1 Small talk

Most of the time we adults take language for granted – unless of course we have to learn a new one. Then, things change pretty quickly. We can't get the pronunciation right, and we can't hear the difference between sounds. There are too many new words, and we forget ones that we learned just the day before. We can't say what we want to say, and we can't understand anything either, because everyone speaks too fast.

Then, as if that isn't bad enough, we come across a three-year-old child and watch in envy and amazement as she talks away effortlessly in that impossible language. She can't tie a knot, jump rope, draw a decent-looking circle, or eat without making a mess. But while she was still in diapers, she figured out what several thousand words mean, how they are pronounced, and how they can be put together to make sentences. (I know that I've used "she" all the way through this paragraph, as if only girls learn language. Since English doesn't have a word that means "he or she," I'll simply alternate between the two. I'll use "she" in this chapter, "he" in the next chapter, "she" in the third chapter, and so forth.)

Children's talent for language is strangely limited – they're good at learning language, but not so good at knowing what to say and what not to say.[1]

> "Daddy, did your hair slip?" – *three-year-old son, to his bald but long bearded father*
>
> "Why don't you get some expensive money?" – *three-year-old daughter, when told by her mother that she could get a small toy, but that the ones she had asked for were too expensive*
>
> "I wish someone we knew would die so we could leave them flowers." – *six-year-old girl, upon seeing flowers in a cemetery*
>
> "If I was a raccoon, I would eat the farmer's corpse." – *a kindergartener, writing a story about what he would do if he were a raccoon*
>
> "How will that help?" – *kindergarten student, when the class was instructed to hold up two fingers if any of them had to go to the bathroom*

These samples of "childspeak" are funny because of the misunderstandings that they contain about rather basic things in the world – beards, money, raccoons, death, going to the bathroom in kindergarten, and so on. It's easy to lose sight of what they *don't* contain – mispronunciations, words with the wrong meanings, or grammatical errors.

There is something very intriguing about this. Despite their naiveté about the world in general, children can make and hear contrasts among dozens of speech sounds, they have learned thousands of words without having heard a single definition, and they are able to build and understand sentences of impressive complexity. Herein lies the mystery of language acquisition. How can children be so good at language, and so bad at almost everything else?

Sounds, words, and sentences

From a parent's point of view, the most important and exciting thing about language acquisition is probably just that it allows their children to talk to them. But exactly what does it take to be able to talk? And how do children get from the point where they can't do it to the point where they can?

Most children start producing words some time between the ages of eight and twelve months or so, and many children have ten words in their vocabulary by the age of fifteen months. Things gradually pick up speed from that point on. Whereas an eighteen-month-old child may learn only one or two new words a day, a four-year-old will often acquire a dozen, and a seven-year-old will pick up as many as twenty. (That's more than one per waking hour!)

How does this happen? Adults don't pause between words when they speak, so how do children figure out where one word ends and another begins? How do they learn to make words plural by adding the suffix *-s* and to put verbs in the past tense by adding *-ed*? Why do we find errors like *eated* and *goed*? Why do children say things like *I can scissor it* and *I sharped them*?

By themselves, words are just empty shells, and there's no point in learning a new word if you can't also learn its meaning. Children are remarkably good at this too – so good in fact that they are often

able to learn a word's meaning the first time they hear it used. For instance, a child who sees a horse running in a field and hears her mother say "horse" typically figures out right away that the word refers to the animal, not to its color, or to its legs, or to the fact that it's running. What makes this possible?

Meaningful words are the building blocks out of which we create sentences, our principal message carriers. Most children begin producing sentences some time between the ages of eighteen and twenty-four months, at about the point where they have vocabularies of fifty words or so. First come two-word utterances like (*Mommy here* and *That mine*), then longer telegram-like sentences that are missing little words like *the* and *is* as well as most endings (*That a green one. Mommy drop dish*).

By the age of three, the basics of sentence formation are in place and we find many sentences worthy of an adult – *I didn't know that one stands up that way*, *Does that one get a button?*, and so on.[2] How does a child master the craft of sentence carpentry at such an early point?

A whole different set of challenges face the child when it comes to the *meaning* of sentences. How, for example, is a child who can only say one or two words at a time able to make herself understood? How does she figure out that *The car was bumped by the truck* means the exact opposite of *The car bumped the truck* even though the words *car*, *bump*, and *truck* occur in the same order in both sentences? Why doesn't *The doll is easy to see* mean that the doll can see well?

And then there are speech sounds – the stuff of nightmares for adult language learners. Just how does a child go about distinguishing among dozens of speech sounds? And, equally importantly, how does she go about figuring out how to *make* those sounds and then assemble them into fluent melodies of syllables and words? What, if anything, does babbling have to do with all of this? Do children really produce all the sounds found in human language before learning to speak their own?

All of which brings us to the ultimate question: how DO children learn language? Every time I'm asked that question, my first inclination is to respond by simply saying that I wish I knew. In a way, that's the most honest answer that anyone can give. The fact of the matter is that we still don't understand how children learn

language – any more than we have figured out how the universe works, exactly what happened to the dinosaurs, or why we can't all live for two hundred years.

But that doesn't mean that we are completely in the dark. On the contrary, research in the last three decades has yielded many exciting and important findings that reveal a great deal about how language is acquired. The job of this book is to report on those findings in a way that makes them accessible to scholars, students, and parents who are not specialists in the field of language acquisition research.

Methods 101

There are basically two ways to go about studying child language. The first is called "experimental," because it involves conducting experiments. Contrary to popular belief, experiments don't have to involve a laboratory or special equipment – although some do.

An experiment is really just a way to test an idea. Good experiments are often ingeniously simple, and you don't have to be a specialist to understand them. In the chapters that follow, we'll have a chance to look at the results of some of the most famous of these experiments to see what they tell us about children and their language.

The second way to study child language is called "naturalistic," since it relies on the observation of children's speech in ordinary everyday situations. Two techniques are particularly popular.

One involves keeping a language diary. For the first few months after a child begins to talk, it may be possible to write down each and every one of her utterances – or at least each and every one of her NEW utterances. (For those of you who'd like to keep your own diary, you'll find some guidelines in Appendix 1 at the end of the book.)

By the time a child is two years old, though, she typically becomes so talkative that it's impossible to keep up. From that point on, a diary is usually used just to make note of more specific sorts of things, like the pronoun in *My did it* or the double past tense in *I ranned away*. A different research technique is needed to keep track of other aspects of development.

As a child becomes more loquacious, acquisition researchers often gather naturalistic data by recording samples of her speech and conversations, usually for about an hour every two weeks. (These days, researchers like to make video recordings rather than just audio recordings. That allows them to have a record not only of what children say but also of what they are doing, what they are looking at, what gestures they use, and so on.) Once transcribed and analyzed, these speech samples become a linguistic "photo album" that captures many of the major milestones in a child's journey to language.

Thanks to the efforts of dozens of researchers over the past thirty years, there is now a significant database of child speech transcripts, both for English and to a lesser extent for various other languages as well. These are available to everyone through the Child Language Data Exchange System, or CHILDES (http://www.childes.psy.cmu.edu/).[3] (In case you'd like to do some recording and transcription of your own, I've included some basic information in Appendix 1.)

As we will see in the chapters that follow, both observational and experimental techniques have a place in the study of child language. Each is appropriate for answering particular types of questions, and each is subject to limitations that may make it inappropriate for other types of research. You'll see lots of examples of how both techniques are used as we proceed.

What's next

To make our task more manageable, it helps to divide language into its component parts – sounds, words, sentences, meanings, and so on – and deal with them in separate chapters. This is a bit of a distortion, I admit, since children don't first learn sounds, then words, then sentences, and then meanings.

In reality, children start using words and learning meanings before they master all of a language's sounds. And they usually start building sentences after they acquire just a few dozen words. So, there's actually an extended period of time during which children are working on sounds, words, meanings, and sentences all at

once. But it'll be a lot easier for us to figure out what's going on if we can untangle these different things and look at them separately.

We'll get started on all of this in the next chapter by talking about how children identify and learn the words of their language. But if you're more interested in how they learn meanings, or sentences, or sounds, feel free to skip ahead to another chapter. Each chapter can be read independently of the others and, hopefully, each will pique your curiosity about what comes next.

Just one word of reassurance before beginning, especially for readers who have young children of their own at home. When it comes to language acquisition, all children share the same destination, but no two follow exactly the same path or travel at exactly the same speed. Except in the rarest of cases, these differences should be a cause of delight rather than concern. Children need people who will listen to them and talk to them. Beyond that, they typically do very well on their own, so there's no need to take on the role of teacher. Just watch and listen – something amazing is about to happen.

2 The great word hunt

A child's first birthday is cause for special celebration in most cultures. It's a sign of survival and growth. By this age, children have their first teeth, they are able to eat solid food, and they're about ready to take their first steps, if they haven't already done so.

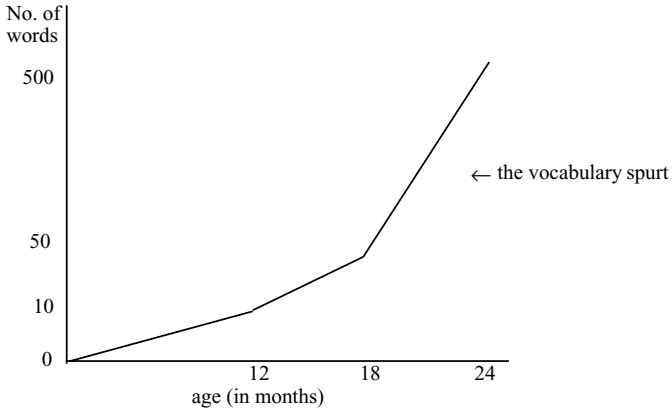
Their minds are developing too – they are able to follow the direction of an adult's gaze, they are sensitive to gestures such as pointing, and they tend to pay attention to the same things as the adults with whom they are interacting.[1] Not coincidentally, this is also about the time that they first venture into language.

A child's first word is one of the great milestones in his life – and in the lives of his parents. For most children this happens when they are around twelve months old, give or take a few weeks in either direction. On average, a child has ten words in his vocabulary by age fifteen months and fifty words by age eighteen or nineteen months.[2]

And, yes, it's true that the first words learned by children the world over are usually the names for "mother" and "father." They get a lot of help with this, though. As we'll see in chapter 6, words like *mama*, *papa*, and *dada* are very easy to pronounce – they consist of very simple sounds arranged into very simple syllables – and they are a natural by-product of children's spontaneous babbling. In fact, "mama"-like sounds have been detected in children's vocalizations starting from as early as two weeks of age up to around five months, usually in a "wanting" context (wanting to be picked up, wanting food, and so on).[3]

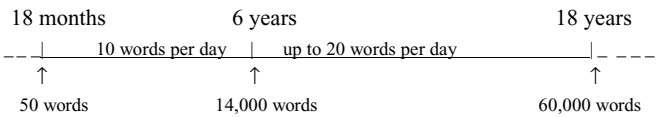
Parents are quick to help a child assign meaning to these early noises, decreeing that *mama* means "mother" and *papa* or *dada* means "father." Children go along with the game, it seems, and before long they start using those words in just the "right" way. (The game is played differently in Georgian, a language spoken in one of the former Soviet republics in the Caucasus Mountains. There, I'm told, *mama* means "father"!)

At first, word learning is quite slow and new words show up at the rate of one every week or so. But things often speed up at about the time children reach the fifty-word milestone (usually around age eighteen months). At this point, we often see the beginnings of a "vocabulary spurt" during which children learn one or two new words a day.[4]



In some children, the spurt doesn't take place until the vocabulary contains well over one hundred words.[5] And as many as a third of all children acquire words at a steady pace or in a series of small bursts with no sudden leap forward.[6] (It's even been suggested that the whole idea of a vocabulary spurt is a myth,[7] although most linguists still seem to believe in it.)

At later ages, word learning becomes even faster, averaging about ten words a day between age two and six.[8] By age six, children have a vocabulary of about 14,000 words,[9] and they go on to learn as many as twenty new words per day over the next several years.[10] (Try to do that day in and day out if you're learning a foreign language.) The average high school graduate knows 60,000 words.[11]



1. Where are the words?

You may not realize it, but when people talk, they usually don't leave pauses between their words. Most sentences are just a single continuous stream of sounds. If you have any doubts about this, try listening to a language that you don't speak. You'll quickly notice that the words all run together.

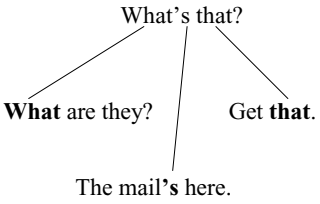
That should give you some idea of the challenge that a child confronts as he tries to learn English. Somehow, he has to take the continuous stream of sounds that make up a sentence like *Wewatchedthedoggiesrun* and break it down into words (like *doggies* and *run*) and pieces of words (like the past tense ending *-ed* and the plural ending *-s*). Linguists refer to this process as *segmentation*.

Sometimes we make things easy for children by producing utterances that consist of just one word – like when we point to something and say "Milk" or when we pick up a spoonful of food and say "Open." But we don't do that as often as you might think – one-word sentences like these make up only about 10 to 20 percent of parents' speech to children.[12]

Children forge ahead anyway, picking what they can out of the stream of speech that flows past their ears. The things they grab onto are often single words, but sometimes they end up with larger bites of speech – like *what's that?* (pronounced *whadat*) or *give me* (pronounced *gimme*).

These are almost certainly indivisible chunks for one-year-olds – the equivalent of the phrases that travelers commit to memory so that they can get by in a foreign country. (How many tourists who memorize *Arrivederci* as the Italian way to say "good bye" realize that it contains five separate meaning-bearing elements and literally means "until reseeing you"?)

A simple test helps us decide whether a particular utterance should be thought of as a multi-word sentence or an indivisible chunk with no internal parts: if there are multiple words and the child knows it, they should show up elsewhere in his speech – either on their own or in other combinations. That's what happens in adult speech, where the three words in *What's that?* can each be used in other sentences as well.



But things don't always work that way in child language. Often, the different parts of an utterance behave as if they were welded together, with no hint that they have an independent existence of their own.

Other indications that an utterance is chunk-like come from the way it is used. For instance, two-year-old Adam often said "Sit my knee" when he wanted to sit on an adult's knee and "I carry you" when he wanted to be carried.[13] Both utterances were clearly modeled on things that he had heard adults saying to HIM, and he didn't seem to realize what the component parts were or what they meant.

A different type of segmentation error can be seen in the following utterances, which were produced by Adam when he was between twenty-eight and thirty-six months old.[14]

It's fell.
It's has wheels.
There it's goes.

These errors tell us that Adam must have misanalyzed *it's* when he heard it in sentences like *It's Daddy* and *It's hot*. Adults know that *it's* consists of the word *it* and part of another word (*is*), but Adam must have thought that it was a single one-part word. As a result, he started using *it's* where an adult would use *it* – as we can see in his *it's fell* and *it's has wheels*.

Two learning styles

Some children are initially better than others at finding words. In fact, there appear to be two different styles of language learning.[15]