

## Two-Word Utterances

When does language begin? In the middle 1960s, under the influence of Chomsky's vision of linguistics, the first child language researchers assumed that language begins when words (or morphemes) are combined. (The reading by Halliday has some illustrative citations concerning this narrow focus on "structure.")

So our story begins with what is colloquially known as the "two-word stage."

The transition to 2-word utterances has been called "perhaps, the single most disputed issue in the study of language development" (Bloom, 1998).

A few descriptive points:

Typically children start to combine words when they are between 18 and 24 months of age. Around 30 months their utterances become more complex, as they add additional words and also affixes and other grammatical morphemes.

These first word-combinations show a number of characteristics. First, they are systematically simpler than adult speech. For instance, function words are generally not used.

Notice that the omission of inflections, such as -s, -ing, -ed, shows that the child is being systematic rather than copying. If they were simply imitating what they heard, there is no particular reason why these grammatical elements would be omitted. Conjunctions (*and*), articles (*the, a*), and prepositions (*with*) are omitted too. But is this because they require extra processing, which the child is not yet capable of? Or do they as yet convey nothing to the child—can she find no use for them?

Second, as utterances become more complex and inflections are added, we find the famous "over-regularization"—which again shows, of course, that children are systematic, not simply copying what they here.

### Chomsky's Influence

Research on child language was behavioristic in the years that preceded Chomsky's critique of Skinner, and his publication of *Syntactic Structures*:

"though there had been precedents for setting problems in the study of child language acquisition at a more abstract, cognitive level by continental scholars--most notably, Roman Jakobson (e.g., 1941 / 1968)--much of the research on child language acquisition at midcentury was influenced to a greater or lesser degree by the highly concrete, behaviorist orientation of B. F. Skinner and others. Two events were of major important in the change from behaviorist to cognitive thinking in research on child language. The first was Chomsky's classic review (1959) of *Verbal Behavior*, Skinner's major book-length work on the learning and use of language; the second

was the detailed longitudinal study of the acquisition of English by three young children conducted over a 17-month period by Roger Brown and others in the early 1960s (Brown, 1973)."

Ritchie, W. C., & Bhatia, T. K. (1999). Child language acquisition: Introduction, foundations, and overview. In W. C. Ritchie & T. K. Bhatia (Eds.), Handbook of child language acquisition, (pp. 3-30). San Diego: Academic Press, p. 3-4 note 2.

"A child who has learned a language has developed an internal representation of a system of rules" (Chomsky, 1965, p. 25).

The psychologist's task, it follows, is to determine what the child's rules are. "The linguist constructing a grammar for a language is in effect proposing a hypothesis concerning the internalized system" (Chomsky, 1968, p. 23).

Up to the 1950s, people simply counted characteristics such as sentence complexity, proportion of grammatical utterances, etc.

After Chomsky, the search was on for child grammars, assumed to be universal.

## **Roger Brown's Research**

In 1956 Roger Brown heard Chomsky for the first time, speaking at Yale. In 1962 he began a five-year research project on children's language at Harvard University. The historical significance of Brown's laboratory at Harvard can hardly be exaggerated. The names of students and colleagues who worked with Brown pop up all the time, to this day, in psycholinguistic research: the list includes Jean Berko Gleason, Ursula Bellugi, David McNeill, Dan Slobin, Courtney Cazden, Richard Cromer, Jill de Villiers, Michael Maratsos, Melissa Bowerman, Eleanor Rosche, Sue Ervin (now Ervin-Tripp), Steven Pinker.

Brown set out to write grammars for each of the stages of language development, by looking at the distribution of forms and construction patterns in spontaneous speech. In most cases the data allow for more than one grammatical description. "The description to be preferred, of course, is the one that corresponds to the way the speaker's linguistic knowledge is structured, the one that determines the kinds of novel utterance he can produce or understand, how he constructs their meanings, and what his intuitions are about grammatical well-formedness" (Bowerman, 1988, p. 28)

"Every child processes the speech to which he is exposed so as to induce from it a latent structure. This latent rule structure is so general that a child can spin out its implications all his life long.... The discovery of latent structure is the greatest of the processes involved in language acquisition, and the most difficult to understand" (Brown & Bellugi, 1964, p. 314)

Brown collected samples of spontaneous speech from three children, given the pseudonyms Adam, Eve, and Sarah. The corpus of collected data can be found in the

CHILDES archive. Eve was visited from age 18m to 26m, Adam from 27m to 42m, Sarah from 27m to 48m.

Dan Slobin described the project:

“We paid close attention to the auxiliary system and to word-order patterns, because these had played a central role in *Syntactic Structures*. We kept track of sentence types—affirmative, negative, and questions—in which use of auxiliaries and word order would vary. Linguistic growth was assessed in terms of things to be added to childish sentences to make them adult-like: the additions of omitted functors (inflections, prepositions, articles, and the like) and transformational operations. We did not categorize utterances in terms of communicative intent—that is, in terms of semantics or speech acts or extended discourse skills—and so we did not look for growth in terms of additions or enrichment of such abilities. Our central concern was with syntax and morphology, with some later interest in prosody. We worried about such questions as whether child grammar was finite state or transformational, and whether syntactic ‘kernels’ were the first sentence forms to appear in child speech” (Slobin, 1988, p. 11).

### **Mean Length of Utterance**

This simple measure of syntactic complexity was introduced by Roger Brown.

**Table 7. Rules for calculating mean length of utterance and upper bound** (Brown, 1973, p. 54)

1. Start with the second page of the transcription unless that page involves a recitation of some kind. In this latter case start with the first recitation-free stretch. Count the first 100 utterances satisfying the following rules.
2. Only fully transcribed utterances are used; none with blanks. Portions of utterances, entered in parentheses to indicate doubtful transcription, are used.
3. Include all exact utterance repetitions (marked with a plus sign in records). Stuttering is marked as repeated efforts at a single word; count the word once in the most complete form produced. In the few cases where a word is produced for emphasis or the like (no, no, no) count each occurrence.
4. Do not count such fillers as *mm* or *oh*, but do count *no*, *yeah*, and *hi*.
5. All compound words (two or more free morphemes), proper names, and ritualized reduplications count as single words. Examples: *birthday*, *rackety-boom*, *choo-choo*, *quack-quack*, *night-night*, *pocketbook*, *see saw*. Justification is that no evidence that the constituent morphemes function as such for these children.
6. Count as one morpheme all irregular pasts of the verb (*got*, *did*, *went*, *saw*). Justification is that there is no evidence that the child relates these to present forms.
7. Count as one morpheme all diminutives (*doggie*, *mommie*) because these children at least do not seem to use the suffix productively. Diminutives are the standard forms used by the child.
8. Count as separate morphemes all auxiliaries (*is*, *have*, *will*, *can*, *must*, *would*). Also all catenatives: *gonna*, *wanna*, *hafta*. These latter counted as single morphemes rather than as *going to* or *want to* because evidence is that they function so for the children. Count as separate morphemes all inflections, for example, possessive {s}, plural {s}, third person singular {s}, regular past {d}, progressive {ing}.
9. The range count follows the above rules but is always calculated for the total

transcription rather than for 100 utterances.

The title of Brown's 1973 book, summarizing of a decade of research (his own and other people's), was *A First Language: The Early Stages*. A follow-up was planned, describing the "later" stages, but never written.

What is this book about? "It is about knowledge; knowledge concerning grammar and the meanings coded by grammar.... The book primarily presents evidence that knowledge of the kind described develops in an approximately invariant form in all children, through at different rates. There is also evidence that the primary determinants of the order are the relative semantical and grammatical complexity" (58)

Here is an early attempt to write a "syntactic" grammar of two-word speech, first describing only 89 observed utterances (Table 4), then going "beyond the obtained sentences to the syntactic classes they suggest (Table 5) (Brown & Fraser, 1964, pp. 59, 61):

TABLE 4  
A Grammar Describing All and Only the 89 Utterances Obtained

Utterance →	{	<i>A</i> + <i>C</i> <sub>1</sub> <i>Daddy</i> + <i>C</i> <sub>2</sub> <i>Mummy</i> + <i>C</i> <sub>3</sub> <i>'s</i> + <i>C</i> <sub>4</sub> <i>See</i> + <i>C</i> <sub>5</sub> <i>That</i> + <i>C</i> <sub>6</sub> <i>The</i> + <i>C</i> <sub>7</sub> <i>There</i> + <i>C</i> <sub>8</sub> <i>Two</i> + <i>C</i> <sub>9</sub>	}
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- C*<sub>1</sub> → *block, book, candle, cricket, dog, fall, kitty, meatball, nurse, pillow, reel*  
*C*<sub>2</sub> → *bear, book, honey*  
*C*<sub>3</sub> → *bear, dimple, do, go, puff*  
*C*<sub>4</sub> → *bird, Daddy, picture*  
*C*<sub>5</sub> → *boy, eye, Mummy, radio, rocker, that*  
*C*<sub>6</sub> → *bird, boat, book, bowl, boy, broken, car, cookie, cow, Daddy, dirty, doggie, fuzzy, going, horsie, kitty, Mummy, Peter, pretty, puff, Rayma, rocker, sun, wire*  
*C*<sub>7</sub> → *bird, book, girl, horsie, kitty, mike, peas, puppy, reel, rug, whistle*  
*C*<sub>8</sub> → *bird, boat, book, boy, carriage, chair, Daddy, doll, dollie, Dru, go, goes, is, kitty, man, Mummy, pea, potty, radio, reel, 'tis*  
*C*<sub>9</sub> → *Bobby, chair, Gale, men, reel*

NOTE.—{ } means a choice of one of the contained sequences.

TABLE 5

A Grammar that Results from Filling In the Blanks in Table 3

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Utterance	→	$C_1 + C_2$
$C_1$	→	<i>A, Daddy, Mummy, 's, See, That, The, There, Two</i>
$C_2$	→	<i>bear, bird, block, boat, Bobby, book, bowl, boy, broken, candle, car, carriage, chair, cricket, cookie, cow, Daddy, dimple, dirty, do, dog, doggie, doll, dollie, Dru, eye, fall, fuzzy, Gale, girl, go, goes, going, honey, horsie, is, kitty, man, meatball, men, mike, Mummy, nurse, pea, peas, Peter, picture, pillow, patty, pretty, puff, puppy, radio, Rayma, reel, rocker, rug, sun, that, 'tis, whistle, wire</i>

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NOTE.—This grammar predicts the 89 utterances obtained plus 469 others.

## Brown's Two Main Findings

Two main findings are described in *A First Language*.

### 1. The “Semantic Look” of Stage I Speech

First, that the organization of early word-combinations cannot be described in purely syntactic terms. Brown and his coworkers quickly had to change direction. Syntactic descriptions didn't suffice.

That's to say, Stage I constructions couldn't be satisfactorily explained either as “telegraphic” speech, or in terms of “pivot-open” grammar.

#### *Telegraphic Speech*

One of the first ways of characterizing 2-word utterances was to say that they omitted “function words,” such as articles, auxiliary verbs, inflexions, prepositions, and the copula (*is*). The words that are spoken tend to be nouns, verbs, and adjectives, and their order tends to resemble the order in what one presumes the adult sentence would be. These characteristics make early utterances sound like telegrams. But inflections are omitted too, and these are free in telegrams. And a few functors such as *more*, *no*, *you* and *off* are found. More important problems are that this description uses adult categories. And it doesn't explain the productive character of children's two-word utterances.

#### *Pivot-Open grammars*

Martin Braine suggested that children have simple rules they use to generate two-word utterances. Each pair of words selects one from a small set of words—called “pivots”—that occur in many utterances, and always in a fixed position (either the first word, or the second). For example, “Allgone” is a first-position pivot: *allgone egg*, *allgone shoe*, but not *shoe allgone*. A second-position pivot “off”: *shirt off*, *water off*, etc. The choice of the second word is more “open.”

But “the rules simply do not fit the evidence; pivot words do occur in isolation, pivots occur in combination with one another, sentences longer than two-words are fairly common in I, and there is distributional evidence which indicates that more than two word-classes exist” (Brown, 1973, p. 110).

Brown and his colleagues noted that adults “expand” children’s utterances. These expansions don’t seem effective in teaching the child anything new (Cazden, 1965). But they do provide important clues to the researcher. If one assumes that adult expansions are generally accurate interpretations of the child’s utterance, then pivot-open grammars are inadequate because they underestimate the child’s knowledge. (Both would simply be described as O + O.)

For example, Lois Bloom showed that when one attended to context the utterance *mommy sock* was used by her child in two different ways. The first could be glossed as “It’s mommy’s sock,” while the second could be glossed “Mommy is putting on your sock.” A pivot-open grammar would not be able to distinguish these two.

### ***From Non-Semantic (Lean) Grammars to Semantic (Rich) Grammars***

So Brown and his co-workers started instead to describe two-word utterances in **semantic** terms. They employed a process that Lois Bloom called “rich interpretation”: using all the contextual information available to infer what the child *meant* by an utterance.

As Lois Bloom said, “evaluation of the children’s language began with the basic assumption that it was possible to reach the semantics of children’s sentences by considering nonlinguistic information from context and behavior in relation to linguistic performance. This is not to say that the inherent ‘meaning’ or the child’s actual semantic intent was obtainable for any given utterance. The semantic interpretation inherent in an utterance is part of the intuition of the child and cannot be ‘known’ with authority. The only claim that could be made was the evaluation of an utterance in relation to the context in which it occurred provided more information for analyzing intrinsic structure than would a simple distributional analysis of the recorded corpus” (Bloom, 1970, p. 10).

The result was the identification of a small set of basic **semantic relations** that the children’s utterances seems to be expressing. The eight most common of these are summarized in the following table (cf. Brown, p. 193-197):

#### **“Major Meanings at Stage I”**

<b>Two-Word Utterance</b>	<b>Semantic relation expressed</b>
<i>mommy come; daddy sit</i>	agent + action
<i>drive car; eat grape</i>	action + object
<i>mommy sock; baby book</i>	agent + object
<i>go park; sit chair</i>	action + location
<i>cup table; toy floor</i>	entity + location
<i>my teddy; mommy dress</i>	possessor + possession

<i>box shiny; crayon big</i>	entity + attribute
<i>dat money; dis telephone</i>	demonstrative + entity

It seems that children when they first combine words talk about objects: pointing them out, naming them, indicating their location, what they are like, who owns them, and who is doing things to them. They also talk about actions performed by people, and the objects and locations of these actions. Brown suggested that these are the concepts the child has just finished differentiating in the sensorimotor stage.

This kind of semantic characterization of children's speech continues in current research. For example, the following table is redrawn from Golinkoff & Hirsh-Pasek, (1999, p. 151.) The terminology differs a little, and Recurrence and Disappearance have been added (or at least were not in Brown's "top eight"), but other than this the picture is the same.

Two-Word Utterance	Probable meaning expressed	Possible gloss
<i>Mommy sock</i>	Possessor-possessed or Agent (acting on) an object	"That's Mommy's sock" or "Mommy, put on my sock"
<i>More juice!</i>	Recurrence	"I want more juice"
<i>Allgone outside</i>	Disappearance or Nonexistence	"The outside is allgone" (said after front door is closed)
<i>Throw chicken</i>	Action on object	"(Dad) is throwing the toy chicken"
<i>Car go</i>	Agent doing an action	"The car is going"
<i>Sweater chair</i>	Object at location	"The sweater is on the chair"
<i>Little dog</i>	Object and property	"The dog is little"
<i>That Susan</i>	Naming	"That is Susan" or "Her name is Susan"

### **What Grammar to Write?**

How to represent the knowledge that underlies children's utterances viewed in these semantic terms? What kind of grammar can one write? Brown (1973) reviewed several possibilities and concluded that "No fully explicit grammar proves to be possible" (p. 244). Bloom wrote essentially syntactic grammars, which however included information necessary to give an appropriate semantic interpretation. Schlesinger (assigned reading) wrote a semantic grammar. Antinucci & Paresi (optional reading) wrote a grammar that included some pragmatic information too.

The following is a grammar for one of the three children Bloom studied: it "consists of (1) the phrase structure, (2) lexico feature rules, and (3) transformations (Bloom, 1970, pp. 67-68):

### 3.2.4. Kathryn I Grammar

Phrase structure:

1.  $S_1 \rightarrow \text{Nom (Ng)} \begin{Bmatrix} \text{NP} \\ \text{VP} \end{Bmatrix}$
2.  $S_2 \rightarrow \text{Pivot} + \text{N}$
3.  $\text{VP} \rightarrow \text{V} \begin{pmatrix} \text{NP} \\ \text{Part} \end{pmatrix}$
4.  $\text{NP} \rightarrow (\text{a}) (\text{ADJ}) \text{N}$
5.  $\text{Nom} \rightarrow \begin{Bmatrix} \text{N} \\ \text{Dem} \end{Bmatrix}$

Lexicon feature rules:<sup>8</sup>

- i.  $\text{N} \rightarrow [+N, \pm\text{animate}, \pm\text{Nom}]$
- ii.  $[+\text{animate}] \rightarrow +[\_VB], -[\text{Nom}\_], -[\text{ADJ}\_]$
- iii.  $[+N] \rightarrow [\pm\text{Pron}]$
- iv.  $[+\text{Pron}] \rightarrow [\pm\text{Nom}]$
- v.  $[+\text{Nom}, +\text{Pron}] \rightarrow [\pm\text{Dem}]$
- vi.  $[+\text{Dem}] \rightarrow \text{this, that(s)}$
- vii.  $[-\text{Dem}] \rightarrow \text{I}$
- viii.  $[-\text{Nom}, +\text{Pron}] \rightarrow \text{it}$
- ix.  $[+N] \rightarrow \pm[\text{Prep}\_]$
- x.  $[+\text{Prep}] \rightarrow \text{on, off, up}$
- xi.  $\text{Ng} \rightarrow \text{no}$
- xii.  $\text{Part} \rightarrow [+particle]$
- xiii.  $[+particle] \rightarrow \text{now, here, outside, away, later, right}$
- xiv.  $\text{V} \rightarrow [+V]$
- xv.  $[+V] \rightarrow \pm[\_NP], \pm[\_Part]$
- xvi.  $\text{a} \rightarrow -[\text{Ng}\_]$
- xvii.  $\text{Pivot} \rightarrow \text{Hi, Oh, O.K., thank you}$
- xviii.  $\text{ADJ} [+ADJ]$
- xix.  $[+ADJ] +[\_N]$

Transformations:

$$(1) \text{ T}_{\text{Placement (optional)}} \quad \text{S.D.: } \begin{Bmatrix} \text{ADJ} \\ \text{Prep} \end{Bmatrix} \text{N}$$

$$\text{S.C.: } x_1 - x_2 \Rightarrow x_2 - x_1$$

$$(2) \text{ T}_{\text{Reduction (obligatory)}}$$

- (a) S.D.:  $X - \text{Ng} - Y$   
S.C.:  $x_1 - x_2 - x_3 \Rightarrow x_2 - x_3$
- (b) S.D.:  $\# - X - Y - Z$ , where X, Y, Z are category symbols<sup>9</sup>  
S.C.:  $\# - x_1 - x_2 - x_3 \Rightarrow \# - x_i - x_j$ ,  
where  $0 \leq i < j \leq 3$

$$(3) \text{ T}_{\text{Placement (optional)}}$$

- S.D.:  $X - \text{VP}$ , where X may be Ng or null
- S.C.:  $x_1 - x_2 \Rightarrow \text{a} - x_1 - x_2$

### ***Criticism of Interpretive Analysis***

An interesting criticism of these semantic analyses was made by Howe in 1976. Howe noticed a lack of consistency across semantic categorization of two-word utterances by Bloom, Slobin, Schlesinger and Brown, and suggested that the identification of semantic relations actually tells us more about adult interpretation of children's speech than it does about what the child has in mind.

"Overall, the existence of contradictions between the categories presented in Table 1, the fact that some of the categories are not always mutually exclusive and the fact that it is hard to demonstrate that some of the so-called 'semantic' distinctions are more than syntactic alternatives for expressing the same meaning, make it unlikely that Bloom, Brown, Schlesinger and Slobin have produced an adequate categorization of the meanings common to the speech of children at the beginnings of word combination or indeed of adults.... [A]ll four writers tacitly assumed that the two-word utterances of young children always express a meaning adults might express using these words and hence their aim was to specify which of the meanings adults might express occur in the first word combinations" (Howe, 1976, p. 34).

Howe asserted that (as she later put it) "there was no evidence that children at the beginning of word combination recognize a world containing agents, locations, and so on" (Howe, 1981, p. 443).

It is interesting to read the next rounds of this debate: Bloom, Capatides, & Tackeff (1981), Golinkoff (1981), and Howe's reply (1981). Bloom is witheringly derisive (and seems to miss the point of Howe's article), Golinkoff is more constructive. Howe accepts Golinkoff's suggestion that *non-linguistic* data will show us how a child understands their situation, and she concludes that so far the research shows "that children do not discover that language encodes roles [played in actions and states of affairs, as distinct from *entities* involved in actions and states of affairs], until some time after their first word combinations" (451). But I think there's a larger point here that I'll explore in class.

### ***Brown's conclusions about Stage I***

Brown drew the following conclusions about Stage I:

"The Stage I child operates as if all major sentence constituents were optional, and this does not seem to be because of some absolute ceiling on sentence complexity. In Stage II and after we shall see that he operates, often for long periods, as if grammatical morphemes were optional. Furthermore, the child's omissions are by no means limited to the relatively lawful omissions which also occur in adult speech. He often leaves out what is linguistically obligatory. This suggests to me that the child expects always to be understood if he produces any appropriate words at all. And in fact we find that he would usually be right in this expectation as long as he speaks at home, in familiar surroundings, and to family members who know his history and inclinations. Stage I speech may then be said to be well *adapted* to its communicative purpose, well adapted but *narrowly* adapted. In new surroundings and with less familiar addresses it would

often fail. This suggests that a major dimension of linguistic development is learning to express always and automatically certain things (agent, action, number, tense, and so on) even though these meanings may be in many particular contexts quite redundant. The child who is going to move out into the world, as children do, must learn to make his speech broadly and flexible adaptive" (Brown, 1973, p. 244-245).

## 2. The Acquisition of Grammatical Morphemes in Stage II

The second major finding that Brown reported in *A First Language* was that "a set of little words and inflections begins to appear: a few prepositions, especially *in* and *on*, an occasional article, an occasional copula *am*, *is*, or *are*, the plural and possessive inflections on the noun, the progressive, past, and third person present indicative inflections on the verb. All these, like an intricate sort of ivy, begin to grow up between and upon the major construction blocks, the nouns and the verbs, to which Stage I is largely limited" (Brown, 1973, p. 249).

Brown found that the 14 of these grammatical morphemes of English that he selected for detailed study were acquired in a fixed and universal order. These are the grammatical morphemes we discussed in an earlier class: affixes like *-s*, *-ed*, {PAST}, and small function words like *on*, *in*, *the*. We've already noted that these morphemes are omitted from the first word-combinations. Brown studied the way they are gradually added to a child's speech. This takes place in what he called Stage II. The child begins to explicitly mark notions such as number, specificity, tense, aspect, mood, using the inflections or unbound morphemes.

Of course, Brown was studying only three children, but the finding of invariant order has stood up when larger numbers of children have been studied. For example, de Villiers and de Villiers (1973) replicated his finding with a sample of twenty-one children.

Brown offered evidence that the order of their acquisition was determined by their linguistic complexity. (That's to say, the number of features each of them encoded.)

(Though he noted too that children differ greatly in their *rate* of acquisition of these morphemes.)

Order	Morpheme	Example
1.	present progressive	<i>singing; playing</i>
2/3.	prepositions	<i>in the cup; on the floor</i>
4.	plural	<i>books; dolls</i>
5.	irregular past tense	<i>broke; went</i>
6.	possessive	<i>Mommy's chair; Susie's teddy</i>
7.	copula uncontractible	<i>This is my book</i>
8.	articles	<i>The teddy; A table</i>
9.	regular past tense	<i>walked; played</i>
10.	third-person present tense regular	<i>he climbs; Mommy cooks</i>

11.	third-person present tense irregular	John <i>has</i> three cookies
12.	auxiliary uncontractible	She <i>was</i> going to school; <i>Do</i> you like me?
13.	copula contractible	<i>I'm</i> happy; you <i>are</i> special
14.	auxiliary contractible	Mommy's going shopping

Brown examined each utterance to see whether it required any of these morphemes to make it fully grammatical by adult standards, attending to both linguistic and nonlinguistic context. E.g., when the child points to a book and says *that book*, Brown inferred that there should have been a copula (*'s* or *is*) and an article (*a*). Then he checked how many of these obligatory positions for each morpheme were actually filled with the appropriate morphemes at each age.

Acquisition—defined as the age at which a morpheme is supplied in 90 percent of its obligatory positions—was remarkably constant across Brown's three subjects.

Why did Brown study these morphemes? Presumably because they are at first omitted. But more importantly, he was trying to test the hypothesis that children are *taught* grammar by adults. And Brown found that frequency of exposure (in adult speech) was not a predictor. For example, adults used articles more frequently than prepositions, but children acquired these in the opposite order.

Brown suggested that **linguistic complexity** does predict acquisition. The morphemes differ in both semantic complexity (the number of semantic features encoded) and syntactic complexity (the number of rules each requires). For example, the copula verb encodes both number and temporality. These two types of complexity are highly correlated, so they cannot be teased apart, but in either case they predict order of acquisition.

The other important change that occurs in Stage II is that, as utterances grow in complexity, the child begins to combine two or more of the basic semantic relations from Stage I:

*Adam hit ball*

= agent + action + object

= agent + action, *plus* action + object

### ***The Other Stages of Language Acquisition***

Each of the five stages that Brown distinguished is named for the linguistic process that is the major new development occurring in that stage ("or for an exceptionally elaborate development of a process at that stage" p. 59).

Thus we have:

**Stage I. Semantic Roles & Syntactic Relations. MLU: 1.0 – 2.0**

agent, patient, instrument, locative etc.

expressed (in simple sentences) by

linear order, syntactic relations, prepositions or postpositions.

**Stage II. Grammatical Morphemes & the Modulation of Meaning. MLU: 2.0 – 2.5****Stage III. Modalities of the Simple Sentence. MLU: 2.5 -**

Next the child forms transformations of simple declarative sentences: yes-no interrogatives, question request, negation, imperative. During the earlier stages children use intonation to mark different sentence modalities. Now they begin to use morphosemantic devices to mark negatives, questions, and imperatives.

**Stage IV. Embedding of Sentences**

One simple sentence will now become used as a grammatical constituent or in a semantic role within another sentence.

**Stage V. Coordination of Simple Sentences & Propositional Relations**

Sentences are linked together with connector words.

**Individual Differences**

Brown also noted some individual differences among Adam, Eve, and Sarah. Two of the children combined V with N, and also used N for possession: *eat meat, throw ball, mommy sock*. But the child third combined V (or objects of possession) with pronouns: *eat it, do this one, my teddy*.

These two strategies were found by other researchers too. Catherine Nelson called them **pronominal & nominal** strategies (they have also been called “holistic & analytic”; “expressive & referential”), and noted that they could be seen in one-word utterances also: some children tend to produce single-word utterances that are nouns, other children tend to use social or personal words such as *hi, bye, and please*.

Subsequent research has explored the connections between these strategies and later development, cognitive style, and input differences (cf. Shore, 1995. *Individual differences in language development*, Sage).

However, these strategies converge over time. By MLU=2.5, sentence subjects (agents) are typically pronominal, and predicate objects (patients) are typically nominal.

## Directions After Brown

By the mid-1970s grammar-writing was dying out. Incorrect predictions had discouraged researchers, as had the problem of indeterminacy: the fact that more than one grammar could be written.

Interest was growing in other considerations: in the role of semantics; in cognitive precursors to syntax, and to language in general; in mother-child interaction; and in the pragmatic uses to which early speech is put. In the view of some people, linguistic structures and operations became neglected.

### 1. How Does the Child go from Semantics to Syntax?

We've seen that Brown's research found that the grammar of children's early word combinations was better described in semantic than in syntactic terms. If this is so, how does a child make the transition from a semantic grammar to the adult grammar? Researchers continue to argue about this.

**Steven Pinker** (1984, 1987) suggests that children use semantics to enter the syntactic system of their language. In simple "basic sentences" the correspondence between things and names maps onto the syntactic category of nouns. Words for physical attributes and changes of state map onto verbs. Semantic agents are almost always the grammatical subjects of sentences. This semantic-syntactic correspondence in early utterances provides a key to abstract syntactic categories of grammar.

**Paul Bloom** has argued that children actually are using syntactic categories from the start, and he cites as evidence for this the fact that children will they place adjectives before nouns but not pronouns:

*big dog* but not:  
\* *small she*

Some linguists have offered a syntactic description of Stage I utterances. They argue that at this stage children merely have a lexicon and a limited set of phrase structure rules in deep-structure. They lack functional categories such as INFL (inflectionals) and COMP (complementizers). No transformations exist at this stage: instead, elements of the deep structure are assigned thematic (i.e. semantic) roles to yield the surface-structure. And they have proposed that the lack of grammatical subjects in Stage I utterances reflects the default setting of a "null-subject parameter." (Since in languages like Italian and Spanish a subject is optional.)

**Lois Bloom** (1990b) has suggested that children simply have a more limited processing capacity at this age. Sentence subjects are often provided by context, and so can be safely omitted.

**Dan Slobin** has proposed that "children create grammars in which clearly identifiable surface forms map onto basic semantic categories" (1988, p. 15).

For example, locative prepositions—in, on, under—are omitted in early child speech. They are used earlier in languages when they are encoded more saliently—as noun suffixes or as postpositions following nouns. At the same time, there is a common order of emergence across languages: simple topological notions of proximity, containment and support (in, on, under, next to), with locative relations embodying notions of perspective (back, front) always later. Slobin infers that “conceptual development provides the content for linguistic expression, while linguistic discovery procedures are necessary for working out the mapping of content according to conventions of particular languages” (p. 15).

Slobin has looked carefully at the English grammatical morphemes—and their equivalents in other languages—to see how they are used *before* they are completely acquired (by Brown’s 90% criterion). He finds that children generally use the morphemes systematically, though their use is still “incomplete” by adult standards. For example, a Russian child applied the accusative inflection only to nouns that “were objects of direct, physical manipulation, such as ‘give,’ ‘carry,’ ‘put,’ and ‘throw,’ omitting the accusative for less manipulative verbs such as ‘read’ and ‘see.’”

Children will “organize systems of pronouns and case inflections; but, to begin with, children will organize these various forms to express particular, child-oriented speech functions” (p. 18). They are using the resources of the adult language to mark distinctions that are salient to them.

Slobin has also proposed some “universal language-learning principles.” These are an attempt to explain observed cross-language regularities in order of acquisition. “According to Slobin, the child has certain concepts, based on cognitive growth, that are expressed through the language system. Using certain principles of acquisition, the child scans the language code to discover the means of comprehension and production” (Owens, 2001, p. 214-215).

1. Pay attention to the ends of words
2. Phonological forms of words can be systematically modified
3. Pay attention to the order of words and morphemes
4. Avoid interruption and rearrangement of linguistic units
5. Underlying semantic relations should be marked overtly and clearly
6. Avoid exceptions
7. The use of grammatical markers should make semantic sense

### ***Knowledge of Verb syntax***

**Lois Bloom** asserts that learning the argument structure of verbs, and the syntactic differences for different thematic relations is the foundation for acquiring a grammar. Verbs play a central role in further multiword utterances. Opinions differ, however, on how knowledge of verb syntax is acquired. Bloom suggests that the first verbs are those that name actions (*do, make, push, eat*). Nouns and pronouns take thematic roles (agent, object) in relation to these actions. Bloom says that this implies that children’s “theories” of objects, space, and causation are important here.

A few all-purpose verbs—“pro-verbs”—are used for most early sentences. E.g., *do*, *go*.

With these, verb argument structures, verb inflections, and Wh-questions are learned.

Subsequently, the child adds the syntax for negation, noun- and verb-inflection, and questions. And then moves on to embedded verb phrases (“*drink [Mommy juice]*”)

## 2. From Semantics to Semantics

Language involves a great deal of categorization. “The forms of language are themselves categories, and these forms are linked to a vast network of categorical distinctions in meaning and discourse function” (Bowerman, 1988, p. 28-29).

**Melissa Bowerman** has argued that adult language always has a level of semantic organization. The semantics of language is organized in terms of categorical oppositions, which seem distinct from perceptual or cognitive organization. Consider a button placed in the palm of someone’s hand. Ask them to slowly close their hand. When does the button stop being *on* the hand and become *in* the hand? The perceived situation changes gradually, continuously. The linguistic categorization is discontinuous, abrupt, and binary.

Furthermore, these categorical distinctions differ across languages. Spanish uses *en* for both *in* and *on*. Dutch uses *op* for objects placed on a horizontal surface, or securely attached to a non-horizontal support (such as a magnet on a fridge door), but *can* for an object attached to a non-horizontal surface by a restricted point (such as a picture hanging on the wall).

Or consider the notion of *animacy*. English uses *who* for humans but *what* for both animals and inanimate objects. Russian uses *kto* for humans and animals, and *cto* for inanimate objects.

Another example. In English, the prefix *un-* has a “covert” semantic meaning: it is applied only to verbs with a covering, enclosing, and surface-attaching meaning. So we say *uncover*, *uncoil*, *undress*, *unfasten*, *unlock*, *unroll*, *untangle*, *untie*, *unwind* but not *unbreak*, *undry*, *unhang*, *unheat*, *unlift*, *unmelt*, *unopen*, *unpress*, *unspill*. How do children learn this kind of odd category?

Bowerman (1988) says “How children perform this task—how they apply their general nonlinguistic understanding of the world to solving the delicate and finely articulated semantic categorization puzzles posed by their language—preoccupied Roger [Brown] already 30 years ago. And despite major changes in psychologists’ conceptions of the structure of semantic categories (from ‘criterial attributes’ to ‘prototypes’...)” we still don’t know the answer.

Bowerman concludes that we must assume there is an interaction between the child’s non-linguistic cognition and the semantic structure of the “linguistic input” the child hears, and that these both contribute to the child’s grasp of the semantics of their language. But we have no real idea of how these two interact.

### 3. Where does Early Semantics Come From?

If early language is semantic rather than syntactic, an obvious question to ask is where the semantic relations expressed in two-word utterances come from. And this leads immediately to the study of earlier speech; to study of one-word utterances. Remember that Brown started with two-word utterances because one word has no syntax to it. But one word can surely express something semantic. As the interest shifted to semantics, so researchers moved 'back' to look at one-word utterances.

But, assuming that semantic categories show up in one-word utterances too, where do they come from? In the 1970s, the answer was thought to lie in non-linguistic or pre-linguistic cognitive development, especially those cognitive developments of infancy described by Piaget. Eleanor Rosche found "basic level" grouping. Research on color terms showed that they have a universal perceptual basis, even when different languages carve up colors with different terms.

Notions of space and time, and those of agent, action, and location, were seen to develop before language, and outside language.

### 4. Child-Directed Speech: "Input"

But studying semantics (and pragmatics) requires inferences about meanings and intentions, both of them much less directly visible than linguistic forms. How to do this? Rather problematically, the most widely practiced solution was to use linguistic forms as a guide to the child's meanings and intentions (de Villiers, 1988, p. 59).

Jill deVilliers showed that middle-class U.S. adults use the following simplifications when speaking to small children:

#### Phonological Simplifications:

- Higher pitch and exaggerated intonation
- Clear pronunciation
- Slower speech
- Distinct pauses between utterances

#### Syntactic Differences:

- Shorter and less varied utterance length
- Almost all sentences well-formed
- Many partial or complete repetitions of child's utterances, sometimes with expansion
- Fewer broken sentences
- Less grammatical complexity

#### Semantic Differences:

- More limited vocabulary
- Many special words and diminutives
- Reference to concrete circumstances of here and now
- Middle level of generality in naming objects

### Pragmatic Differences

More directives, imperatives, and questions

More utterances designed to draw attention to aspects of objects

## 5. Social Precursors

Brown granted that “much meaning is carried by the structure and content of social interaction” (13). But his research looked at mother-child interaction only as a “source of linguistic training.” “Conversation was [viewed as] a source of knowledge, not a skill to be studied in its own right at that time.” Increasingly, researchers started to examine the possible role that social relationships and social interaction play in children’s learning of language.

### Problems with Brown’s Approach

Here’s one:

The semantics that Brown paid attention to was the semantics of propositions or assertions. (cf. p. 29). So that what Brown calls a ‘simple sentence’ is a sentence that makes a declarative assertion. His approach looks at the sentence in isolation, and assumes that meaning is carried (coded) in grammar. In fact, meaning depends on context, on speaker and hearer and circumstances of production, on surrounding linguistic context, on presuppositions and other tacit knowledge not part of the sentence (or even the utterance).

Semantics is not a matter solely of propositional content. There is an important difference between a “truth-conditional” theory of meaning and a “use-conditional” theory of meaning (Wittgenstein, Grice, Strawson).

The latter gives “logical priority to utterance-meaning over sentence-meaning.... All boundaries between formal and contextual aspects of language are seen as artificial and ill conceived; the system as a whole is completely contextual and does not possess autonomous components. If it is agreed that the task of pragmatics is the study of language use in context, and if all language is inherently contextualized, then pragmatics is the most general discipline encompassing all aspects of language” (Ninio & Snow, 1999, p. 349-350)

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