How to talk with children

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It is generally assumed that adults learn how to talk with children in a special style called child-directed speech. But this cannot be the whole story. Each child's ability to speak and understand is a moving target, changing yearly, weekly, even daily. How could adults adapt to these changes? Evidence shows that in conversation both adults and children try to establish, as they go along, the mutual belief that they have understood each other well enough for current purposes. It is this process, called grounding, that allows adults to infer the child's current abilities and to adapt their speech to that child. Adults, then, learn how to talk with children in the very act of talking with them.

Introduction

Talking with children isn't easy. We may know the language a particular child is destined to speak – English, French, Japanese – but we cannot know which parts he or she already knows. We may know other aspects of communication the child will master – from taking turns to being polite – but here again we cannot know which aspects he or she has already mastered. Each child's ability to speak, understand, and converse is a moving target: it changes not just yearly, monthly, weekly, and daily, but moment to moment, and we cannot know where he or she is at any moment.

How, then, *do* we manage to talk with children? One view is that we switch to a style of speaking that has variously been called *baby talk*, *motherese*, and *infant-* or *child-directed speech,* which I will lump under the term *child-directed speech*. But how would we learn this style? If we acquired it by watching other adults talk to children, what about adults who have no such models? And if we acquired the style by talking with children, how would we do that? Even once we learned child-directed speech, how would we adapt the style to a child whose abilities were constantly changing? Child-directed speech by itself is no solution to the child-as-moving-target problem.

To discover the solution people actually use, we first need to distinguish (1) talking *for* others, (2) talking *to* others, and (3) talking *with* others.

1. *Talking-for*. When people talk *for* others, they design what they say to be understood by a *class* of people and not by any one individual or set of individuals. On late-night television talk shows, the hosts and their guests talk in ways they believe their unseen viewers will be able to understand. Even when they address viewers directly, they treat them not as individuals but as a class. The same goes for the adults, children, and puppets on the television program *Sesame Street*. They talk in a way they believe most viewers aged 2 to 6 should be able to understand.
2. *Talking-to*. When people talk *to* others, they design what they say for the individual people they are speaking to. When I leave a voice message for my sister on her telephone, I design what I say not merely for people *like* my sister, but for my sister herself. I refer to people, places, and things she and I both know because of our shared history. Talking-to is a more stringent form of communication than talking-for.
3. *Talking-with*. When people talk *with* others, they engage them in interaction. When my sister and I talk face to face, we do more than take turns talking *to* each other. I design what I say in *collaboration with* her, and she does the same with me, and that takes actions from us both (see H. Clark & Wilkes-Gibbs, 1986; H. Clark & Schaefer, 1989; H. Clark, 1996; Sacks, Schegloff, & Jefferson, 1974; Schegloff, 2007). Talking-with is even more stringent a form of communication than talking-to.

Child-directed speech is really a type of talking-to. Several of the ground-breaking papers on child-directed speech appeared in a 1973 book called *Talking to children,* in which it was tacitly assumed that adults talk *to* children, not *with* them. This, of course, cannot be right. In many societies, parents do more than talk to children. They engage them in interactive conversation. Although not all of their talk is interactive, much of it is.

In societies like this, I suggest, adults solve the child-as-moving-target problem simply by talking *with* children. When they do that, they do what they would do with anyone they talk with: they try to establish, as they go along, that they and their partner have understood what each other meant well enough for current purposes. This is a process my colleagues and I have called *grounding* (H. Clark, 1996; H. Clark & Brennan, 1991; H. Clark & Wilkes-Gibbs, 1986; H. Clark & Schaefer, 1989). It is grounding that enables adults to track a child's abilities moment by moment.

The account I will outline here was not pulled out of thin air. It was inspired by, perhaps even purloined from, Eve Clark's work on conversations between

adults and children. Still, it was also based on the work on grounding in adult conversations. Let us start with the accounts of child-directed speech.

Adult speech to children

One day when I was talking with my niece, she turned to talk with her two-year-old son, and as she did so, her speech changed dramatically. She talked more slowly, used shorter sentences, and spoke with an exaggerated intonation, speaking in a way she would never have spoken with me. It is this style that has been identified as child-directed speech. In describing this style, I will rely Eve Clark's excellent review in *First Language Acquisition* (Clark, 2009).

Clarity in speaking to children

A striking feature of child-directed speech is its clarity: adults go to great lengths to make themselves clear. Adults talking to children use shorter sentences and fewer subordinate or conjoined clauses. They speak more slowly – lengthening important words and adding pauses both within and between sentences. And they almost never produce disfluencies such as *uh*s, *um*s, repeated words, and self--repairs. In one study (Newport, Gleitman, & Gleitman, 1977), adults produced only one disfluency in 1500 utterances in conversations with children, although they produced disfluencies in 5% of their utterances in conversations with adults.

The classic research on child-directed speech was carried out by Eve Clark's long-time colleague Charles Ferguson (Ferguson, 1964, 1977, 1982). He observed that adults talking to very young children try to avoid phonologically difficult consonants, such as "f" and "th" in English, and difficult clusters of consonants, such as "st" in English. So instead of *father*, *mother*, and *stomach*, they use *daddy*, *mommy*, and *tummy*. He argued that features like these defined a *register* he called baby talk.

If adults everywhere try to make themselves clear to children, then many features of baby talk should be common across languages, and Ferguson argued that they are. In the six languages he studied (Ferguson, 1964), he found that:

1. "baby talk items consist of simple, more basic kinds of consonant, stops and nasals in particular, and only a very small selection of vowels" (p. 109);
2. there is "the predominance of reduplication, both of parts of words and of whole words" (p. 109), as in English *mama*, *papa*, *poo-poo*, *pee-pee*, and *itty-bitty*;
3. there is "the absence of any inflectional affixes" as in "baby *go* poo-poo" and "the presence of a special baby-talk affix" (p. 110), such as the diminutive "y" in English, as in *doggie*, *kitty*, and *birdie*; and

4. there is a "greater use of nouns rather than pronouns and verbs" (p. 106), leading adults to say "dollie pretty" instead of "the doll is pretty" and "daddy wants" instead of "I want."

Another goal of child-directed speech is simply to capture and keep children's attention. One way to do this is with exaggerated intonation. Research also reviewed in *First Language Acquisition* shows that adults speaking to children raise the pitch of their voice and exaggerate the rises and falls in their pitch. They use special intonation even before infants can understand words. In a study by Fernald (1989), mothers were asked to produce utterances for five different functions, and in doing so, they used five identifiable patterns of prosody (roughly intonation plus rhythm):

Function	**Example**
1. Approval	"Good boy yeah" in large, smooth pitch swings on each word
2. Prohibition	"No. No. No" in three short, rhythmic, staccato bursts with small pitch swings
3. Attention-bid	"Look at the ball" in two large smooth pitch swings
4. Comfort	"Oh ... yeah ..." in one long, low, smooth pitch swing
5. Game	"Peek-a-boo" in two low plus one large rhythmic pitch swings

Adults used roughly the same prosody regardless of language. In a follow-up study by Fernald (1993), one-year-olds with English speaking mothers were found to respond differently to spoken approvals and disapprovals not only in English, but in languages they had never heard – German and Italian. What the infants responded to, apparently, was the intonation of the approval or disapproval and not its wording.

Ferguson's most important insight was that child-directed speech is simply a "modified version of normal adult speech" (Ferguson, 1977). And why do adults modify their speech? It is to capture and keep children's attention and to make it easy for them to understand. These features, as we will see, fall out naturally from the process of grounding.

Conversation with children

There has long been evidence that child-directed speech is also designed to support conversation. In many cultures at least, mothers create exchanges with babies from as early as one month of age and elaborate on these exchanges as the babies grow older (Trevarthen, 1979). By the time babies are three months old in these cultures, many mothers talk to them in type of pseudo-conversation, as in this example recorded by Snow (1977, p. 12):

(1) Ann: (smiles)
Mother: oh, what a nice little smile
Yes, isn't that nice?
There
There's a nice little smile
Ann: (burps)
Mother: what a nice little wind as well
Yes, that's better, isn't it?
Yes
Yes
Ann: (vocalizes)
Mother: there's a nice noise

This is only an apparent exchange since it was the mother who created the turns. When Ann (aged 3 months) smiled, burped or vocalized, her mother responded *as if* Ann had taken a genuine turn. By the time Ann was 18 months old, she was taking genuine turns with single word utterances such as "mouth" and "face." As children get older, Snow argued, these exchanges look more and more like adult conversations.

In conversations like these, adults do more than try to get children to understand. They try to manage and engage them in continued talk. If adults were simply trying to choose easy sentences, they should prefer ones that are simple syntactically, such as declaratives like "You can sing a song." And yet in a study by Newport et al. (1977), adults talking with 12- to 24-month-olds were more likely to use imperatives ("Sing a song!"), wh-questions ("What can you sing?"), yes-no questions ("Can you sing a song?"), and other questions ("What is that?"). They used the complex constructions 62% of the time and declaratives only 30% of the time. Why did adults use the more complex constructions? To get children to take the next turn and respond with relevant information. One of their goals, pretty clearly, was to keep children engaged in conversation.

Adults have many ways of keeping children engaged. They can use the child's name ("Anne!"), direct children's attention with deictic expressions ("Look over there" "What's this?"), and simply point (Clark & Estigarribia, 2011). In conversations studied by Newport et al. (1977), adults used "this," "that," "here" or "there" in 16% of the utterances they addressed to 12- to 24-month-old children, but in only 2% of those they addressed to other adults. Adults can also repeat words until the child responds, as with this mother speaking to a two-year-old: "Pick up the red one. Find the red one. Not the green one. I want the red one. Can you find the red one?" (Snow, 1972).

Why, then, do adults speak to children the way they do? I will argue that it isn't just to help them understand or take part in conversation. It is about getting these conversations to succeed. That, in effect, is what grounding is all about.

Grounding in conversation

To communicate is, etymologically, to "make common," to establish information as common or shared. But how do people make certain that the right information has become truly common or shared?

One approach has focused on failures in communication (see, e.g., Schegloff et al., 1977). The idea is that conversations are vulnerable to "intrinsic troubles," as when participants misspeak, mishear, or change their minds. It is up to the participants to monitor for troubles and, when they find them, repair them. If so, people need a system for identifying and repairing the troubles that arise.

A second approach has focused, instead, on success and failure together (Clark, 1996; Clark & Schaefer, 1989). The idea is that participants try to establish, as they go along, the *mutual belief that they have understood each other well enough for current purposes*. Not only should they repair things that have gone wrong, but they should display and acknowledge *positive* evidence of things that have gone right. It takes both to reach joint closure on what addressees have understood speakers to mean. The process of establishing these beliefs is called *grounding* (Clark, 1996; Clark & Brennan, 1991; Clark & Schaefer, 1989; Clark & Wilkes-Gibbs, 1986). People work at grounding as much as the circumstances allow.

Grounding, I will argue, is as essential to conversations with children as it is to conversations with adults. Grounding is part of children's earliest attempts to communicate with adults, and it is needed by adults for communicating with children. Effective grounding is not possible when people talk *to* or *for* each other. It is only possible when they talk *with* each other.

Evidence of understanding

An important source of positive evidence of understanding in dialogues is *acknowledgments*. In listening to extended descriptions, people regularly add "uh-huh," "m-hm," "yeah," "yes," and nodding as positive claims of understanding-so-far (Jefferson, 1984, 2002; Schegloff, 1982). Here is a British description with four acknowledgments (with overlaps marked in adjacent pairs of square brackets):[1]

1. Most of the examples of grounding come from either the London-Lund corpus (Svartvik & Quirk, 1980) and are numbered by file, conversation, and line (e.g., 1.5.34), or from the Switchboard Corpus (Godfrey, Holliman, & McDaniel, 1992) and are numbered by conversation (e.g., 3476).

(2) 1 Beth and I went to some second year seminars, where there are only about half a dozen people,
2 Ann [m,]
3 Beth [and] they discussed what a word was,
4 Ann [m,]
5 Beth [and -] what's a sentence, that's [ev] en more difficult, .
6 Ann [yeah,]
7 Ann yeah, -
8 Beth and so on, . (1.5.34)

With each "m" (the British equivalent to American "m-hm") and "yeah," Ann claimed to have understood the just previous clause well enough for Beth to go on, and she invited her to do so (Schegloff, 1982). When people want something stronger than "uh-huh" or "yeah," they can use *assessments* such as "gosh," "really," "oh?" or "good God" (Goodwin, 1986).

Another source of positive evidence is second parts of so-called *adjacency pairs*. An adjacency pair is a pair of spoken turns, by different speakers, in which the first part projects the second part as the next turn (Schegloff & Sacks. 1973). Examples are question plus answer, and greeting plus greeting. Consider this question and answer:

(3) 1 Kate who is it?
2 Jane oh, it's Professor Worth's secretary, from University College,
3 Kate m, (8.3d.230)

When Jane responded "oh, it's ..." she passed up the chance to ask for clarification ("Do you mean me?") or a repeat ("What?"), and responded instead with what she believed was an appropriate answer. She was claiming, by implication, that she understood Kate's question well enough to answer it. But *did* she? She could only be sure once Kate acknowledged her answer, as Kate did with "m" in line 3. In this way, Jane and Kate each provided the other with positive evidence that Jane had understood Kate as intended. That, in turn, allowed them to consider the question to be grounded (Clark & Schaefer, 1989).

When an answer to a question yields negative evidence of understanding, that normally leads to a repair. Here is an example:

(4) 1 Abe Do do do you know, where you are, do the schools emphasize the metric system?
2 Bill Yeah, in the engineering they all do pretty much.
3 Abe No, I I I meant I meant down, like, in the elementary schools.
4 Bill Oh, in the elementary schools. I don't know. (*continues*) (3476)

Although Bill thought he understood Abe's question (in line 1), his answer (in 2) showed Abe that he did not, so Abe clarified it (in 3) with "No, I meant ..." Bill, in turn, displayed his understanding of the clarification (in 4) "Oh, in the elementary schools ...," which Abe *did* accept. Like Kate and Jane, Abe and Bill worked together to get joint closure: *both* had positive evidence of Bill's understanding of Abe's question.

Patterns of repairs

Repairing problems in dialogue is an interactive process. As Schegloff, Jefferson, and Sacks (1977) argued, speakers have two preferences in making repairs. The first is for speakers to make their own repairs, as in this example:

(5) 1 Sam we must ha- we're . big enough to stand on our own feet now,
2 Reynard yes, (1.2.33)

Sam's replacement of "we must ha-" with "we're big enough ..." was a *self-repair*, and self-repairs are legion. Repairs can also be made by one's partner, as in this example:

(6) 1 Maggie you fancy it yourself do you? -
2 Julia what, the men's doubles?
3 Maggie yeah,
4 Julia well more than the singles, yes, – (7.3e.278)

"The men's doubles" was Julia's repair, not Maggie's, so it was an *other-repair*. There is much evidence that people prefer self-repairs to other-repairs.

The second preference is for speakers to *initiate* their own repairs. When Sam replaced "we must ha-" with "we're big enough ..." he initiated the repair without being prompted – a *self-initiated repair*. For a contrast, consider the next example:

(7) 1 Roger well there's no general agreement on it I should think,
2 George on what, .
3 Roger on uhm – on the uhm – the mixed up bits in the play, the [uhm]
4 George [yes] (3.5a.283)

Here Roger clarified the word "it" only after Sam asked for clarification ("on what?"). Roger's self-repair was *other-initiated*. There is also much evidence for the preference of self- over other-initiation of repairs.

Grounding in full dialogues

Dialogues are often treated as *bare* dialogues – as if they consisted of nothing but speech. But when people are face-to-face, they engage in *full* dialogues in which they use not only speech, but gestures, eye gaze, positioning of their bodies, and other signals. Full dialogues, in turn, are used in carrying out larger joint activities – planning, telling stories, buying and selling goods, playing basketball. A common problem in many studies is that dialogues are analyzed only after they have been surgically excised from the activities they were part of, which obscures *why* participants said what they said.

In full dialogues, grounding makes liberal use of gestures, nods, smiles, eye gaze, positioning of the body, and other unspoken signals. In one study (Clark & Krych, 2004), one participant (the "director") was asked to guide a second participant (the "builder") in assembling a small model of Lego blocks. The two participants sat at opposite ends of a table. In the following excerpt, David and Ben could not see each other or each other's space:

(8)
1	David	And then you're gonna take a blue block of four.
2	Ben	M-hm.
3	David	And you're gonna put it on top of the four blocks – four yellow blocks farthest away from you.
4	Ben	Which are the ones closest to the green.
5	David	Yeah
6	Ben	Okay. But the green's still not attached.
7	David	Yeah. And then ...

David made a series of self-repairs, one initiated by himself and the rest by Ben. Everything they did was with speech, 49 words in total. In the next excerpt, in contrast, Doris and Betty could see each other, and Doris could see Betty's workspace and the model she was building:

(9)
1	Doris	Take a short blue.
2	Betty	(*Retrieves a short blue block.*)
3	Doris	(*Looks at Betty's block.*) Put it at the end of the yellow close to the green.
4	Betty	(*Places the blue block on the yellow block.*)
5	Doris	(*Looks at result.*) Take a ...

Although Doris and Betty were at precisely the same point in assembling the Lego model as David and Ben, they did most of their grounding by displaying blocks and looking at the result. Doris used only 16 words in total, and Betty used none. This was typical. Assembling Lego models took half the time, and fewer than half

the words, when the director could see the builder's workspace – as Doris could. The goals in grounding were the same for Doris and Betty as for David and Ben, but the techniques were not.

Grounding also makes reference to the larger joint activity the talk is coordinating. In line 3, Doris told Betty, "Put it at the end of the yellow close to the green." Betty could have responded "Okay," but she responded instead by placing the blue block on the yellow block for Doris to check visually. The two of them grounded Doris' request by referring to the next step in their joint activity – Betty's placement of the blue block on the yellow block.

The gestures used in grounding take many forms. In a further example from the Lego study, Danny the director and Ed the builder could see each other, and Danny could see Ed's workspace:

(10) 1 Danny and now get (.75) a-uh eight piece green, (*waits 1.5 sec while Ed rummages through the blocks and retrieves an "eight piece green"*)
2 Ed (*exhibits the block to Danny*) (= "I've got one")
3 Danny and join the two ... (continues)

In line 1, Danny asked Ed to get a particular type of block, and when Ed got one, he *exhibited* it to Danny, holding it out for Danny to see (line 2). In line 3, Danny accepted Ed's block as correct by continuing on. Line 1 was grounded by Ed's exhibiting the block in line 2. Gestures also arise in side sequences, as in the continuation of Danny and Ed's dialogue:

(11) 3 Danny and join the two so it's all symmetric-
4 Ed (*poises the block over a location in the model-so-far*) (= "Does the block go here?")
5 Danny yeah, right in the center
6 Ed (*affixes the block to the model-so-far*)

In line 3, Danny told Ed where to put the block he had just retrieved. But because Ed was uncertain where to put it, he initiated a side-sequence in line 4 (an other-initiated repair) with a gesture, *poising* the block over the location he believed it should go. Danny took him as asking, "Does the block go here?" and answered, "Yeah, right in the center." Once the location had been cleared up, Ed affixed the block as instructed (line 6).

In conversation, then, participants do more than hope and pray they have understood each other. They work together to establish the mutual belief that they have understood each other well enough for current purposes. To establish this belief, they use speech, gestures, and any other evidence they can assume is shared. This is the process called grounding.

Conversations with children

The idea that to communicate is to make common is one that children appear to appreciate from the beginning. Evidence suggests that children try to ground their communication from as early an age as they try to communicate at all. What is remarkable is how effective they are in grounding even before they can speak and even when they can produce only one word at a time.

Pursuit of mutual understanding

When children want something – and want it badly enough – they will persist in trying to reach their goal until they have reached it (or run into insurmountable barriers or lose interest). Even before they are a year old, they realize that for certain goals they need the help of an adult. Consider a 12-month-old named Jordan, studied by Golinkoff (1983, p. 58), who wanted a sponge that was out of reach on a nearby counter. Because he wasn't yet able to speak, this is what he and his mother did:

(12)	1	Jordan	(vocalizes repeatedly until his mother turns around)
	2	Mother	(turns around to look at him)
	3	Jordan	(points at one of the objects on the counter)
	4	Mother	Do you want this? (holds up milk container)
	5	Jordan	(shakes his head no) (vocalizes, continues to point)
	6	Mother	Do you want this? (holds up jelly jar)
	7	Jordan	(shakes his head no) (continues to point)
	8		[2 more offer-rejection pairs]
	9	Mother	This? (holds up sponge)
	10	Jordan	(leans back in high-chair, puts arms down, tension leaves body)
	11	Mother	(hands Jordan sponge)

Jordan's strategy was remarkable for a 12-month-old. He had to begin with a hierarchy of goals:

a. I want the sponge on the counter
b. I want my mother to get me the sponge on the counter
c. I need to *make it common with my mother* that I want her to get me the sponge on the counter.

Jordan's top goal was to get the sponge, but achieving that depended on goal *b*, which depended on goal *c*. He was systematic in going after goal *c*. First, he got his mother's attention (line 1), which she grounded for him by looking at him (line 2). Then, and only then, did he point at the sponge (line 3). But because his mother

wasn't sure what he was pointing at, she initiated the side sequence in line 4 (an other-initiated other-repair), which failed in line 5, and so on, until she guessed the right object in line 9. Jordan grounded his reference in line 10 by discontinuing his pointing and relaxing his body. It took 15 moves for Jordan and his mother to reach closure on his reference to the sponge, but they persisted until the closure was complete (for similar examples, see Bates, Camaioni, & Volterra, 1975).

Children show the same persistence even after they have begun to produce words. In a report by Scollon (1976, 1979), Brenda (aged 19 months) was recorded as she faced an electric fan while speaking with her mother:

(13)

1	Brenda	fei
2	Brenda	fae
3	Mother	Hm?
4	Brenda	fei
5	Mother	Bathroom?
6	Brenda	fani
7	Brenda	fai
8	Brenda	fei
9	Mother	Fan! Yeah.
10	Brenda	ku
11	Mother	Cool, yeah. Fan makes you cool.

Brenda repeated the word *fan*, revising her pronunciation on each repetition, until her mother confirmed it saying, "Fan! Yeah," which grounded the reference. Only then did Brenda proceed to say "ku," which her mother grounded with "Cool, yeah."

What Brenda produced was an utterance in two installments: "Fei" and "Ku." Installment utterances are common in adults, as in this example (see Geluykens, 1992):

(14)

1	Adam	and that table tennis room of mine,
2	Ben	mhm
3	Adam	it's always cold in there (1.7.119.1)

Adam produced a first installment ("that table tennis room of mine") and got Ben to confirm it (with "mhm") before going on to the second installment. Brenda did much the same thing. She produced "fei", which took her mother and her eight turns to ground, and only then did she go on to "ku." These are what Scollon (1976, 1979) called *vertical constructions*. They require adult and child to work together, grounding the first part before going on to the second.

Not all of Brenda's efforts at grounding were successful, as in this example at the same age:

(15)

1	Brenda	car [4 times, with revised pronunciations]
2	Father	What?
3	Brenda	go [2 times, with revised pronunciations]
4	Father	xxx [untranscribable]
5	Brenda	bus [9 times, with revised pronunciations]
6	Father	What? Oh, bicycle? Is that what you said?
7	Brenda	na'
8	Father	No?
9	Brenda	na'
10	Father	No – I got it wrong

Varieties of grounding

Adults, as I noted, prefer self-repairs to other-repairs, and self-initiated repairs to other-initiated repairs. Children have the same preferences – so far as one can tell (Laakso & Soininen, 2010; Solonen & Laakso, 2009). Brenda initiated and made five self-repairs of *fan*, three of *car*, one of *go*, and eight of *bus*. And even without words, Jordan made five self-repairs, although they were all initiated by his mother. Children appear to make or initiate other-repairs only when they are older (Forrester & Cherington, 2009). For a more complete picture, I will appeal to studies by Eve Clark and her colleagues (Chouinard & Clark, 2003; Clark, 2007; Estigarribia & Clark, 2007; Clark & Estigarribia, 2011; Clark & Bernicot, 2008), though I will describe only bits of those studies.

Recall that adults provide positive evidence of understanding with *uh-huh, yeah*, head nods and other acknowledgments. Another way is by repeating words from the previous turn, as in this exchange from a call to directory enquiries in Cambridge UK (Clark & Schaefer, 1987):

(16)

1	Operator	It's Cambridge 68947
2	Customer	68947
3	Operator	That's right

In repeating *68947*, the customer gave the operator the chance to correct it if it was wrong. Adults talking to children do much the same, as in the conversation with Brenda:

(17)

10	Brenda	ku
11	Mother	Cool, yeah. Fan makes you cool.

The mother's repeat of "cool" gave Brenda a chance to correct it if it was wrong. Indeed, the mother's repeat of "bathroom" *was* wrong, and Brenda corrected it.

Children, too, use repeats to ground what is said. Here is an example from D aged 18 months:

(18) 1 D (points at some ants on the floor) Ant. Ant.
2 Father (indicating a small beetle nearby) And that's a bug.
3 D Bug.

The next example is from Duncan aged 19 months:

(19) 1 Mother (asking son about a shape) What does it look like?
2 Duncan A eight
3 Mother It looks like a square, doesn't it?
4 Duncan Square.

Both children were at roughly the one-word stage, and yet they used their limited capacities to ground the new words they had just heard (see Clark, 2007).

When adults have trouble understanding another adult, they can initiate a side sequence to clear up the trouble. Adults use the same technique in talking with children, as in this exchange with Abe, aged 2 years 5 months (Chouinard & Clark, 2003, p. 656):

(20) 1 Abe the plant didn't cried
2 Father the plant cried?
3 Abe no
4 Father oh, the plant didn't cry
5 Abe uh-huh

Abe's father was apparently uncertain what Abe meant in line 1, so he initiated the side sequence in line 2. He offered first one interpretation, which Abe rejected, and then another, which Abe did accept. Like Jordan and his mother, the two of them persisted until they achieved joint closure on what was said.

Another way to make repairs is with what Jefferson (1982) called *embedded corrections*. Here is an example of Jefferson's:

(21) Customer in a hardware store looking for a piece of piping:
1 Customer Mm, the wales are wider apart than that.
2 Salesman Okay, let me see if I can find one with wider threads. (Looks through stock) How's this?
3 Customer Nope, the threads are even wider than that.

In line 1, the customer used *wales* where he should have used *threads*. In line 2, the salesman corrected the term to *thread*, but he did so *en passant*, without remarking on the correction. In line 3 the customer took up the correction, again without comment. Jefferson called the pattern of *wales-threads-threads A-B-B*.

Adults correct children in the same way (Chouinard & Clark, 2003). Consider the father's exchange with Abe aged 2 years 5 months:

(22) 1 Abe I want butter mine.
2 Father Okay give it here and I'll put butter on it.
3 Abe I need butter on it.

In line 1, Abe's "mine" was incorrect by adult standards, so in line 2, Abe's father did an embedded correction, reformulating "mine" as "on it." In line 3, Abe ratified his father's correction by repeating "on it." This is an *A-B-B* pattern. In other cases, the child took up the embedded correction with an acknowledgement such as "yeah" or "m-hm," as Abe did here:

(23) 1 Abe my momma cry
2 Father Mommy cried
3 Abe uh-huh you yelling
This is an *A-B-yes* pattern.

Evidence shows that grounding in conversations with children is continuous and systematic. In a study by Chouinard and Clark (2003), five English- and French-speaking children were followed from age 2 to age 5 (with about 16,000 utterances). These children made observable mistakes in about 50% of their utterances, and when they did, adults corrected them between 50% and 70% of the time. There were errors in pronunciation, morphology, syntax, and meaning, which adults corrected about equally often. In making corrections, adults used side sequences about 65% of the time and embedded corrections 35% of the time. The children, for their part, were highly responsive. They explicitly took up the adult's reformulations between 20% and 50% of the time – in an *A-B-B* pattern, an *A-B-yes* pattern, or a rejection of the reformulation. Not only does grounding start at an early age, as with Jordan and Brenda, but it continues through to adulthood.

Most dialogues with the youngest children take place in daily routines such as eating, dressing, and going to bed or in other joint activities such as playing, looking at books, and going places. It is here that pointing, displaying, gazing, touching, and placement become particularly important.

Pointing is a good example (see Bates, Camaioni, & Volterra, 1975; Clark & Estigarribia, 2011; Tomasello, Carpenter, & Liszkowski, 2007). In (12), Jordan referred to the sponge by pointing at it, and his mother tried to ground his successive references by holding objects up. In studies by Clark and Estigarribia (2011; Estigarribia & Clark, 2007), parents talking with one-and-a-half- to three-year-olds often referred to novel objects (e.g., salad tongs) by pointing or holding them up; they continued their gestures until the children looked at the objects. Physical actions like these are characteristic of grounding with children.

Tracking a child's language abilities

Adults are able to track children's language abilities precisely because these abilities are put on full display in the process of grounding.

Consider production. Jordan at 12 months was able to produce "repeated vocalizations," though not words, and could point at things communicatively. His mother could have inferred these abilities just from their attempts at grounding in this brief exchange.

Brenda, at 19 months, was able to produce single words such as "fei" and "ku" in vertical constructions such as "fei + ku" for "Fan cool." Her mother could infer all this from grounding their conversational moves. Brenda's father, in contrast, failed to ground even the words *car*, *go,* and *bus*, which kept him from discovering that she knew these words. Likewise, D and Duncan (at 18 and 19 months) were able to produce one- and two-word utterances, such as *ant*, *bug*, *a eight*, and *square,* and to point at things, abilities their parents could infer while grounding these few utterances. And although Abe, at 29 months, was able to produce utterances several words long, he had yet to learn past tense morphology, as in "didn't cried," and certain features of syntax, as in "I want butter mine." Abe's father could infer these limits *en passant* as they grounded what Abe said.

Tracking children's understanding is similar. At 12 months, Jordan was able to understand references when his mother pointed at things or held them up, knowledge she could infer from their exchanges. Likewise, at 19 months, Brenda was able to understand single word utterances like "Bathroom?" "Fan! Yeah" and "Cool, yeah," and perhaps even "Fan makes you cool." And at 18 and 19 months, D and Duncan showed that they understood simple introductions such as "That's a bug" and "It looks like a square" and could pick out the new terms in them – *bug* and *square*. And at 29 months, Abe showed he could understand utterances as complex as "the plant didn't cry," "I'll put butter on it," and "Mommy cried."

The conclusion seems clear. Adults infer children's current abilities to produce and understand particular words, constructions, and gestures in the very process of grounding those words, constructions, and gestures. And the parents of Jordan, Brenda, D, Duncan, and Adam all relied on these inferences in formulating their next utterances – just as they would have done in talking with adults. As Ferguson argued, talking with children is simply a "modified version of normal adult speech."

Learning to talk with children

The optimal way for children to learn language is in conversations with adults. The evidence is well summarized in *First Language Acquisition*. The more time children spend in conversations with adults, the earlier and more thoroughly they

learn their first language. It isn't enough to see and hear adults talking with each other, or to see and hear adults talking *for* or *to* children. Learning is optimal when adults spend time talking *with* children.

The reason talking *with* children is optimal is that it requires grounding. Learning a language requires feedback, and the best feedback is focused, immediate, and frequent. Grounding has all three properties. It is focused on one utterance at a time. It is immediate – about the current or preceding utterance – which leads to immediate repairs when they are needed. And it provides explicit or implied feedback on virtually every utterance. Grounding provides just the type of feedback that is optimal for learning.

If interaction with feedback is the best way for children to learn how adults speak, then it should also be the best way for *adults* to learn how *children* speak. Because of the child-as-moving-target problem, adults need a way of assessing a child's abilities moment by moment. It is grounding that enables them to do that. Why? Because grounding yields focused, immediate, and frequent evidence for both (a) what a child can produce at that moment, and (b) what the child can understand.

Most features attributed to child-directed speech are really features of grounding. For example, if baby talk words such as *mommy*, *daddy*, *tummy*, and *peepee* are pronunciations that small children are able to produce, they are also pronunciations that adults can repeat in confirming what the children said. Likewise, imperatives and questions are first parts of adjacency pairs that lead children to reveal what they understand in the second parts. A child who understands "Sit down" will sit down. A child who understands "What is that?" will give an answer. But a child who understands "It looks like a square" need not respond at all. So reliable evidence of grounding is easier to establish with imperatives and questions than with assertions. Other features of child-directed speech have similar accounts.

To sum up, we learn how to talk with children in the very act of talking with children. The reasoning is straightforward. We cannot talk *with* a child without grounding what gets said, and in grounding what gets said, we automatically track that child's current abilities, both in speaking and in listening. As adults, we may pride ourselves on knowing so much more about language than the children we talk to. And yet, in face-to-face interaction, they are suddenly our peers, because grounding is a joint process. It is there we discover that we have as much to learn about a child's language as the child does about ours.

Postscript

At the beginning of our careers, Eve Clark and I were advised one day by a senior colleague, "If you each want to be known in your own right, develop separate areas

of expertise, and publish separately." Eve and I took his advice seriously. It was natural for us to split the world into adults and children. Eve studied language in children, and I studied language in adults. It was also easy to write separately. From that day on, we published together only twice – a book in 1977 on psychology and language, in which we wrote separate chapters, and a paper in 1979 on how nouns surface as verbs.

And yet Eve and I have remained each other's most valued consultants. She has commented on most of my papers, and I have commented on most of hers. And thanks to our division of labor, I have never had to become expert in language acquisition. If there was something I needed to know, all I had to do was ask.

Why am I saying all this? Because it explains how hard it was to write this essay. Eve wasn't told about this volume, and that left me entirely on my own. I couldn't make use of her unlimited expertise, nor could I rely on her editorial comments. The experience brought home to me just how indebted I am to Eve for her intellectual support over all these years. And imagine how much this essay would have benefited from her advice.

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