The role of imitation in the developing syntax of a blind child*

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Abstract

Lacking access to visually oriented means of communication (eye contact, shared gaze), blind children are especially dependent on the vocal channel for social interaction. At first they tend to rely heavily on partially analyzed segments of the speech they hear in routine situations. This is observable as 'imitation' of various sorts: immediate, delayed, literal, and expanded. As their language becomes more productive, they must discover how the language system works as they use it. This paper presents data from one blind child's language learning between 19 and 40 months, focusing on ways in which his 'use first, analyze later' strategy seems to have affected the way he induced the syntactic system of English.

It is easier to understand the processes involved in the acquisition of a particular linguistic structure when it is possible to identify the linguistic target the child is trying to analyze. This identification is facilitated when the child starts out by imitating known targets. Tracing development from imitation to overgeneralization errors to correction of these errors provides a new kind of view of the processes of hypothesis-making and revision in language acquisition. It also raises the possibility that syntactic development may be more tightly tied to situational use than has been generally thought.

Introduction

Research on child development has shown that the parents of sighted children are able to use various kinds of visual information (such as eye contact, smiling, sharing gaze, and pointing) to help their children begin to understand

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how and when to use language, as well as what that language refers to (Bruner, 1975, 1978; Trevarthen and Hubley, 1978). Since blind children lack access to such information, it is of interest to discover how they and their caregivers compensate, and whether the strategies these children adopt have any discernible effects on the course of their language development.

A review of the literature reveals that not all parents of blind children are able to find ways to overcome this interactional handicap (e.g. Adelson, 1983). But while some encounter tremendous difficulty in finding a way to establish meaningful communication, others have an easier time in finding alternative routes (Kekelis and Andersen, 1984). The more successful families come to depend extremely early on vocal interchange as the basic means of communication (Dunlea, 1982).

In one study, Urwin (1978, 1983) found that the mothers of the three blind children whom she observed introduced their babies to various physical and vocal interactive routines, starting with devices for getting attention (touching, tickling, blowing) and initiating turntaking (imitating the babies' coughs, sneezes, babbles). They also sang songs and played hand-clapping games – routines that were quite similar to those of sighted children of the same age, except that the medium was more heavily vocal. The children's early words built upon these early routines by accompanying pre-existing vocal and/or action procedures which conveyed particular communicative intentions. In other words, their pre-verbal dialoguing paved the way 'for an unusually early mastery of basic conversation-maintaining procedures' (1983). As the children grew older, some routines were dropped, some new ones were introduced, and 'certain routines persisted to become generative' (1978: 89), that is, their form did not remain fixed. Rather, variations were introduced within the framework of the routine to accommodate the children's expanding interests and developing abilities for both participation and role reversal.

Another finding from studies of the early verbal development of blind children is that besides relying heavily on verbal routines for initiating and maintaining communicative interaction, these children also imitate[1] a relatively high proportion of the time. Dunlea (1982) observes that blind children characteristically imitate their mothers' speech in somewhat anomalous ways. In particular, these children often memorize whole phrases that are appropriate to particular situations, and then use them as unanalyzed chunks in a way that could be called 'delayed' or 'deferred' imitation (Moerk and Moerk, 1979; Snow, 1981). This is especially true of the questions their

mothers use to initiate interaction. For instance, Dunlea cites requests by the children that take forms like 'Wanna hear a record?', and reports of their own actions such as 'Did you drop the horsie?' (289-290). She suggests that such verbatim constellations of words, including pronoun 'reversals', serve to fill in for missing visual gestalts which would provide 'instant simultaneous access to information which is otherwise segmented by space and time' (295). The tendency to use mother's speech in this holistic way is, she feels, 'at once an index of some of [the children's] basic confusions and a vehicle through which they may come to better understand the invisible environment' (296).

A third characteristic of verbal interactions between blind children and their caretakers is that their conversations are less anchored in a 'here and now' determined by visible objects in the immediate environment, and more dependent on the rehashing of shared past experiences.

Although the vocal channel is only one of several possible modes for social interaction, along with touch and use of the eyes, blind children represent an extreme case, since for them it is the overwhelmingly primary medium. These children, even more than sighted children, are driven to use language even before they know how the system works – a prime case of having to learn through doing. Given such circumstances, then, we may inquire about how this kind of primacy of language use might affect the acquisition of the linguistic system. In particular, we would like to know whether heavier than usual reliance on imitation to provide the means for interaction would have any discernible effect upon the course of language acquisition.

Studies of sighted children have shown that they vary widely in their propensity to imitate verbal models, ranging from almost not at all to as high as 25% of the time. Moreover, although this tends not to be directly addressed, there is some suggestion that a given child's tendency to imitate will vary, both from day to day, and with the stage of her linguistic development (see Bates, unpublished; also Table 1, below, where the rate of imitation ranges from 7 to 34%). Various researchers have noted that verbal imitations may be indexes of two very different kinds of awareness in language learners: awareness of appropriate, often formulaic language to be used in order to participate in specific, usually routine contexts (Moerk and Moerk, 1979; Snow, 1981); and attention being paid to linguistic forms that are just being acquired (e.g. Bloom, Hood and Lightbown, 1974).

The latter kind of attention may turn out to be an index of language that the child has partially but not yet completely learned. Kagan believes that 'the probability of imitation is a function of the state of response uncertainty

generated in the child', pointing out that 'acts that are too easy or too difficult to assimilate and to perform are not likely to be imitated' (1984: 94). He also suggests that 'events in the environment representing responses which are in the process of being mastered by the child function as incentives that alert or excite the child. The reaction to that arousal is the attempt to reproduce the act' (97).

But what of children who not only imitate heavily, but rely on the use of both immediate and delayed imitations as a primary means of interaction? The data to be presented here suggest that copious imitation may sometimes lead a young language learner to make hypotheses about syntactic structure which eventually have to be rejected or reorganized. Such 'errors' may arise because, having developed a capacity for rote memorization, but not being selective in what he imitates, he accumulates a large and unwieldy corpus of memorized but unanalyzed utterances. Many of these utterances have structures which are beyond his competence to analyze fully for quite a while, so he has to do the best he can to incorporate them in his developing grammar. The 'errors' thus made also provide linguists with a useful window on the processes of hypothesis-making and revision in language acquisition.

The data

Let us now look at the evidence we can find concerning the role played by imitation in the language development of a blind child named Seth between 19 and 40 months. Seth was born with hypoplasia of the optic nerve, and was totally blind during his first year (he had no pupillary response to intense light at three months of age). By twelve months he was able to avoid obstacles when crawling, by 25 months he could grasp brightly colored objects one or two inches in diameter and distinguish colors, and at 28 months he could disciminate boldly written 2-inch-high letters. At 40 months he was assessed as having no central vision but a small tunnel of peripheral vision (20/800) in his left eye. Although he has become able to make use of some kinds of visual information, eye contact and shared gaze continue to be inaccessible to him.

Seth's memory for sounds and voices developed well and early. His father reports that at two to three months of age he could hold the memory of a friend's voice over a period of two weeks' absence, breaking into a broad smile upon hearing that one voice among a crowd of others. His sensitivity to

intonation contours made him a proficient turn-taker in conversations long before his control of the segmental phonology had progressed beyond coos and squeals – a prime example of 'learning language through doing it'. As Seth grew older, he imitated many sentences taken from the 'fatherese' to which he was exposed, including many interactive questions. For instance, for a while he used *didja* as a past-tense marker in reportative sentences, e.g. 'Didja dump it out' meant 'I dumped it out'. (See Wilson, 1985, for a full treatment of tense and aspect in Seth's language development.) Like Dunlea's subjects, he used adult questions as requests, e.g. 'D'ya wanna get cookie' meant 'Get me a cookie', and 'Are ya pau ya water' meant 'I've finished my water'[2] (examples from 28 months). When Seth was about two and a half, a speech therapist who tested him, in what Seth apparently considered an intimidating situation, found that she could not get him to answer her questions although he would imitate them up to a length of twelve words! Once out on the playground, however, he began to converse with his familiars like a normal child.

Seth's care was shared by his mother and father up to the age 19.1,[3] and from that time until the period covered in this paper his father was his primary caregiver.[4] From age 15.3 months until about 52.0 Seth's father, who was at that time a graduate student in linguistics, collected data on Seth's acquisition of English. One to two hours of audiotape per week and almost daily diary notes were supplemented by half-hour videotapes every six weeks to two months. In all, over 250 hours of audiotape were recorded, of which nearly 40 half-hours, spread over the time period, have been transcribed. A list of the tapes that have been transcribed (up to 40 months) is given in Table 1, along with the percentages of spontaneous speech, self-repetitions, expanded repetitions, imitations, expanded imitations, memorized routines, and self-talk (where they have been calculated).

This extraordinarily rich data base has made it possible to begin to detail the developmental history of Seth's language, and to consider the role of imitation, both immediate and in well-established interactive routines, in its evolution. Two sub-areas have been investigated in some detail. One of these is the emergence of tense and aspect marking (Wilson, 1985), the other involves the development of WH-questions (Wilson and Peters, in preparation). For Seth, these turn out to have been highly influenced both by the particular kind of linguistic input he received from his father and by his heavy use of imitation of unanalyzed chunks of speech. One of the consequences of these two influences is that, in working out the syntactic sub-systems for each of

Table 1. *Tapes transcribed* (1/2 hours)

Age (Mths./ Wks.)	Utts. (No.)	Spont. (%)	Rep (%)	Rep+ (%)	Im (%)	Im+ (%)	Routine (%)	Self (%)
19.1	344	37	26.0	.6	19.2	0	8	11
19.2	411	37	32.6	2.7	21.9	0	2	4
19.3	246	49	28.4	4.4	8.5	1.6	0	1
20.0	262	43	14.9	0	34.0	2.3	1	6
20.1	286	46	32.5	1.7	13.3	1.1	1	3
20.2	549	30	19.1	.9	14.0	1.6	2	30
20.3	287	42	27.2	2.4	24.0	.3	4	0
21.0	395	45	25.1	2.8	14.2	.5	1	14
21.2	515	35	34.2	1.7	15.5	4.3	1	8
22.0	439	39	27.5	5.5	11.3	1.1	1	10
22.2	487	55	25.1	6.2	9.0	.4	1	3
23.0	421	31	28.7	3.1	6.6	.5	1	22
23.2	356	41	23.6	2.2	10.1	2.5	10	10
24.0	270	32	11.5	0	15.2	1.1	6	34
24.2	354	45	20.1	3.4	22.8	2.0	2	4
25.0	493	41	15.8	1.8	10.1	1.4	10	19
25.2	401	50	14.5	5.0	13.7	7.2	2	7
26.0	253	52	9.1	2.0	25.7	2.8	2	6
26.3	342	42	15.0	1.8	13.5	2.6	2	20
27.1								
28.0	297	36	16.8	7.4	22.6	9.4	0	5
28.2								
29.0	219	49	14.2	6.9	19.2	4.6	2	3
29.2								
30.0	432	41	7.6	2.8	8.3	3.7	33	2
30.3	333	61	14.4	4.5	12.6	3.9	2	0
32.0	365	52	13.9	3.8	8.2	2.5	7	4
33.0								
34.0	426	53	14.5	3.1	6.6	2.1	3	18
35.0								
36.0	416	47	5.0	2.2	8.6	.7	18	18
38.1								
40.0								

these areas, Seth also had to come to grips with the patterning of certain pronominal forms, particularly *you*, *I*, and *we*. The 'errors' he made in the process provide interesting evidence about the routes a child can take in acquiring the adult morpho-syntactic system.

To summarize briefly before going into details: morpho-syntactically we find persistent, though by no means categorical, pronoun reversals by Seth through much of his fourth year; some evidence for item-by-item develop-

ment of pronouns (i.e. some aspects of *you* and *we* get sorted out before they do for *I*); novel constructions by Seth that incorporate *whatta*, such as 'Whatta I'm doing?'; and finally the development of highly unusual WH-questions such as 'What did I get lost at the, Dad?'.

The explanations for these interesting syntactic phenomena seem to lie in the interplay of two kinds of phenomena in the input. The first is the father's informal speech register which resulted in numerous contractions and elisions, most importantly for our story *what're* for *what are*, and *didja* for *did you*. The second is the mutual interference of a number of interactional strategies and routines that were developed by this dyad, namely: the father's early and heavy use of questions as a partial substitute for lack of eye-contact; requested imitations by the father; Seth's own spontaneous use of imitation, especially his delayed imitations of his father's questions without reversing the pronouns, and his increasingly productive use of this 'question' format as a means of reporting his own (non-shared) experiences; much mutual rehearsal of shared experiences; a sentence-completion routine, and Seth's desire to reverse roles within this routine as he grew older and more competent.

Seth's 'errors'

1. Seth had manifest difficulties with the reference of *you*, which he often used to refer to himself. This kind of 'reversal' is a problem typical of blind children (Fraiberg and Adelson, 1975; Andersen, Dunlea and Kekelis, 1984), although not limited to them (e.g. Chiat, 1982). Fraiberg and Adelson give a psychoanalytic explanation for this difficulty, claiming that blind children misuse first and second person pronouns because they have difficulty differentiating 'self' from 'other'. More linguistic explanations for these difficulties focus on aspects of pronoun usage which are either semantic (the shift of reference from speaker to addressee) or pragmatic (reference to speaker and addressee cannot be nominal, but must be pronominal) (e.g. Chiat, 1986).

Looking at Seth's productions, his reversals did not extend to *I*, for which his usages, appearing as early as 24.2, made correct reference to himself. In contrast, a few of his uses of *you* continued to refer to himself at least as late as 33.0 (see Table 2 for examples). Certainly, contra to Fraiberg and Adelson, Seth seems to have solved any problem of distinguishing 'self' from 'other' with little difficulty.[5] Most of his misuses of *you* occurred in formulaic or imitated phrases, in which he repeated offers by his father with the illocution-

ary force of requests by himself (e.g. 'D'ya wanna cookie?' meaning 'I want a cookie'). The evidence is strong that he had not completely analyzed such phrases as to their morphological contents.

Seth's first solution to the linguistic referential problem involved in mapping linguistic forms onto the concept of 'other' was to use a proper name: when he wanted to refer to his father as agent or possessor he began to use *Daddy* as early as 25.2, thus bypassing the troublesome *you*. (See Table 2.) Although this violates the constraint that reference to speaker and addressee must be pronominal, it is common enough in adult speech to children that the strategy is available for adoption.

2. Syntactically, these pronouns developed in a somewhat different order, although here, too, there is evidently some sort of pronoun-by-pronoun development. So far, I have only looked at the development of first and second person pronouns plus auxiliaries in constructions with *what*. At 31 months, we see his first questions of the form *whatta* {*we're/you're*} VERB+*ing* (see Table 2). At 34 months *whatta I'm* appears. By 36 months, *what* { *'re /do* } { *we/you*} VERB gets sorted out, but *whatta I'm* is still occurring at 38.1. *What am I* does not appear up to 40 months in the tapes that have been transcribed.

3. Related to Seth's problems with the pronouns is his difficulty in working out the co-occurring auxiliaries, both *be* and *do*. He used the idiosyncratic form *whatta* as a variant of *what* + AUX, but only before pronouns. In Table 2, examples from the tapes are arranged chronologically, with the first person references on the left, and the second person references on the right. In this table we can trace all the 'errors' discussed so far: his use of *you* as well as his own name to refer to himself, the consistent use of *Daddy* and the inconsistent use of *you* to refer to his father, the alternation of *whatta* with *what*, the gradual sorting out of the *be* and *do* auxiliaries.

4. Finally, between 38 and 42 months, Seth produced a small set of some 19 highly anomalous, but quite systematic, WH-questions that appear to violate a universal linguistic constraint against interruption of noun phrases (see Wilson and Peters, in preparation). Some examples are given in (1):

(1)	What's Kathryn.is my?	[answer: cousin]
	What did I get lost at the, Dad?	store]
	What did I say goodbye to Doctor?	Moore]
	What are we gonna look for some?	houses]
	What we have to buy me some?	M&Ms]
	What are you cooking on a hot?	stove]

Table 2. *Development of 1st and 2nd person questions with 'what'*

Age	First-person Questions	Second-person Questions
31.0	Whatta–wha' did we eat?	What [does] Daddy have?
	Whatchu drinking? [probably self-referent]	
	Whatta you're gonna smell? [self-referent]	
32.0	Whatta we're going [to do tonight]?	What're you gonn' buy? [ref. to D]
	Whatta we're gonna buy at the store	
	What're we gonna buy?	What's Daddy doing now?
	Whatta you're gonna smell? [self-ref?]	
	What're you gonn' smell? [self-ref?]	
33.0	Whatta we call that?	What Daddy do?
		What's Daddy take off? ['what did D...']
	What Seth made?	What Daddy's giving you? [*you* = self]
		What Daddy could find?
	Whatcha do at school? [self-ref]	What Daddy find?
	Whatcha do a felt mark– to color at–school?	
34.0	Whatta we-- do at Kailua beach?	What's Daddy's gonna have?
		What's Daddy's gonna eat?
	Whatta I'm doing?	What Daddy's gonna look [for]?
	What Seth's doing, Dad?	
35.0	Whatta I was doing on my plastic bag?	
	Whatta I were doing there?	
	What Seth did?	
	What Seth doing?	
	What's Seth gonna do?	
36.0	Whatta *we* slap?	Wha' Daddy's doing?
38.0	Whatta I wearing?	What're/are you putting your foot on?
	Whatta I'm wearing?	What're/are you doing?
	Whatta I'm lying on?	What're/are you wearing?
		What're you put your head on?
		What is Daddy gonna bring me?
40.0	What do we have in here?	What will *you* say if I splash in the water?
	What else shall we talk about?	An' what did you do with the fork?
		What didju do?
	What else did I sing?	What didju say?
	What would I say if ya splash in the water?	An' what are you gonna eat?
	If you splash what will I say?	What /rz/ you gonna do?
	If you wake up an' get in my bed at night, what will I say?	What else can you do?
	If ya spit it out, what will I say?	

Contributing factors

As already suggested, these difficulties seem to have been exacerbated by an interplay between two aspects of the linguistic input Seth received: specific linguistic forms that his father used, and interactive routines that this dyad evolved. Let us look at each of these separately, and then look at how their interactions affected Seth's language development.

Linguistic forms in the input

The speech register used by Seth's father contained a number of common elisions, including the question introducers *didja* (for *did you*) and *what're* (for *what are*). These were evidently first learned by Seth as unanalyzed chunks whose grammatical functions he had to struggle to discover. For both of these forms he made interesting early analyses which he eventually had to revise.

For middle-class Anglo adults, asking questions is one means of promoting verbal interaction (Heath, 1982). For the parent of a blind child in this culture, then, questioning is probably a natural way to try to compensate for the eye contact that is so disturbingly absent. At any rate, Seth's father did ask him many questions from a very early age. For instance, when Seth was 19.3 months, slightly over 25% of his utterances to Seth were questions. He also reports (Wilson, 1985) that he used many of these questions as a way to try to give Seth the language for actions that Seth had just been involved in. As an illustration, at 19.1 months, when Seth threw his Teddy on the floor, his father asked: 'Didju throw the Teddy down? Didju throw the Teddy on the floor?' Given that these questions were also intended to label Seth's own activities, it is not terribly surprising that his first production of *didja* seems to have been as a past-tense marker in sentences describing what he had just done. Examples are given in (2):

(2) *24.0 months*:

Didja hear car	= I heard a car
25.2 months:	
Didja help you drive	= I helped Daddy drive
Didja throw little blocks	= I threw little blocks
26.3 months:	
Didja break ya face	= I bumped my face

Didja find it	= I found it
Didja throw it so hard	= I threw it so hard
28.0 months:	
Didja dump it out	= I dumped it out
Didja throw everything out	= I threw everything out
29.0 months:	
Didja burp	= I burped
30.3 months:	
Di'ya knock that tube down	= I knocked . . . [immed. past]
Did you go to Mommy's new house	= I went . . . [longer ago]

As for Seth's *whatta*, there seem to be at least three, and possibly four sources for it in his father's speech, all of which occur regularly across the tapes:

(3) *what a* as in *What a* {nice/funny} {kiss/song/present}
what are as in *What're* {you/we} {doing/gonna do}
what do as in *Wha'da* {you want/we have here}
what did as in *Wha'did* {ju/we} {eat/say/do}

All of these forms, except the first, occurred regularly with *we* and *you*. They must not only have posed a segmentation problem for Seth, but have also been involved in his problems in sorting out the *be* and *do* auxiliaries.

Interactive routines

Seth and his father developed a number of interactive routines, all of which fostered imitation and memorization on Seth's part. One that figures centrally in the development of his ability to imitate is the rehearsal of shared past experiences. Seth's father seems instinctively to have adopted the device of talking about recent past experiences with Seth. This served two purposes: it was a way to be sure Seth remembered them, and it helped compensate for the fact that, since they could not share mutual gaze, it was relatively difficult to talk about the 'here and now' as parents of sighted children tend to do. This strategy is especially evident in the tapes made before Seth's second birthday. In this period, 'conversation' tended to involve sharing knowledge rooted in past experience, and typically consisted of a sequence of semantically linked one-word utterances by Seth, each of which would be confirmed by his father.[6] When Seth ran out of words in a particular topical

'association bundle', his father would often suggest one or two more. For instance, at 20.3 months Seth led off the following recitation of the names of the inhabitants of the house where his Mommy then lived (Sean, Eji, Zach, Lady and Kitty were children, room-mates or dogs belonging to Mommy's household):

(4) S: Sean.
D: Sean.
S: Eji.
D: Eji.
S: Zach.
D: Zach.
S: Vlakich.
D: And Lady. (knows what Seth means)
S: Ng kitty.
D: And Kitty.
S: N Zach.
D: Well, who else is there?
Who are you forgetting?
How 'bout your Mommy?

This interactional device probably served as an early encouragement to Seth to memorize these bundles of associated words, a strategy which was also to prove useful later on. As Seth's productive competence grew from one-word to two-word utterances, the simple rehearsing of an experientially related string of lexical items evolved into a sentence-completion routine. (Because of the way it looks in transcription, we have named this the 'three-dot routine'.) Here, the father would start a sentence on a well-known topic, pause partway through, and encourage Seth to supply the missing information, which he would then confirm or sometimes correct. (5) shows examples from well-known daily routines.

(5) 24.2 Getting ready for breakfast:
D: Put your . . .
S: Bib on.
D: Put your bib on.
26.0 Cleaning up after breakfast:
D: Daddy'll getchu outta the high chair.
Th'n you c'n . . .
S: move the rubbish can.
D: Throw it in the rubbish can.

27.1 Leaving the house:
D: Ok, (picking S up) help Daddy –
help Daddy with the lights now.
Let's turn out the . . .
S: bafroom light.
D: Bathroom light? Thank you, Bird.
And let's . . .
S: git the kitchen light?
D: Get the kitchen light.
S: Good!
D: And we'll say . . .
S: ba-bye little house.
D: Bye-bye little house.

The examples in (6) show how 3-dot prompts were also used for more didactic purposes:

(6) 26.0 Naming colors of Christmas ornaments:[7]
D: This – this one is red an' this one is . . .
S: yellow.
D: Yellow. An' this one is . . .
S: white.
D: White.
27.1 Talk about traffic lights while driving in the car:
S: There's a light.
D: What color.
S: R-red. (uncertain)
D: That's right. The light's red.
But it's gonna . . .
S: change.
D: Change.
And it'll be . . .
S: stop.
Green. (correcting himself)
D: Green. (clunk of gear shift)
There, now it's green, see?
Now we can . . .
S: go.
D: Go.

In Wilson and Peters (in preparation) we note that in many of his three-dot prompts Seth's father was unwittingly modeling the interruption of constituents such as noun or verb phrases. We also show how, as Seth grew more

competent with his language, he began to wish to reverse roles in this sentence completion game, and to have his father do the filling in of the blank. Unfortunately for Seth, but interestingly for linguists, his father was unwilling to cooperate in this venture and Seth was forced to find some way of presenting an incomplete sentence that was compelling enough to lure his father into participation. Seth's solution was the construction of the anomalous WH-questions already illustrated in (1), each of which involves information known to both of them.

Requests for imitation

In the transcripts of Seth's interactions with his father we find three kinds of imitation. Not only does Seth spontaneously imitate a good deal, but his father also regularly elicits imitations from Seth. Both these kinds of imitations contributed to the teaching and memorization of formulaic chunks of language, including prayers and stories, as well as shorter routines which they eventually performed antiphonally, using the well-established, sentence-completion routine. This kind of contextually triggered reproduction of memorized chunks is really delayed imitation.

The accepted viewpoint of our culture is that direct instruction does not play much of a role in first language acquisition. Certainly, this device is used more heavily in some other cultures such as the Kaluli of New Guinea (Schieffelin, 1979), and the Kwara'ae of the Solomon Islands (Watson-Gegeo and Gegeo, 1986). But there is beginning to be some evidence that it is also used among Anglo-Americans as well. Miller (1982) investigates the role of direct instruction via requested imitations in the language development of three little white working-class girls from South Baltimore. In her data, she finds that this device is used to promote the following five aspects of language learning: (1) names and labels (vocabulary); (2) nursery rhymes and songs; (3) social politeness (please, thank you, etc.); (4) how to talk to other people (lines to say to a third person); (5) how to talk to their baby dolls.

If we exclude talking to dolls and expand the nursery rhyme category to include two folk stories, direct instruction in all of these aspects of language can also be found in the Seth data. On almost every tape, we find Seth's father requesting him to 'Say X' at least once, with an intent to teach some aspect of language. On the whole, Seth is very obliging about complying. As

Table 3. *Kinds of requests for imitation*

Age	Vocab./ Syntax	Social (phrase)	Social (3rd pers.)	Routines/ Stories	Names/ Pronouns	New info.
19.1	9-2*	2				
19.2	8-3			1:loveyou		
19.3	3-1	1				
20.0	2	3	2-1			
20.1						
20.2	6-3					
20.3	8-1			1:loveyou		
21.0		1				
21.2	14-1	2		2:prayers		
22.0	#19-2	4-1				
22.2	2	2				
23.0		4-4				
23.2				2:stories	1:Daddy	
24.0	2-1		7-3			
24.2		2		2-2:prayers	1:my	
25.0						
25.2		1	4			
26.0						
26.3	1	2	2			
27.1	1	7-5				
28.0						
28.2						3:letters
29.0	2	3			4:I/me	
29.2					1-1:I	
30.0	3					1:nostril
	p1:story					
30.3	p4:yawns	2-2				
32.0		2		1:say uh		2-1:U-P=up
33.0	5-1:French	1				3:letters
	2:spice					
34.0		2				3-1:Braille
35.0		1				
36.0	p2:French					1:cards
38.1	1:French		3-1			
40.0	p1:Span.					

* number requested minus number not attempted
\# several have the pronoun reversed
p focus on pronunciation

he grows older, however, the kind of linguistic information that is being imparted changes. Table 3 shows some of the focuses of requested imitations across time.

Through 21 months the emphasis is on modeling and imitation of single words (mostly nouns, including people's names, and adjectives), as if in an attempt to increase Seth's productive vocabulary. There is also some attention to social uses of language, including expressions of politeness (*thank you, you're welcome*) and coaching of how to talk to a third party, both face-to-face and on the telephone. There is some explicit modeling of a phrase from one of their oldest routines: *You know what? I love you.*)

At 21.2 months, it seems that Seth's father is aware that Seth is on the threshold of moving into two-word constructions, since he asks if Seth can imitate 11 short phrases (from *cuppa milk* to *ride in the car*). This focus on imitation of phrases continues at 22 months: this time some 19 phrases are modeled for imitation. Three of them (*pick me up Daddy, come pick me up, put me down*) contain pronouns which Seth reverses in his imitations (e.g. *pi' ya up*), presumably because he has already learned them as unanalyzed chunks from hearing his father ask 'Do ya want me to *pick ya up/ putcha down*?: This signals the beginning of yet another focal theme within requested imitations: an attempt to help Seth master the correct pronominal forms, especially in requests to his father.

At 24 months we find a fairly typical sequence involving how to talk on the telephone. Seth's mother has called to wish him a happy birthday:

(7) D: That's your Mommy on the phone.
Come on le's go– le's me– pick up your high chair
an' move the whole thing over here.
An' let's talk to your Mommy.
Your Mommy wants to talk ta you . . .
Here he is.
Here's yer Mommy.
D: Mommy.
Happy birt'ay. (echoing his mother?)
D: Say, 'Thank you Mommy.'
S: Tanka Mommy.
Huh-appy. (4 sec)
D: Say, 'I'm eating egg– an' chocolate milk.'
(12 sec)
S: Ba-bye.
D: Say, 'Love you.'
S: Luf you.
D: Bye Mommy. Say, { 'Have a nice day.'
S: {Hi.

Similar sequences occur at 20.0, 25.2, 26.3, and 38.1 months.

The theme of how to use language to refer to self vs. other is strongest at 29 months when Seth's father models and elicits the correct pronoun 4 times, as in (8):

(8) D: You want Daddy ta help you?
S: Wan' Daddy ta help you, Dad.
D: Say, 'Help me, Dad.'
S: Hap me, Dad.

From 30 months we find requested imitations being used to reinforce new information that has just been given to Seth, ranging from French vocabulary (Seth's father was taking a course in French and taught Seth some), to Braille letters. It was also used to correct Seth's pronunciation of his French vocabulary (36 months) and a Spanish song that they liked to sing (40 months).

(9) 34 months: Seth and Dad are working on Braille letters:
D: Try this one I have here.
S: That's a. . . a– N.
D: No– Feel it some more.
S: Oooo ssshhhh oooosh ooosh.
D: Here, Bird, it's a–
S: Ngee.
D: It's G.
Now feel it and say G.
S: Ngee. (voicing starts before 'G' is articulated).
D: Feel it, feel it, now.
Feel it 'n say G.
S: Ngee. (some improvement)
D: Okay.

36 months: Seth and Dad are practicing French:
D: Qu'est-ce que veut dire, what?
S: Tête.
D: Tête?
S: { yep-
D: { Qu'est-ce que veut dire tête?
Tête veut dire 'your head'.
S: Dis a vu dire my finger.
D: Say, 'Qu'est-ce que veut dire'. . .
S: my. . . (filling in blank instead of imitating)
Ges {pa dire? (going back to imitate)
D: {xx qu'est-ce que *veut*,
Qu'est-ce que *veut* dire. . .

S: Gesk voow.
Gess ka va dire?
D: Qu'est-ce que veut dire my finger?
Mon doigt.
S: Un doigt.

Some use of requested imitation, but with heavier reliance on Seth's natural propensity to imitate, was used to teach Seth two folk tales (Peters, 1987). Through participation in antiphonal retellings with his father, Seth had memorized much of these stories by the time he was 31 months old. Here again we find a kind of delayed imitation of only partially analyzed chunks of language. Small excerpts from 24 and 30 months are shown in (10):

(10) 24 months: beginning of crocodile story:
D: Once upon a ti– (spoons up more food)
Once upon a time,
there was a crocodile.
S: N libed in riffer.
D: Lived in the river.
And he would talk all day with his friend. . .
S: Nn modjey?
D: The monkey.
who lived in a. . .
S: Unh chwee!
D: In a mango treee.

30 months: beginning of crocodile story:
D: Once up. . .
S: 'Pon da {time. . .
D: {Time,
there. . .
S: was a repper. (wrong insert in frame)
D: A– and there was a. . . (recovers and re-prompts)
S: Cropadile.
D: Crocodile.
And he. . .
S: Lipped in na ripper.
D: Lived in the river.
And his. . .
S: frien' na mukey. . .
D: His friend the monkey. . . (same intonation)
S: A frien' lives in da tree. . .
D: Lived in a tree. . .

Seth's use of this kind of much-delayed imitation, as in this last example, was, of course, encouraged by the interactive strategies we have already discussed, particularly rehearsal of shared knowledge and requested imitations. As suggested earlier, much of Seth's pronoun 'reversal' can be explained by viewing it as reproduction of speech that his father would have used in just that situation. (See also Snow, 1981, for discussion of similar phenomena in her son's language development.) The observation that delayed imitations may play a crucial role in language development suggests that it is of utmost importance to be able to identify routine situations in order to be able to recognize delayed imitations. There are a number of situations that recur often enough on these tapes that they are easy to identify as routines. They include feeding, dressing, going for walks, playing ball, building block towers, and telling stories (Peters, 1985). The example in (11) is from a feeding situation. It shows immediate, delayed and requested imitations, along with an interesting mix of correct use of *I* (in *I want* as mentioned above) as well as incorrect *you* to refer to himself:

(11) 29 months. Dad is preparing oatmeal with raisins for Seth. [Delayed imitations are flagged with *; Spontaneous (immediate) imitations with <; Requested imitations with >]

S: Oatmeal!
D: Yeah? Ya gonna get up in this highchair?
Okay! (lifting him up)
There you go.
{ Let Daddy getchu–
S: { Oatmeal in dere!
Lotsa oatmeals.
I-I– I-I wan' spoon, Dad.
D: Okay, Bird.
*S: Getcher spoon–
Getcher spoon on dere.
D: Oh, looks like Daddy made this oatmeal just right. (stirring)
An' Daddy cooked th' raisins with the oatmeal
so they swelled up an' they're soft-
They'll be so good.
{ Oh, I c'n smell it.
*S: { Wanna eat cherself! (meaning 'I want to eat it by myself')
D: (hassled) Bird, I'm spoonin' it out in your damn bowl, OK?
S: 'kay. (softly)
D: Say, 'I wanna eat it myself!' (Sorry he was so abrupt, and trying to reestablish rapport)

<S: Mm I wanna eat it by { yourself. (softly)

[There is some evidence that Seth had analyzed *myself* as *by self*, so here he was making sure just who would be wielding the spoon.]

(a bit later)

S: I-I want raisins, Dad.
D: Okay. See there raisins, right there.
It has raisins in it.
Daddy put raisins in it.
S: I-I wwanna have a bite of raisin, Dad.
I:- {I wanna have a bite of raisin.
D: {Hey Bird, you want–
you want Daddy t' give ya some raisins?
You want D–
You want raisins out of yer oatmeal?
Or ya want raisins out of the box.
<S: Ca– or you want raisins out of the box.
D: Say, 'I'd like some raisins out of the box, Daddy.'
S: I va–
> I like raisins out of the box, Dad?
D: 'kay, Bird. (sound of raisins being poured out)
<S: 'kay Bird.

Conclusions

In trying to weave all this together, we see a kind of domino effect, where one strategy affects another, which in turn affects a third. Thus, Seth's blindness seems most immediately to have affected the interactional strategies of his major caregiver, in that it promoted a high rate of questioning as a substitute for eye contact, and an emphasis on rehearsal of shared experiences to compensate for the fact that, since they could not share gaze, it was relatively difficult to talk about objects and events in the here and now. Seth's father's naturally didactic nature led him to use these same routines to teach Seth all kinds of things: vocabulary, manners, songs, stories, Braille letters, French, etc. These strategies, in turn, encouraged Seth to use all kinds of imitation, including requested and spontaneous, immediate and delayed, literal and expanded, as a way to memorize and then make conversational use of useful chunks of his father's speech. These imitations, especially of his father's questions, may have helped to lead him temporarily astray in some areas of his syntactic development, particularly as regards the 'errors' we have

been considering: his productive use of *whatta*, his problems with pronoun reference and the auxiliaries, and his anomalous WH-questions.

In attempting to learn more about the process of language acquisition, we have to tease apart two complementary components: the contribution of the human biological endowment (the 'innate' component) and the contribution of 'learning' in the classical sense. One way of working at how to separate out the contribution of the child's innate endowment is to try to identify processing biases (or 'Operating Principles') which the child brings to the problem of trying to understand how language works (Slobin, 1985). As for the learning component, as researchers, we understand the most when we are able to identify the linguistic material that the child is working with and trying to analyze. For it is what we can see the child do with this linguistic input that helps us understand the process, particularly when he makes wrong hypotheses and then corrects them. Imitation, both immediate and delayed, of large chunks of language, is ideal in this respect because this language is eventually going to have to be analyzed syntactically. Therefore, we should bear in mind that evidence from how children make use of imitation has the potential to be one of our most important windows on how the learning component of language acquisition operates.

Notes

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1. I am using the term *imitate* to refer to repetition of the speech of others, and *repeat* to refer to repetition of one's own speech.
2. *pau* is Hawaiian English for 'all done', or 'finished'.
3. Ages are given as: months. weeks.
4. Between 6 months and 4 years Seth attended a program for the visually handicapped which was sponsored by Sultan Easter Seals; between 3 and 4 years he also attended a Montessori preschool in the afternoons, switching to full-time attendance at age 4. He also occasionally visited his mother at weekends.
5. Lise Menn has suggested to me that explanations that hinge on a purported difficulty of distinguishing 'self' from 'other' are indicative of a kind of linguistic naivete that could be described as a belief in 'word magic'. Those who are unwitting victims of this naive sort of view assume that the meaning of a word is somehow inherent in the word itself and that, therefore, if the word is misused it is because something is wrong with the mind of the user. This can be contrasted with the more linguistically oriented view that language cannot be a direct window