psychology* **33**, 952-965.
- Bates, Elizabeth & Brian MacWhinney (1987). Competition, variation, and language learning. In Brian MacWhinney (Ed.), *Mechanisms of Language Acquisition*. Hillsdale, NJ: Lawrence Erlbaum Associates, 157-193.
- Bates, Elizabeth, Inge Bretherton, & Lynn Snyder (1988). *From First Words to Grammar: Individual Differences and Dissociable Mechanisms*. New York, NY: Cambridge University Press.
- Bates, Elizabeth & Judith C. Goodman (1997). On the inseparability of grammar and the lexicon: Evidence from acquisition, aphasia and real-time processing. *Language and Cognitive Processes* **12**, 507-584.
- Bowerman, Melissa (1977). The acquisition of rules governing "possible lexical items": Evidence from spontaneous speech errors. *Papers and Reports on Child Language Development* **13**, 148-156.
- Bowerman, Melissa (1982). Reorganizational processes in lexical and syntactic development. In Eric Wanner and Lila R. Gleitman (Eds.), *Language Acquisition: The State of the Art*. New York, NY: Cambridge University Press, 319-346.
- Braine, Martin D.S. (1976). Children's first word combinations. *Monographs of the Society for Research in Child Development*, 41-164.
- Childers, Jane B. & Michael Tomasello (2001). The role of pronouns in young children's acquisition of the English transitive construction. *Developmental Psychology* **37**(6): 739-748.
- Davis, A.R. (1996). Lexical semantics and linking in the hierarchical lexicon. Unpublished PhD dissertation, Stanford University.
- Dowty, David (1991). Thematic proto-roles and argument selection. *Language* **67**, 547-619.

- Dodson, Kelly & Michael Tomasello (1998). Acquiring the transitive construction in English: The role of animacy and pronouns. *Journal of Child Language*, 25: 555-574.
- Fisher, Cynthia (1996). Structural limits on verb mapping: The role of analogy in children's interpretations of sentences. *Cognitive Psychology* 31, 41-81.
- Goldberg, Adele E., Devin Casenhiser, & Nitya Sethuraman (2004). Learning argument structure generalizations. *Cognitive Linguistics*, 15-3, 289-316
- Gropen, Jess, Steven Pinker, Michelle Hollander, Richard Goldberg, & Ronald Wilson (1989). The learnability and acquisition of the dative alternation in English. *Language* 65, 203-257.
- Langacker, Ronald W. (1991). *Concept, image, and symbol: The cognitive basis of grammar*. New York, NY: Mouton de Gruyter.
- Langacker, Ronald W. (1999). *Grammar and conceptualization*. New York, NY: Mouton de Gruyter.
- Laakso, Aarre & Linda B. Smith (2004). Pronouns predict verb meanings in child-directed speech. In Ken Forbus, Dedre Gentner & Terry Regier (eds.), *Proceedings of the 26th Annual Meeting of the Cognitive Science Society* (pp. 767-772). Mahwah, NJ: Lawrence Erlbaum Associates, Inc.
- Lieven, Elena V.M., Julian M. Pine & Gillian. Baldwin (1997). Lexically-based learning and early grammatical development. *Journal of Child Language* 24, 187-219.
- MacWhinney, Brian (1982). Basic syntactic processes. In S.A. Kuczaj II (Ed.), *Language development, syntax, and semantics*, Vol 1. Hillsdale, NJ: Lawrence Erlbaum Associates, 73-136.
- MacWhinney, Brian (2000). *The CHILDES project: Tools for analyzing talk* (3rd edn). Mahwah, NJ: Lawrence Erlbaum Associates.
- Ninio, Anat (1999). Pathbreaking verbs in syntactic development and the question of prototypical transitivity. *Journal of Child Language* 26, 619-653.
- Olguin, Raquel & Michael Tomasello (1993). Twenty-five-month-old children do not have a grammatical category of verb. *Cognitive Development* 8, 245-272.
- Pine, Julian M. & Elena V. M. Lieven (1993). Reanalysing rote-learned phrases: Individual differences in the transition to multi-word speech. *Journal of Child Language* 20: 551-571.
- Schlesinger, Itzhak M. (1982). *Steps to Language: Toward a Theory of Language Acquisition*. Hillsdale, NJ: Lawrence Erlbaum Associates.
- Sethuraman, Nitya (2002). The acquisition of verbs and argument structure constructions. Doctoral Dissertation. University of California, San Diego.
- Tomasello, Michael & Patricia Brooks (1999). Early syntactic development: A construction grammar approach. In Martyn Barrett (Ed.), *The development of language*. Philadelphia, PA: Psychology Press/Taylor and Francis, 161-190.
- Tomasello, Michael (1992). *First verbs: A case study of early grammatical development*. Cambridge, UK: Cambridge University Press.
- Tomasello, Michael (2003). *Constructing a language: A usage-based theory of language acquisition*. Cambridge, MA: Harvard University Press.