**Language Acquisition Part 2**

1. **Breaking into the Speech Stream**

If adults break up the speech stream by identifying the units of meaning it contains, infants must clearly start in some other way: They don’t yet have any linguistic meanings to make use of. What alternatives are there? One possibility is that, like adults, infants can detect recurring sequences in the speech stream. That is, they can recognize two (or more) sequences as similar. This would allow them to recognize clusters of adjacent sounds and thereby isolate certain recurring sequences. Researchers showed first that eight-month-old infants, after only two minutes of listening to an artificial language made up of syllables strung together, with no prosodic or acoustic markers at boundaries, could segment out chunks or words just on the basis of statistical relations among the sequences of syllables involved. Infants at eight months reliably discriminated words from part-words. So, even after very brief exposures, infants can segment continuous speech into recurrent patterns (words) on the basis of the transitional probabilities of constituent syllable pairs.

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| **A Breaking into the speech stream** |
| I The infants aged eight moths listen to a stream of syllables, with no pauses, no stresses, level intonation, Bidakupadotigolabutupirobidakupadotigolabutupiro… with repeated sequences of syllables that make up recurring chunks or words:  bidaku, padoti, golabu, tupiro  They were then tested on words (sequences with high probability transitions) vs. part-words,  e.g., bidaku vs. dakupa (daku + pa), or padoti vs. titupi (ti + tupi)  Infants recognized the words with repeated groups of three syllables always in the same order (so with high transitional probabilities between syllables) in what they’d heard, but not part-words like daku-pa or ti-tupi  (Based on Saffran et al. 1996) |

Though Saffran’s studies focussed on eight-month olds, younger infants can also discriminate differences among sounds from the time they are only a few weeks old.

1. **Storing Word Shapes in Memory**

From a quite early age, young children must set up fairly adultlike representations of target words. While there has been debate about the amount of phonetic detail children store in their second year, they must clearly store enough to be able to recognize the same word on separate occasions, from different speakers, in different carrier frames and syntactic contexts.

If children’s representations are based on adults’ productions of words, they should be much closer in detail to the adult versions of words than to the versions currently produced by the child. This shows up in the following examples of what Berko and Brown (1960) called the fis phenomenon:

* One of us, for instance, spoke to a child who called his inflated plastic fish “a fis". In imitation of the child’s pronunciation, the observer said: “This is your fis?” “No,” said the child, “my fis.” He continued to reject the adult’s pronunciation until he was told, “This is your fish.” “Yes,” he said, “my fis” (Berko & Brown 1960: 531).

The child is clearly aware of the adult contrast between /s/ and /∫/ even though he can’t produce it himself, and he consistently corrects the adult when she fails to produce fish.

The children failed to identify their own words 52% of the time and failed to identify those of a peer 48% of the time. But when they heard the adult tape, they correctly identified the words in it 94% of the time. Moreover, those child productions they did identify were consistently closer to the adult pronunciation than those they failed to identify.

One view is that at first children base their representations on their own productions of the adult target words (e.g., Waterson 1971). If this were the case, since children’s forms in production are pretty distant from the adult targets, how would they recognize what an adult was saying? To store only one’s own productions seems to offer no route for development. Children would have difficulty recognizing what adults say and, without any adultlike representations as a guide, also lack any templates against which to compare their own faulty productions with more adultlike ones. In short, they would have no representations to provide targets for what their productions should sound like.

1. **Early Words**

Few children produce any words before age one. Most say their first recognizable words in the next three months or so. By age two, they may be able to produce anywhere from 100 to 600 distinct words. By age six, they have a vocabulary of around 14,000 in comprehension, with somewhat fewer in production. These numbers imply that they acquire words between age two and age six at a rate of nine to ten words a day. For each year in school, they add some 3,000 more words to their vocabulary (for an additional 36,000 in twelve years of schooling), and between the ages of twelve and seventeen, it is estimated that they are exposed to up to 10,000 new word-root-plus-affix combinations just in school textbooks. At a minimum, children may have learnt some 50,000 words by the time they leave school. English-speaking adults have an estimated vocabulary in the range of 50,000 to 100,000 words.

What do young children talk about? What do their early vocabularies consist of? A survey of the first 40–50 words reported in diary studies for a variety of languages showed that children’s first 50 words fall into a fairly small number of categories (Clark 1979): people, food, body parts, clothing, animals, vehicles, toys, household objects, routines and activities or states.

But children differ in the rate at which they learn to produce their first words. In one study of six infants, researchers tracked their trajectories in word production, using a strict criterion for what counted as a word compared to a nonword vocalization (Robb, Bauer, & Tyler 1994). They found considerable variation in age for when children reached the ten-word (between 1; 0 and 1;4) and then the fifty-wordmark (between 1;5 and 1;10) as well as in the average length of utterance for each infant at those two points. Since children also differ in motor skill, whether for walking or picking up small objects, they should differ just as much when it comes to the fine motor movements required for speech.

Children’s earliest word uses often coincide with adult usage but may also depart from it in quite striking ways. Both nineteenth- and twentieth-century diarists, for example, noted numerous occasions where young children overextended their words and used them for referring to things that would not be covered by the adult word. For example, a two-year-old might overextend the word dog to refer to cats, sheep, horses, and a variety of other four-legged mammals. Children overextend words for communicative reasons. They may well know that their word is not the right one, but they don’t have or can’t readily access the right word, so they make do with a term close by.

As children start to use language, they generally make do with minimal means. They may wish to talk about many more things than they have words for. This communicative impulse, it seems, lies behind some of the options they favor as they stretch their linguistic resources to their limits. One way in which they do this is to overextend some of their early words to talk about things for which they don’t yet have the necessary words.

They also rely heavily on both deictic and general-purpose terms. They use deictic terms like that to pick out all kinds of objects and events, and they make use of general purpose verbs like do to pick out different kinds of activities (Clark 1978b, 1978c; Rodrigo et al. 2004). In context, with the aid of joint attention, it is normally quite clear what children are talking about when they do this. Without contextual details, though, it is usually impossible to interpret such utterances as they were intended at the time they were produced.

1. **Where Do Early Meanings Come from?**

Children appear to draw on two major sources in their initial assumptions about the kinds of things words can be used for. First, they attend to what the adults talking to them are talking about. They draw on the words and utterances addressed to them, by making the readiest inferences possible about referents, on the basis of joint attention combined with physical and conversational co-presence. From this, they find out that adults talk about kinds and individuals. This in turn allows them to make certain generalizations about the objects, properties, and activities being referred to.

1. **Babbling and Early Words**

Infants produce crying sounds from birth on and start to make cooing sounds as well, from around two months of age. Up to about five months, most infant vocalizations consist of crying and cooing, sometimes characterized as sad and happy sounds respectively. However, even parents can’t distinguish these very reliably without further contextual information. Most infants begin to babble between six and eight months, though some don’t start until as late as ten months or so.

The earliest babbling tends to consist of a single “syllable” repeated, for example, babababa or gagagaga, where the syllable consists of a consonant like sound (here a b or g) combined with a vowel-like sound produced with an open vocal tract, some kind of a. As these babble sequences become longer and more frequent, infants may display a preference for one consonant-type over others, with some favoring mainly m- sounds, others b- sounds, and others still g- sounds. They soon vary the intonation contours of babble sequences too, matching the rises and falls of intonation patterns in the language around them. They also start to vary the syllables within a babble sequence, for example, bababa-mamama, mememe-dede, baba-dadada.

Recent analyses offer support for continuity over discontinuity. First, babbling typically continues until well after the appearance of children’s first words, and a number of analyses have shown that there are strong similarities between the phonetic sequences in babbles and early words. Many infants use intonation contours carried by babble sequences to mark requests and rejections, for instance, before the emergence of recognizable words. Work by Elbers and Ton (1985) also suggests that, although parents do not reinforce infants for using some sounds over others, young children themselves show considerable continuity from babbling to early words in their choices of the sound sequences attempted in their first words. In addition, they appear more likely in their first words to attempt sounds that had appeared previously in their babbling and to avoid sounds that hadn’t. Finally, young children continue to produce babbled sequences alongside words until as late as age two or two and-a-half. Babbling, then, seems to lay a foundation for producing words.

The targets of children’s earliest attempts at words may be hard to recognize. Around age one, young children start to use consistent vocalizations in specific contexts. They are often associated with systematic gestures and appear to carry a consistent meaning. Consider the stable early vocalizations produced by David between the ages of 1;1 and 1;4 (Carter 1978, 1979). They were consistently produced with specific gestures. For example, David’s pointing or showing gestures were accompanied by vocalizations with an initial d-, where the adult target may have been some form of there; and his exchange forms, with a reaching gesture towards the person giving or receiving something, were consistently accompanied by vocalizations with initial h- forms, possibly based on here.

1. **Simplifications in Production**

Until they master the full range of articulatory programs necessary for the variety of legal word shapes in their language, children often fall short of adult pronunciations in their own production. They omit some sounds altogether and substitute some sounds for others. So, they tend to substitute (fis 🡺 fish), assimilate (boubou 🡺 bottle), or omit a syllable (television 🡺 tevision).

1. **First Combinations**

One-year-olds don’t speak very often. When they do, they typically say one word at a time and produce their words at extended intervals, with long pauses between utterances. Some researchers have proposed that there is a single-word stage during the first few months of language production, a stage in which children never produce more than one word at a time.

Children exhibited a consistent pattern in their uptake of new words in production. Their first attempts were generally far from recognizable, and they would then spend several days in intensive practice until their productions of each new word approximated the adult pronunciation rather more closely. Only then did they add a few more new words. That is, their progress showed a pattern of additions followed by intensive practice that resulted in much greater intelligibility. To compensate for lack of fluency, children may have recourse to gestures. This strategy appears quite prevalent in a gesture-rich culture like Italy’s. There is generally an increase in gesture + word combinations produced prior to an increase in word + word combinations. This suggests that children who might still have difficulty producing the longer articulatory sequences required for a two-word combination could instead produce a gesture + word combination. Iverson and Goldin-Meadow (2005) studied the transition from single words to two-word combinations and found that gestures played an integral role. First, many of the “words” produced initially in gestural form were later replaced by actual words. And second, those children who first produced gesture + word combinations like point (bird) + nap were also the first to produce two-word combinations (bird nap). Changes in their gestures predated and also predicted changes in their language. Children’s gestures elicit the requisite words from their parents and caretakers. In this way, adults could supply just the words children need at this point in order to move on from a gesture + word combination, for instance, to a word + word one.

Children attend to how adults use constructions as well as words in those constructions, as well as attending to the events adults talk about in order to identify constructions as well as the meanings of the words in each construction.

1. **From One Word at a Time to Longer Sequences**

The development of articulatory skill does not end with single words. Children learn how to plan and produce longer sequences too. The achievement this represents can be seen in the transition from single-word utterances to utterances containing two or more words. After a few weeks (occasionally months) of one-word utterances, children start to combine words into longer sequences. This usually begins between age 1;3 and 1;8. This transition is often marked by children’s beginning to produce strings of one-word utterances. The transition occurs gradually. Children first produce single words with separate intonations, with longish pauses between each one, and equal stress on each word. Next, children shorten the pause between two words produced in succession and shift to uneven stress, with the second word receiving heavier stress than the first. Finally, the pause virtually disappears in two words combinations and they add more words to form longer sequencers with the same intonational “umbrella” stretched over two words. If two words are treated as a unit, this in turn suggests they are linked in some way in the child-speaker’s mind.

1. **Doing Things with Words**

When children start to use their first words, they use them, even one word at a time, for particular purposes. They make requests for actions and objects, they comment on what is happening, and they accept or reject adult proposals. Like adults, they make use of their words in trying to convey their intentions to others within the context of the ongoing interaction. But since at first they produce only one word at a time, these intentions on their own may be hard to interpret. Their interpretation becomes a little easier when the words are supplemented by gestures and other information about the child’s locus of attention and apparent purpose in context. But once children begin to produce longer utterances, with the relevant grammatical information (e.g., inflections for case, tense, person, number, etc., and consistent word orders), their intended meanings become easier to discern. Some researchers have suggested that children’s choices here are governed by some measure of informativeness. That is, they are more likely to mention information they identify as new than something that is already known or given (previously mentioned) in the current conversation. This would suggest that even one-year-olds are good at assessing what their interlocutors know and at keeping track of what is given and what is new in conversational exchanges.

* Nicky (1;1.3, hearing someone come in) 🡺 dada.

Children appeared to attend to and talk about the same kinds of roles within events as they started to use single-word utterances. Interestingly, the things they talked about first were generally animate objects (people, animals) or else small inanimate objects (often things that they themselves were manipulating). They talked also about the actions in question and the states that resulted. This suggests that actors, their activities, and the objects affected by activities of various kinds stand out, for example, over places and properties associated with objects. This in turn suggests that some types of things might be more salient to really young children, and so more worth talking about (e.g., Pruddenetal, 2006). Indeed, children seem to talk more about things that move (that are animate) and that are movable or manipulable, and these do have properties that attract the attention of infants.