ELSEVIER

Journal of Pragmatics 31 (1999) 1353–1389

journal of PRAGMATICS

www.elsevier.nl/locate/pragma

Learning how to manage communication, with special reference to the acquisition of linguistic feedback

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Abstract

This study has two parts. The first part gives a theoretical overview of what a child has to learn in order to manage communication, whereas the second part provides a longitudinal case study. The case study shows how a child, from the age of 1 year and 8 months to the age of 3 years and 3 months, learns how to use different means for interacting in order to make contextually relevant communicative contributions. We can see how such aspects of his communication as mean length of utterances (MLU), use of onomatopoeia, communicative gestures, and informative actions develop in interaction with each other. A more specific study of linguistic feedback (feedback morphemes and repetitions) shows the development in different activities of the use of feedback. The role of the linguistic feedback system in language acquisition is also discussed.

1. Introduction

The purpose of this paper is to provide a case study of how a child learns to communicate interactively. The paper focuses on the acquisition of the ability to respond relevantly, in particular on the acquisition of the ability to use responsive linguistic feedback. The paper takes as its point of departure 'activity based communication analysis'. A summary of this approach and of its relations to other relevant approaches, such as speech act theory and conversation analysis, can be found in Allwood (1995).

Section 2 provides a theoretical overview of what a child has to learn in order to manage communication. We consider 'own communication management' and 'interactive management' (feedback, turntaking, and sequencing). We also consider how to make autonomous contributions and how to interact in activities which are socially and culturally different. Finally, we discuss the relation between linguistic feedback and language acquisition.

0378-2166/99/$ – see front matter
PII: S0378-2166(98)00109-X

Section 3 provides a case study of a child learning 'interactive communication management', especially feedback. The case study applies the framework presented in section 2. Methodological and theoretical considerations that concern the case study are treated in section 3.1, 'Method'. The case study first deals with how the child learns to produce adequate contributions as reactions to previous utterances. Mean length of utterance (MLU), use of onomatopoeia, communicative gestures, and informative actions are studied. We classify preceding utterances according to mood and analyze the child's responses to utterances of different moods. Secondly, we make a more specific study of how the child learns to use linguistic feedback. A quantitative analysis of verbal feedback (feedback morphemes and repetitions) is made and the analysis is related to the child's development. We then analyze activity influence on feedback and the acquisition of feedback, as well as how the child gives his utterances different types of evocative function and the manner in which he repeats part of preceding utterances. Finally, we discuss the role of feedback for language acquisition.

A short summarizing discussion ends the paper.

2. Theoretical overview

2.1. Communication: Functions and constraints

The goal of communication is to share information and understanding. In order to learn how to communicate, a child has to learn how to act and react in order to send and receive information in a motivated, rational, and cooperative manner. The way this is done depends greatly on enablements and constraints of the following types: (i) physical, biological, (ii) psychological, (iii) social and cultural, (iv) linguistic, (v) activity based.

For a child learning to communicate, biological and psychological maturity constraints strongly influence what types of communicative actions and reactions are possible at a certain age level. Social, cultural and linguistic constraints also come into play, determining what kinds of interactive patterns have to be learned. An important part of what is to be learned has to do with adaptation to social activity and physical circumstances. The child has to learn what particular communicative requirements and opportunities are associated with different social activities and physical circumstances, i.e., how to use language adequately in context.

If we consider communicative activity itself, the child must learn both (i) to construct (autonomous) messages and (ii) to manage message communication. Let us first turn our attention to the latter skill.

2.2. Learning communicative management

Following Allwood et al. (1992), we will distinguish two types of communication management:

(1) *Own communication management (OCM)*
Own communication management is related to how you as a sender, while communicating, provide opportunities for processing, planning, and turnkeeping. It

is also related to self correction and other mechanisms for changing your own communication.

(2) *Interactive communication management (ICM)*
The three most important types of interactive communication management are:
A. Feedback
B. Turn management
C. Sequencing

2.2.1. Feedback

The focus of this paper is on one of these, i.e. linguistic feedback (or more generally communicative feedback), which is concerned with giving and eliciting feedback concerning whether or not one is willing and able to: (i) continue contact (c), (ii) perceive (p), (iii) understand (u), or (iv) in other ways react to the communication. Thus, when a communicator gets a message he/she must evaluate whether and how he/she is able to and willing to continue, perceive, understand and react to the message.

This evaluation is followed by an overt response in which information is given about the result of the evaluation. Parts of the information may here be implicit. In fact, one of the things a child has to learn is what needs to be explicit and what can be left implicit. In example (1) below, B's response to A implicitly signals that continuation is OK and that B has heard, understood, and partly agreed to A's request (for transcription conventions, see Appendix 2).

(1) A: come here
B: just a minute

The child has to learn to both elicit and give feedback. He/she also has to learn that different types of activity require different types and amounts of feedback. From other investigations, e.g. Allwood et al. (1992), we know that both type and frequency of feedback varies with activity as well as with language and culture.

The main feedback mechanisms across languages are: (i) small, unobtrusive morphemes, such as *yes*, *no*, *m*, (ii) repetitions of parts of a preceding utterance, and (iii) nonverbal gestures, such as head nods and head shakes. In this study, we will mainly consider the use of feedback morphemes and repetitions.

The use of feedback morphemes can be illustrated by the following examples.

(2) A: it's snowing
B: yeah
(3) A: it's [snowing] heavily
B: [yeah]

In example (2), B's utterance of *yeah* gives A feedback by accepting A's utterance and implicitly showing that B can hear and understand, and accepts contact. The same functions are present in example (3), the only difference being that B's utterance is totally overlapped by A's utterance, which means that B's in this case doesn't have a turn (in the sense characterized below).

Feedback utterances in the present framework are always regarded as 'speech acts', i.e. as utterances with a communicative function. Following a yes/no question, a feedback morpheme such as *yes* is still seen as an utterance with the feedback function of acceptance, understanding, and perception, but in this case it also has the function of independently affirming a proposition. Compare (4) and (5).

(4) A: it's snowing
B: yeah
(5) A: is it snowing
B: yeah

The difference in interpretation of the meaning of the feedback morphemes can only be understood in relation to the preceding utterance (Allwood et al., 1992).

2.2.2. Turn management

Another problem in learning to communicate is that of learning the proper way to take turns, i.e. when does one have the right to speak and how does one employ this right? How does one capture the attention of wanted listeners?

There are many details of communicate activity which are connected with turn management and which vary both with activity and with the linguistic-cultural community. Some of the relevant functions that have to be learned are: (i) accepting the turn, (ii) finishing a turn, (iii) taking a turn, (iv) keeping a turn, (v) assigning a turn.

2.2.3. Sequencing

A third feature of interactive communicative management that has to be learned is how to structure activities into subsections. How does one, for example, open, continue, and close a telephone conversation? The child has to learn procedures and mechanisms for structuring extended activities of different types. Many of these procedures and mechanisms are linguistic and communicative in nature. Three of the most salient of these concern the general problem of how to structure an activity with regard to: (i) its opening, (ii) its continuation, and (ii) its closing.

Another kind of sequencing problem concerns how to respond adequately to a preceding utterance. In the 'conversation analysis' tradition, this might be referred to as the problem of how to learn 'adjacency pairs' and 'preference orientations' (Sacks et al., 1974, Schegloff and Sacks, 1973). What must be learned here involves at least the following (Allwood, 1994):

(i) learning to perceive and understand preceding utterances with regard to what they mainly express and evoke
(ii) learning to evaluate whether and how one is able and/or willing to continue communicating, perceive, understand, and react to the main evocative intentions (cf. below)
(iii) learning to respond on the basis of the evaluation in such a way that one's response meets the functional needs and normative requirements which hold in a particular culture, activity and social/personal relationship

(iv) learning how the expression of one's own individuality can be adapted to the requirements listed in (iii).

2.3. Learning to make (autonomous) contributions to communication

Since the main focus of the present study is communication management, especially the management of feedback, we have elaborated above on what is involved in adequately managing communication. Of course, to become a fully fledged communicator, it is not sufficient to merely respond adequately to the contributions made by other communicators. The child must also learn to make its own autonomous contributions to communication.

What is involved is perhaps more adequately described as learning to use communication as a means for one's own needs and wants in such a way that what is expressed is intelligible and culturally acceptable. Learning this, in a fundamental way, also means learning how to engage in social cooperation. When one has learned this, one can begin to use communication for one's own purposes in a culturally acceptable way.

2.4. Interacting (cooperatively) in a particular social activity

Learning to communicate, thus, involves learning the conditions for acceptable information sharing in the different social activities of a particular linguistic and cultural community. Let us now look a little closer at what conditions are involved in learning how to use communication in social activities (for a general analysis of conditions for communicative interaction, see Allwood 1976, 1984).

2.4.1. Social activity

Learning to make autonomous contributions both involves learning to express attitudes like beliefs, hopes, or desires, and learning to evoke attitudes or actions from an interlocutor. The various moods of a language, e.g. declarative, interrogative, and imperative, provide convenient combinations of expressive and evocative communicative functions which need to be mastered by the child in order to evoke and respond to information properly in dialog.

In order to communicate adequately in a particular social activity, the child must learn to handle communication (both production and comprehension) with regard to the following four factors.

2.4.1.1. Purpose and function of activity. The child must perhaps learn one way of communicating at the dinner table, another way in playing with his/her friends and yet another way when communicating with nursery teachers or doctors.

2.4.1.2. Roles of activity. Standardized social activities typically have standardized social roles which are connected with particular competencies, rights, and obligations with regard to both communication and other types of actions and behavior. To some extent, the obligations connected with communication can be derived from

requirements on the role one is playing in a particular activity; to some extent they are of a more general nature, such as the obligation to take the listeners into ethical or cognitive consideration. Trying to learn the adequate pattern of activity for a specific role is therefore an important task in learning to communicate. Empirically, we also know that role play is one of the most prominent features of children's play and communication (e.g. Strömqvist, 1984).

2.4.1.3. Artefacts and instruments of an activity. Activities often make use of specific artifacts and instruments which also influence communication. The child has to learn how to handle these artifacts and instruments and their communicative consequences.

2.4.1.4. The physical and social environment of the activity. The environment can influence communication in many respects. If there is noise, the children must learn techniques for circumventing noise. If the lighting is bad, techniques for communicating under reduced levels of lighting must be learned etc.

2.4.2. Universal and culture specific features

If we compare the way in which a particular activity is carried out in different cultures, there will always be both similarities and differences. Consider, for example, an activity like teaching. The purpose of teaching is to transfer information which is retainable from a teacher to a student. The functional requirements of this activity will mean that we will probably find some similarities between teaching in all cultures. We will also find differences, for example, with regard to the degree of autonomy granted the student, the degree of interaction employed by the teacher, and regarding what kind of information and skills are being taught.

More generally, we can expect there to be similarities due to factors like the physical environment and human biology, as well as to functional and structural requirements of different activities. We can also expect there to be similarities based on features of human rationality and ethics. However, there will also be differences due, for example, to different natural circumstances and differences in choice of sociocultural organization.

Both features which are universal, and features which are more culture specific, require learning and development in interaction with the environment. The fact that a particular feature is universal does not mean that it exists fully developed at birth. Adequate triggering impulses for development are required as well.

2.5. Linguistic feedback and language acquisition

Given the general framework outlined above, let us now give a few more details about linguistic feedback. The linguistic feedback system is especially interesting from the point of view of language acquisition. It provides a powerful tool for communication, i.e. for giving and eliciting reactions of contact, perception, understanding, acceptance, and emotion/attitude in communication. Yet, although the feedback system itself is internally complex, large parts of the system can be used without

requiring elaborate skills of other aspects of language, such as phonology, lexicon, and grammar (cf. Allwood et al., 1992).

(i) Our first assumption about feedback is, thus, that linguistic feedback is an important tool for communicative interaction, especially when other parts of language are not very well developed. This assumption is corroborated by the large proportion of feedback utterances in early L1 acquisition. The assumption is also supported by data from adult L2 learners, who, especially in the early stages of their language acquisition, use linguistic feedback as an important part of their communication (cf. Allwood, 1988a).

(ii) Our second assumption is that structurally, linguistic feedback morphemes, operations on morphemes (e.g. lengthening of continuant, syllable reduplication, truncation etc., see section 3.1) and combinations of morphemes develop from simple to more complex forms during early L1 acquisition. This is connected with the fact that more and more complex utterances are directed to the child, demanding more and increasingly complex feedback as a response.

(iii) It is further assumed that the use of feedback is to a certain degree activity specific, reflecting influence of the various activity factors discussed above. According to this assumption, different activities should show different patterns of acquisition and use of feedback. (For further details, see section 3.1 below.) This assumption, in combination with hypotheses (i) and (ii) above, also predicts that both age/development and activity type affect the feedback pattern.

(iv) Finally, feedback is assumed to be a tool used for learning language and learning about the world in general. This is an assumption based on, among other things, studies of adult language learners (Allwood, 1988b). Examples pointing to this function of feedback are also expected to be found in L1 acquisition data.

To illustrate and support the general claims made above, section 3 will provide a case study of the development of interactive communication management with special attention to feedback functions.

3. Learning feedback and interactive communication management

3.1. Method

A boy, Claes (C), was videorecorded in a studio in interactions with his father (P) at ages 1;8 (year; months), 2;3, 2;7 and 3;3. Two activities were selected for study at each point in time: (a) doing a jigsaw puzzle and (b) looking in a book with pictures. The boy and his father were at the outset of each recording seated on a sofa with a small table in front of them and books, jigsaw puzzle, and other things in a bag beside them. They were videorecorded with one camera. The recording was time-coded (cf. Appendix 1 for a more detailed description of the activities).

The videorecorded interactions were transcribed in ordinary orthography, using spoken language forms, and in phonetic (IPA) transcription when necessary (i.e. when C's utterances were not clear correspondences to known orthographic word representations). Prosody was only marked in two respects: ? for rising intonation, and capital letters for emphatic stress. Body communication for both parties was described in a separate column next to the relevant turns.

The analysis covers an analysis of MLU (mean length of utterance), use of *communicative gestures* and *reliance on informative action* (non-communicative but information carrying action), *onomatopoeia*, and *reactions to preceding utterances*, especially reactions involving *linguistic feedback*. The five analyzed aspects are described in some more detail below.

3.1.1. Mean length of utterance

Although MLU as an indicator of language acquisition can sometimes be misleading (cf. Allwood, 1988a), it is often used as "reference point" in studies of L1 development and since it is an easily obtainable measure, it was here calculated for each of the studied recordings.

3.1.2. Communicative gestures and informative actions

Communicative gestures, i.e. gestures that have a communicative function (e.g. head nods for 'yes', head shakes for 'no', shrugging shoulders for 'don't know', and so-called emblems, see Ekman and Friesen, 1969), as well as other actions which provide information which seems to influence the communication were coded for each activity. The gestures and actions can carry the information independently of verbal oral communication, but they can also supplement it. They often constitute communicative acts, e.g. they can be questions or responses to questions or requests. The role of communicative gestures and informative actions is assumed to be considerable in early communication, and it is assumed to interact with verbal oral communication in different ways at different points in development. The percentage of turns containing communicative gestures and informative action, according to the criteria above, was calculated for each activity.

3.1.3. Onomatopoeia

Another important device in communication with young children is onomatopoeia, i.e. sound imitation. In one of the analyzed activities, the Book activity, a large part of the communication consists of onomatopoeia. The proportion of onomatopoeia was calculated for each activity, as the percentage of contributions containing onomatopoeia.

3.1.4. Reactions to preceding utterance

For each of C's communicative contributions, the mood of the preceding speech act produced by P was coded and calculated in each activity. The preceding speech act mood was stipulatively classified as one of the following:

- yes/no-question (on the basis of word order)

- yes/no-question (prosody)
- question-word question
- indicative declarative
- identifier (short identifying utterances, mainly deictic adverbs and pronouns)
- feedback
- imperative

C's utterances were then analyzed as to their link with the evocative function of the mood of a preceding utterance. When there was no obvious linking to a preceding utterance they were coded as own initiatives.

As already has been noted, responding in dialog involves being able to express a reaction to a preceding utterance concerning contact, perception, understanding, and reaction to its main evocative function, as well as being able to evoke new responses from an interlocutor. In order to capture the relation between utterances in terms of the relation between the evocative function in a preceding utterance and the expressed reaction in a succeeding utterance, each communicative act (utterance or gesture) and informative action was coded for mood, expressive, and evocative function. The expressive function of an utterance covers the attitudes expressed by an utterance as a reaction to a preceding utterance and the evocative function is derived from the specific intentions of a speaker to evoke a reaction in a listener. The mood labels mostly imply a combination of expressive and evocative functions (cf. Allwood, 1995), for example:

A. Mood(s)
B. Expressive functions
   (i) FB (feedback): CPU (contact, perception, understanding)
   (ii) Reaction to main evocative function
   (iii) Other
C. Evocative function
   (i) FB (feedback): CPU (contact, perception, understanding)
   (ii) Main evocative function.

If the mood was unclear, as when only a phrase was used, this was noted. Upper case letters (CPU for contact, perception, and understanding) are used when these aspects are focused on. When they are less in focus, lower case letters are used and when they are only implicit small case letters in parenthesis are used. A question mark indicates uncertainty about the occurrence of a coded phenomenon. Consider example (6).

(6) C1: *ha [bola]* 'have ball'
Mood: Phrase VP (verb phrase) (no clear mood)
Expressive: desire
Evocative: c,p,u
Action (P)
P1: *vill du ha bollen* 'do you want the ball'
Mood: Interrogative

Expressive:	(i) c,p, ?U
	(ii) wonder about evocative intention of C1
Evocative:	c,p,u
	information/clarification/affirmation (P1)

In this example, C's first utterance consists of a verb phrase, the mood status of which is unclear. However, the context makes it likely that he is expressing a desire for a jigsaw piece and that he wishes to evoke this action from P (through P's continuing of contact, perception, and understanding what C wants). The mood of P's utterance can be coded as an interrogative yes/no-question in virtue of its word order. P's question implicitly expresses that P is agreeing to continue the contact and has perceived but perhaps has not understood what C has said. Explicitly, it shows uncertainty about understanding of C1 and attempts to evoke clarification from C concerning his evocative intentions.

The orientation of C's communicative acts and informative action with respect to the preceding communicative act were classified as:

(i) C's contribution is totally in accordance with the evocative function of the preceding utterance
(ii) Feedback functions upheld, but no compliance with main evocative intention
(iii) Neither feedback, nor communicative action is a relevant response in accordance with the main evocative intention of the preceding utterance.

The following three responses to the question *do you want it?* provide examples of (i), (ii) and (iii), respectively.

Preceding utterance	*Coded communicative action*
'do you want it?'	(i) 'yes'
	(ii) 'eh?'
	(iii) (no reaction)

For those of C's communicative acts which were classified as own initiatives (see above), a corresponding classification was made of P's succeeding communicative acts.

3.1.5. Linguistic feedback:

The child's acquisition of linguistic feedback was studied by paying special attention to feedback morphemes, i.e. morphemes, the main function of which is to give or elicit information about contact, perception, understanding and about reactions to main evocative intentions. Feedback morphemes were listed for each activity and tables were made of feedback morphemes, operations on feedback morphemes, and combinations with feedback morphemes. Besides morphemes, also the use of repetition to give or elicit feedback was studied.

The morphemes studied were basic feedback morphemes, such as *a*, *ja* 'yes', *nej/nä* 'no', *jo* (contrastive 'yes') and operations on feedback morphemes, like (cf. Allwood, 1986):

lengthening	*ja:*
vowel reduplication	*jaa*
vowel reduplication with -h- insertion	*jaha*
vowel reduplication with -'- insertion	*ja'a*
syllable reduplication	*jaja*
truncation	
truncation + adding initial h-	*ha*
truncation + adding initial '	*'a*
inhalation	[ha]
final -e	*jae*
emphatic stress addition	*JAha, jaHA*

The feedback expressions were coded according to both function and type of expression. Calculations were made of the number of feedback units in isolation or in combination (both in absolute numbers and relative to the total number of words for each activity).

For all activities, a number of feedback measures were calculated for C: the total number of words (also for P), the number and type of feedback morphemes, the number of repetitions used as feedback, the number of utterances containing only feedback, the number of utterances containing feedback in combination with something else, and the number of utterances containing no feedback. A qualitative analysis was made of how C used feedback expressions to evoke reactions from P. Finally, C's use of repetitions was analyzed.

In the sections that follow, we will consider data pertaining to our five studied features. In section 3.2, we will consider MLU, communicative gestures, and informative actions, as well as onomatopoeia. In section 3.3, we will look at learning to respond and in section 3.4, at learning to use feedback.

3.2. Learning to communicate

3.2.1. Mean length of utterance

As an indication of the language development of C, his MLU for the analyzed activities Jigsaw Puzzle (JP) and looking in a book (BOOK) is presented, for the four chosen points in time, in Table 1.

Table 1
Mean length of utterance for C and P

	C				P			
	1;8	2;4	2;7	3;3	1;8	2;4	2;7	3;3
JP	1.3	1.2	1.6	3.2	2.9	5.2	4.1	4.0
BOOK	1.2	1.3	1.7	2.6	5.0	2.8	2.5	4.3

As we can see, the MLU for C develops from 1.2 to around 3 during the period when our observations were made.

P's MLU which provides the input to C falls into three categories. In interactions where C's verbal output is extremely limited (the Book activity at 1;8 and the Jigsaw Puzzle activity at 2;4), P has an MLU of 5 or more. Otherwise, in early activities, he keeps an MLU of 2–3. At 2;7, he changes to an MLU of around 4 in the Jigsaw Puzzle and at 3;3 he also has around 4 in the Book activity. As far as MLU is concerned, C, thus, shows a fairly stable development and it seems as if P adjusts his MLU both to C's developmental level and to the activity at hand.

3.2.2. Communicative gestures and reliance on informative action

The use of communicative gestures and informative actions is shown in Table 2.

Table 2
Percentage of turns with communicative gestures or a high degree of reliance on communicative action

	1;8	2;4	2;7	3;3
Jigsaw Puzzle	60.6	53.8	29.3	30.6
Book	12.9	16.6	44.6	21.4

As we can see, the two activities, Jigsaw Puzzle and Book, are radically different when we consider the use of and reliance on nonverbal information. This is obvious from the activity description above. The Jigsaw Puzzle is basically an activity involving nonverbal action, where speech is not essential, while the Book activity is verbally dependent, involving only pointing and turning pages as nonverbal actions. We can see this in the early recordings (1;8 and 2;4) where the difference between the activity types is considerable. At 2;7 and 3;3 the activity difference has decreased.

3.2.3. Onomatopoeia

Another interesting feature of the communication between C and P which besides showing a clear activity difference also shows a decrease with increasing language acquisition, is the use of onomatopoeia (see Table 3), e.g. *vovvov* for dog.

Table 3
Percentage of turns containing onomatopoeia

	1;8	2;4	2;7	3;3
Jigsaw Puzzle	0	0	0	0
Book	67.3	30.0	25.7	1.0

Onomatopoeia is very prominent in the earliest Book activity, but then gradually decreases to almost 0 (by 3;3). In the Jigsaw Puzzle, it does not show up at all.

3.3. Reactions to preceding utterance

3.3.1. What C responds to

Communicative interaction can be considered as successful if the evocative aspects of a communicative act are relevantly responded to in the next communicative act. The evocative aspects of the preceding utterance can, to a great extent, be seen as a consequence of its mood. Table 4 shows the occurrences of each mood

Table 4
Mood of P's utterances preceding C's

	1;8	2;4	2;7	3;3
Jigsaw puzzle				
YNQ wo	2	1	8	14
YNQ pros	0	1	2	6
QQ	1	2	8	6
INDICATIVE	1	3	10	18
FBG	1	0	12	18
IDENTIFIER	11	1	17	5
IMPERATIVE	3	1	5	2
(C'S OWN INITIATIVES	13	8	5	6)
Book				
YNQ wo	0	2	1	13
YNQ pros				2
QDISJ				1
QQ	6	8	24	36
INDICATIVE	3	4	8	10
FBG	3	0	29	16
IDENTIFIER	13	15	18	4
IMPERATIVE	3	0	0	0
(C'S OWN INITIATIVES	8	14	0	2)
QQ specification				
Jigsaw puzzle	var e 'where is'	var e where is' vilken 'which'	vad 'what'	vad e 'what is' varför 'why'
Book	va säjer 'what says'	va e de 'what is that' å de 'and that'	vad e 'what is' å de 'and that' vad gör 'what does' vem e 'who is'	vad e 'what is' å de 'and that' vad har 'what has' vad gör 'what does' vem e 'who is'

Table 4 *(continued)*

	1;8	2;4	2;7	3;3
				var e 'where is' vart 'where-to' hur många 'how many' hur ser du 'how see you' hur kan du 'how can you'

type that we find in P's speech (i.e. in the communicative acts preceding C's turns) in the two activites at the four points in time. The utterance 'mood' categories are: yes/no-question indicated by word order (YNQ wo), e.g. *sover han* 'is he sleeping'; yes/no-question indicated by prosody, but not word order (YNQ pros), e.g. *han sover?* 'he is sleeping?'; question-word question (QQ), e.g. *va gör han* 'what's he doing'; indicative, e.g. *de e en häst* 'it is a horse'; feedback giver (FBG), e.g. *ha* 'yes'; identifier (single word or onomatopoetic sound identifying an entity), e.g. *häst* 'horse'; imperative, e.g. *ta den* 'take it'. The table also shows C's own initiatives (i.e. no obvious link to preceding utterance). Finally, data on the types of question word questions (QQ) used by P are given.

We can see that the early interactions contain many identifiers from P and many own initiatives from C. The latter consist of utterances, often accompanied by action, arising from needs for help or information and sometimes from a wish to 'comment' in relation to the activity of doing the jigsaw puzzle or looking at pictures in the book. Later on, yes/no-questions, question-word questions, indicative declaratives, and feedback are the most common types of utterance produced by P.

Activity influence can be seen clearly in the higher number of question word questions which occur in the Book activity. The identifiers are also different in the two activities. In the Jigsaw Puzzle, we find mostly deictic adverbs and pronouns, often accompanied by action. In the Book activity, the identifiers are models provided by P for C to imitate, first in the form of animal sounds. Later, nouns, verbs, phrases, and sentences are provided.

The question word questions develop, from *var e* 'where is' and *va säger* 'what says' at 1;8, to *va e de* 'what's that', and *å de* 'and that' at 2;4 and *vilken* 'which', *va gör* 'what does' and *vem e* 'who is' at 2;7 to the addition of *varför* 'why', *va har* 'what has', *vart* 'whereto' and *hur* 'how'-questions at 3;3. The questions seem adapted to a growing productive and receptive communicative ability in C (or aimed at promoting this ability). They are, however, often a bit ahead of C 's actual capacity, as we will see below. To give a concrete feeling for what is going on, C's responses are described below with typical examples from both activities at each of the four points in time.

3.3.2. Relevant responses at different ages and in different activities: Examples and discussion

3.3.2.1. Age 1;8: Jigsaw Puzzle. P uses identifying expressions in the Jigsaw Puzzle (deictic adverbs or pronouns) which are often accompanied by action from P or C and in most cases responded to by C using the preferred action and/or answer. C's own initiatives are, just as P's identifiers, accompanied by action and mostly well responded to by P (see example 7).

(7) *C's identifiers*

C:	da?	points to empty place in JP
P:	de fattas en där 'there is missing one there'	
C:	a? 'a?'	
P:	ja de fattas en där 'yes there is missing one there'	
C:		goes to P, looks in the sofa
P:	letar du efter den 'are you looking for it'	
C:	a 'yes'	
P:	leta efter pusselbiten 'look for JP-piece:def'	
C:	jaa 'yes'	

When P's identifiers are hard to respond to relevantly, C produces a clarification question (vowel or syllable with rising intonation) or just acts irrespective of P's utterance. When C's initiatives are not responded to according to his evocative intention, it is because P wants him to solve the problem himself and therefore tells him to do so (cf. example 8) or doesn't answer.

(8) *Promoting C's own action*

C:		tries to get the piece down
	ööh	(whine) looks at P
P:	nä du 'no you'	points to C
C:		tries again
	ööh	(whine) looks at P
P:	du	points to JP, pushes JP towards C, C tries, puts piece in
	'you'	

3.3.2.2. Age 1;8: Book. In the Book activity, which has a more speech centered goal, it is much harder for C to respond relevantly. First of all, he is subjected to ques-

tion-word questions, which he is in no case able to respond to in accordance with P's main evocative intention. He does, however, try and produces 'dummy' answers of the right type. This is fairly successful from a purely interactive point of view. The same applies to the identifying, onomatopoetic, model sounds produced by P, which C in most cases is unable to repeat correctly, although he tries to do so (see example 9).

(9) *Repeating onomatopoeia*

P:	a de // de e den va säjer den då? 'yes it // it is that what says that then?' vovvovov titta vovvovvov 'bowow look bowowow'	points
C:	[mm mm mmm]	takes book
P:	bä bä 'ba ba'	
C:	[mm]	turns page
P:	vovvovvov 'bowowow'	(laughs a little)
C:	'[mmm]'	

In addition, C's own initiatives are less successful in the Book activity. Two possible reasons for this could be that action is less communicatively important here and that it is hard for C to make P understand what reactions he wants.

3.3.2.3. Age 2;4: Jigsaw puzzle. This Jigsaw Puzzle activity is fairly short and consists of uniform sequences. Most of C's utterances are own initiatives of the form *dä* + action, trying to put a piece in a specific place. P responds to the evocative function of these initiatives roughly in the same way as in the 1;8 Jigsaw Puzzle activity; in other words, C is fairly successful.

3.3.2.4. Age 2;4: Book. The Book activity is even more communicatively difficult for C than the Jigsaw Puzzle. He now manages to give more responses to question word questions and identifiers, but still cannot respond to most of them with the preferred answer. We can note that most of the question-word questions are not even from the interactive point of view relevantly responded to. This is because C takes own initiatives instead of giving answers. This is not as successful here as in the Jigsaw Puzzle, since it leaves P's questions hanging in the air. C points to another picture and makes a sound or asks *å de?* or *ä de?*. He thereby mimics P's questions, possibly believing this to be the preferred contribution, or settling for these easy and recurring phrases when lacking vocabulary for answering, or, as a third possibility, trying to obtain the needed information/vocabulary. C's own initiatives are smoothly responded to by P in most cases (see example 10), i.e., the required information is mostly provided.

(10) *C's initiatives*

P:	å de 'and that'

C: dä*
P: vovvov
'bowow'
en hund
'a dog'
C: dä takes book, points
P: de e en häst
'that is a horse'
C: dä points
P: vovvov
'bowow'
C: å dä
'and ...'
P: de en en häst
'that is a horse'
C: å dä
'and ...'
P: å vovvov
'and bowow'
C: dä
P: häst
'horse'
C: å dä
'and ...'
P: e vovvov
'is bowow'
C: vava
(*dä* is ambiguous between *de* 'it' and *där* 'there' and is therefore not translated)

3.3.2.5. Age 2;7: Jigsaw puzzle and Book. At 2;7, the vocabulary used by P and required from C has substantially increased. Although many identifiers and onomatopoeic words are still used, utterances contain more nouns, verbs, and short phrases. P also uses more declarative indicatives. C manages to respond to them quite well. In the Jigsaw Puzzle, a number of yes/no-questions are used by P and they pose no problem for C. In the Book activity, the types of question-word questions increase a little, and by now C manages to respond relevantly to more than half of them, although this kind of evocative context is still the most problematic one. The communicative interaction in both activities has increased in richness, it is harmonious and well coordinated, as can be seen in examples (11) and (12).

(11) *Jigsaw puzzle*
C: [ha: bola]?
'have ball?'
P: vill du ha bollen
'want you ball:def'

C: ha
P: vilken e den — searches
'which one is it'
C: [dæ ça bola]
'there (...) ball' — points
P: där — hands C the piece
'there'
C: tack // [dæ]? — tries
'thanks // (there)?'
P: ja // den passar där — C tries
'yes // it fits there'
C: nä
'no'
P: jo
'yes'
C: [baça] — tries
'fit'
P: ja den passar där
'yes it fits there'
C: [bola] — puts piece in 'ball'
(translations in parenthesis are translations of targets for phonologically deviant words)

(12) *Book*
P: mm å de? — turns page
'mm and that?'
C: [makwak]
P: ja å de? — turns page
'yes and that?'
C: [mau]
P: mjau
C: [jau]
P: å de?
'and that?'
C: [a] — points
P: hare
'hare'
C: pippi
'bird'
P: ja
'yes'

3.3.2.6. Age 3;3: Jigsaw puzzle. At 3;3, P puts higher demands on C's abilities. In the Jigsaw Puzzle, this is seen in P's unwillingness to help C (since C should know the jigsaw puzzle) and in his objection to C's doing the jigsaw puzzle twice. C, on

the other hand, seems to have forgotten how to do the jigsaw puzzle. He puts on a generally helpless and help seeking attitude, half seriously, half mocking, using a peevish falsetto voice, and persists in doing the jigsaw puzzle twice. Most of P's helpful utterances are in the indicative declarative mood and they are fairly well responded to. P also responds helpfully to some of C's requests. Other utterances are question-word questions, which are still often not relevantly responded to by C and yes/no-questions which C reponds to quite well. There are quite a few ironic statements and questions from P. A subsequence which contains an argument (example 13), however, shows good matching of speech acts. It also shows the variability in feedback items used by C and his ability to carry out the actions of the activity at the same time as discussing something else.

(13) *Simultaneity of talk and other action*

P:	tycker inte du om åsa?	
	'like not you åsa?'	
C:	joo?	
	'yes?'	
P:	joo men hon e en flicka	
	'yes but she is a girl'	
C:	nää	puts in new piece
	'no'	
P:	joo	
	'yes'	
C:	näHÄ	
	'no'	
P:	joo de e hon	
	'yes that is she'	
C:	h håsa? åsa åsa	
P:	åsa ja	
	'åsa yes'	
C:	åsa inte en flicka	takes new piece
	'åsa not a girl'	
P:	joho de e hon	
	'yes she is'	
C:	näHÄ	
	'no'	
P:	jo de e hon	
	'yes she is'	
C:	så så // vara så?	puts in piece
	'so so // be so?'	
	så	P helps
	'so'	

3.3.2.7. Age 3;3: Book. Here, the higher demands are noticeable in the many and varied question word questions. While C is now successfully providing relevant

responses to yes/no-questions and indicatives, his comprehension of question-word questions, as well as his ability to answer them, is still very limited. When the variability is increased, C's success in responding relevantly is decreased. Only about one third of the question word questions are responded to in accordance with the main evocative intention (cf. P's utterances), while half of them are not relevantly responded to. C is, for example, not able to cope with how-questions (see example 14).

(14) *Wh-questions*

P: ha vem e de som går i taket?
'yes who is it that walks in roof:def?'
C: den points
'that one'
P: vem?
'who?'
C: den points
'that one'
P: hur kan du veta de?
'how can you know that?'
C: denna
'this one'
P: hur ser du att han går i taket?
'how see you that he walks in roof:def?'
C: a den taket
'yes that one roof:def'

C also sometimes seems to disregard which question word is being used by P, although he would be able to respond relevantly to it, as in the last answer of example (15), where P's first and last questions are of the same type, but are responded to in different ways.

(15) *Wh-questions*

P: vem e de då?
'who is that then?'
C: krokedilen
'crocodile:def'
P: ha va gör hon?
'yes what does she?'
C: rider krokedilen
'rides crocodile:def'
P: ha vart ska dom åka?
'yes where will they go?'
C: liseberg
'liseberg'
P: vem e de turns page
'who is that'

C: gungar
'rocks'

After having observed how C's ability to relevantly respond gradually increases from age 1;8 to 3;3, (taking into account both the particular evocative intentions of the preceding utterances and the demands of the current activity), we will now turn to a consideration of how that special part of the ability which is constituted by linguistic feedback is acquired.

3.3.3. C's responses in summary

C's communicative/interactive competence is shown by his ability to respond relevantly to P's evocative communicative acts and to get P to respond to his own evocative initiatives, as exemplified above. The development of this ability is in summary form shown in Table 5. The table is to be read as follows: Under *age of occurrence*, the ages when the different types of preceding utterances occur are given. The

Table 5
C's responses: summary

Preceding utterance mood	*Age of occurrence*	*Degree of difficulty*
Yes/no-question word order	late, 3;3 both activities	relatively easy for C to respond to
Yes/no-question prosody	(seldom used alone or last in an utterance, therefore not relevant for C to respond to)	
Question-word question	late JP 3;3 early and late B	hard > easier > hard (extended set)
Indicative declarative	late 2;7, 3;3 both activities	relatively easy
Identifier: deictic adv. pronoun	early JP 1;8	relatively easy
Sound, noun model	early B 1;8,2;4	relatively hard
Deictic adv.+ phrase or action	late JP 2;7	relatively easy
Sound/noun repetition (+phrase)	late B 2;7	easier than before
Feedback giver	late both activities	(consequence of P's yes/no-questions, indicatives, question-word questions)
Imperative		few, always easy
Own initiative	early 1;8, 2;4 both activities	1;8 JP relatively easy, B hard 2;4 relatively easy late 3;3 JP disagreement, 'play'

B = Book activity, JP = Jigsaw Puzzle activity. Early and late refer to observation points (1;8 and 2;3) and (2;7 and 3;3), respectively.

early activities (1;8 and 2;3) are compared to the late activities (2;7 and 3;3) and the two activity types are compared to each other. Under *degree of difficulty*, comments are given about whether the particular type of preceding utterance was relatively easy or relatively hard to respond to at the ages when it occurred in the data.

This summary gives a flavor of how well C's communicative actions are tuned in to a smooth interaction in the different activities. We can see that C gets gradually better at responding, but also that he is gradually given new input material to respond to. Single new nouns introduced by P and question-word questions are difficult preceding utterances to respond to, while statements, requests, and yes/no-questions are relatively easy. We can also see that it is harder for C to take own initiatives in the Book activity than in the Jigsaw Puzzle.

3.4. Learning to use linguistic feedback

3.4.1. Quantitative development of feedback in different phases of language learning

Very early interaction contains many of the precursors of verbal feedback (such as patterns of turntaking and eye gaze). Feedback morphemes are usually phonologically simple and easy to produce. Many of them occur very early. Attempts to give feedback through verbal repetition are also early. Together, the feedback expressions are a considerable communicative resource for the early first language learner, both in order to interact and to learn about the world and the language.

The relative frequency of feedback morphemes and repetition is high in early stages of language acquisition and in periods where acquisition/learning is very active. We can see this in our case study by looking at the share of feedback in relation to the mean length of utterance (MLU). As MLU increases, the relative quantity of feedback decreases (see Tables 1 and 6).

To explore the role of feedback in early language acquisition, we can consider the relative amount of feedback in the rather short utterances produced by C. The development is as shown in Table 6.

Table 6
C: Development of feedback words relative to development of total vocabulary

	1;8	2;4	2;7	3;3
Total FB	28	12	51	48
N words	66	52	240	460
% FB	42%	23%	21%	10%

As C's vocabulary increases, the relative share of feedback words decreases from 42% to 10%. This is so, even if it is also true that C's specific feedback vocabulary doubles in the same period. Thus, feedback expressions make up almost half of the produced words initially, at 1;8, but as little as 10% of the words at 3;3. This is in

accordance with our first assumption in section 2.5, that feedback, being very important for early communication, makes up a large part of early utterances, while later, it decreases in quantitative importance.

3.4.2. Learning the feedback morphemes and the use of repetition

Let us now take a look at the acquisition and differentiation of different types of feedback morphemes and the use of repetition. Some simple feedback morphemes are acquired early, as are some of the operations that can be applied to these morphemes. But the differentiation and specification of their form and function takes considerable time, as can be seen below. Early on, a few simple feedback items used as one-word utterances play a quantitatively and probably functionally very important role in the child's verbal output. Gradually, the verbal differentiation of feedback morphemes and their combination with other verbal expressions come to play a greater role. Probably this makes C's feedback expressions less dependent on nonverbal and prosodic support, at the same time as they decrease in relative verbal dominance quantitatively. We will exemplify this by a look at C's acquisition of feedback morphemes, repetition, and operations on morphemes.

3.4.3. Initial uses of feedback

The basic feedback morphemes which C uses are: *a, ja* (yes) *nej/nä* (no) and *jo* (contrastive yes) (cf. section 2). Table 7 gives an overview of the feedback expressions (morphemes, operations on and combinations of morphemes, and repetition)

Table 7
Summary of C's initial use of feedback morphemes (only main types), operations and combinations.

	1;8	2;4	2;7	3;3
Basic morphemes	a m nä ja		jo	
Vowel lengthening	x			
Vowel reduplication	x			
Q-prosody	x			
Initial h-	x			
Medial -h-				x
Final -e			x	
Adv/Pro			x	
Repetition	x			
Combinations		adv + pro adv + fb fb + Noun/sound fb + Sentence Noun + fb	adv + adv	fb + fb

used by C. The time of introduction for the types of feedback morphemes, operations on and combinations with feedback morphemes is also given in the table. For an explanation, see section 3.1 above.

The basic feedback morphemes, except *jo*, were all present at age 1;8, as can be seen in Table 7. *Jo* (negating a negative statement) occurs at 2;7 in these data (cf. similar findings by Plunkett and Strömqvist, 1990). *Nej* accepting a negative statement does not occur until 3;3 in the data. (The context of a negative statement occurs in the data only at 1;8 and 3;3.) *Nej* as a rejection after positive statements occurs at 2;7. *Ja* or *ha* in order to accept a positive statement are present already at 1;8, and so is *m* after yes/no-questions. But *m* after positive statements only occurs at 3;3. The morpheme *ja*, which is a very specific and typical feature of Swedish, thus, has a more general use at early stages for C than the less language specific *m*.

The operations of lengthening, question prosody, initial h-addition and vowel reduplication (sparsely used) are also present in the first recording. Repetition is attempted. No combinations occur. Feedback elicitation is mostly done by gaze + groan or by *dä* + pointing or action.

At 2;4, the feedback giving morphemes and operations on them are the same as earlier, while repetition is now more successful than before. At this point, C has learned to use the combinations *e dä* and *å dä* as feedback elicitors (cf. P's questions *va e de* and *å de*). The status of *dä* as adverb (*där* 'there') or pronoun (*de* 'it/that') is unclear in these combinations.

At 2;7, apart from the added basic feedback morpheme *jo*, the indefinite pronoun *sån* 'such one' and the morpheme *så* 'so' are added and used extensively, sometimes in combinations with *hä* 'here) giving the phrase *så hä* 'this way'. *Dä* and *de* seem to be separated and *dä* is used in combination with feedback morphemes and other words. Feedback is also combined with nouns, sounds (other than words) and phrases/sentences, indicating a growing vocabulary. The operation e-addition occurs once, when something already given is affirmed.

In the 3;3 recording, there is more of vowel reduplication, also with -h- insertion, and combination of two feedback items occurs. We find eliciting combinations such as *dä då?* 'there then?' and *denna då?* 'this one then?' and a number of question-word questions using *var* 'where'. Vowel reduplication with -h- insertion and emphatic stress is used both in an argument (*näHÄ*) and as feedback to an affirmation of C's own confirmation question (*JAha*).

3.4.4. Feedback morphemes and repetition

Let us now consider the total numbers for feedback morphemes and utterances containing repetitions at each data point (table 8). The main types of feedback morphemes in Swedish, classified after their functions and their written language forms are:

(1) *ja* 'yes' morphemes, with acceptance as main function, which can be weakened to contact, perception, understanding
(2) *jo* 'yes' morphemes, with the main function of negating a negation

(3) *m* 'm' morphemes, with contact, perception, understanding as main function, which can be extended to acceptance
(4) *nej* 'no' morphemes, with negation as main function. (For a more extensive description, see Allwood, Nivre and Ahlsén, 1992).

In Table 8, the *ja* morphemes have been subdivided into three variants, the *a*, *ja*, and *ha* morphemes.

Table 8
Feedback: Morphological variants and utterances containing repetitions

	1;8	2;4	2;7	3;3	Tot	Token per main type
Yes						
a	4	3	6	3	16	
aa				3	3	
aaa				1	1	
a?	1				1	
aa?	1				1	
aaa?	1				1	23
ja			3	4	7	
jaa	1			1	2	
JAA				1	1	
jae			1		1	
ja?				1	1	12
ha	3		2	2	7	
JAha				1	1	8
Contrastive yes						
jo			2	3	5	
joo				2	2	7
M						
m		1		1	2	
mm	1	3	4	1	9	11
No						
n				1	1	
nej			1		1	
nä	1		1	6	8	
nää				2	2	
näHÄ				2	2	
nä nä				1	1	15
Other						
ä	3				3	
ä?	1				1	
hm a				1	1	5
Total morph.	17	7	20	37		81
Types	10	3	8	19		
Utterances containing repetitions	11	5	31	9		56

The table shows that *ja* related morphemes (*a, ja, ha*) make up more than 50% of all C's feedback morphemes, thus indicating a strong language dependent influence on C's acquisition of feedback. However, the table also shows that repetition, which is probably a less language specific feature, plays an important role for C's initial development as well.

Let us now turn to a consideration of how the development of C's major categories of feedback compares to P's use of these categories at the different data points (Table 9).

Table 9
Feedback morphemes, operations on feedback morphemes and repeated utterances in C's and P's production

	C				P			
	1;8	2;4	2;7	3;3	1;8	2;4	2;7	3;3
Feedback morphemes	17	7	20	39	28	8	89	70
Operations on feedback morphemes	5	3	7	16	12	2	10	43
Utterances containing repetitions	11	5	31	9	5	8	11	7
Total words:	66	52	240	460	223	167	530	652
% Feedback morphemes /words	26	13	8	8	13	5	17	11
% Operations on feedback morphemes /words	8	6	3	3	5	1	2	7
Total utterances:	28	14	68	69	29	30	84	85
% Utterances containing repetitions	39	50	46	13	17	10	13	8

Calculated relative to the total number of words produced by C, we can see that his feedback morphemes, operations on feedback morphemes, and repetitions all show a

clear decrease. P uses very few repetitions and operations on morphemes, but a fairly high share of feedback morphemes throughout the different points in time, with a few exceptions, mainly at 2;4, where also C has very little verbal output.

Table 10 shows the distribution of the main types of feedback morphemes over the different 'moods' of preceding utterances.

Table 10
Main types of child's feedback in relation to types of parent's preceding utterances.

	1;8	2;4	2;7	3;3
Yes/no-question	a, ja, m	a, m	a, ja, m	a, ja, ha, jo, nej
Question word question			a, ja	
Indicative declarative	ja, ha	m	a, jo	a, ja, jo, m, nej
Feedback giver	a, ha, nej		a, ha	
Identifier (deictic pronoun or adverb)	a, nej	m	ja	
Imperative	a, ha		nej	

We can see that yes/no-questions are responded to by the *a*, *ja*, and *m* morphemes already at 1;8, but that the repertoire of responses to them is complete at 3;3. Feedback responses to indicatives show a similar development. Feedback givers are most often repeated by C. Identifying deictic pronouns and adverbs are usually accepted by a *ja* or *m* morpheme, when they are not repeated, with rare exceptions when the identification is rejected by C with a *nej* morpheme. They do not appear as much at 3;3. Imperatives take *ja* and *nej* responses. Question-word questions, finally, cause some problems, which are reflected in C's use of *ja* morphemes as responses to them at 2;7.

Since this overview is based on a limited set of activities, it is not possible to claim exact times of acquisition for feedback morphemes, operations, and combinations. We can further note that C's use of head nods and head shakes as nonverbal feedback is very sparse; it has therefore not been given a separate analysis. It is clear, however, that for C the following seems to hold:

(a) Basic feedback morphemes, except *jo*, are present at 1;8.
(b) *Jo* occurs later (at 2;7).
(c) Many phonological and morphological operations are present at 1;8.
(d) Combinations start at 2;4–2;7.
(e) Deictic adverbs as elicitors are used early, but probably differentiated later.
(f) There is a preference for short monosyllabic feedback items early and for longer (reduplicated) and combined feedback items later (at 3;3).
(g) Positive feedback morphemes are used more often than negative feedback morphemes (81% vs. 19%).
(h) Feedback morphemes are used more than repetition for feedback functions (59% vs. 41%).
(i) Among basic morphemes, *ja* is used more often (53%) and with more functions earlier than *m* (14%) (in spite of the universality of *m*).

(j) Specific feedback morphemes and repetitions are used much more often for feedback giving than for elicitation (94% vs. 6%).
(k) Feedback morphemes increase in absolute number; repetition does not; the relative share of feedback morphemes, operations on feedback morphemes and repetition decreases.
(l) Types of feedback morphemes increase in number.
(m) Differentiation of feedback morphemes, i.e. use of *ja*, *nej*, and *m* is already present at 1;8 after questions, but differentiation into *ja*, *nej*, *m*, and *jo* after statements only occurs at 2;7–3;3.

We find that C's feedback increases structurally, as we assumed, and that more types of feedback, more combined feedback units and more combinations of feedback with other utterance content occur in the later activities.

3.5. Learning to use feedback in different activities

Feedback is contextually determined to a high degree. It is therefore of great interest to study more closely the role of linguistic feedback in different activity types during acquisition. How can we follow the influence of the activity type on the use of feedback? A nonverbally focused activity, like the Jigsaw Puzzle in our example, is likely to influence the child's use of feedback differently than a verbally focused one, like the Book activity.

3.5.1. Activity specificity and feedback

So far, we have considered the development of C's feedback as a whole. We will now examine whether there are any differences in development when we compare the two activities. We will consider: the number and percentage of utterances containing feedback only, feedback + something else, and utterances which contain no feedback.

Table 11
Utterances with feedback only, feedback + something else, and no feedback, comparing the Jigsaw Puzzle and Book activities

	Jigsaw puzzle				Book			
	1;8	2;4	2;7	3;3	1;8	2;4	2;7	3;3
FB only	9	4	22	17	19	8	29	23
FB + other	0	0	0	5	0	0	0	3
No FB	19	10	46	47	10	22	55	59
Utterances	28	14	68	69	29	30	84	85
%FB only	32	28	32	25	66	27	35	27
%FB + other	0	0	0	7	0	0	0	4
%No FB	68	71	68	68	34	73	65	69

The only activity difference that we can observe, using this crude measure is the relatively speaking much more frequent use of feedback in the first (1;8) Book activity than in the Jigsaw Puzzle activity (and in the later Book and Jigsaw Puzzle activities). This reflects the verbal nature of the Book activity, which makes it necessary for C at an early and not very verbal age to use at least feedback in the majority of his utterances, in this case mostly attempted repetition of P's utterances. Because of the verbal demands of the Book activity, C cannot take as many own initiatives in utterances and cannot combine utterances with nonverbal actions as much as in the Jigsaw Puzzle, where, for example, nonverbal feedback in the form of an action is common.

3.5.2. Types of feedback evocation used by C

C's use of evocation of feedback develops from pure deixis accompanied by action with the function of getting feedback or help in performing action in the 1;8 and 2;7 Jigsaw Puzzle activities, e.g. *dä* 'there' or *den* 'that-one' + trying a piece in the jigsaw puzzle and looking at P, to more elaborated and varied help-seeking using statements + feedback eliciting morphemes, or 1–3 word phrases containing nouns, verbs, adverbs and pronouns with question intonation, also seeking confirmation of action or pure requests at 2;7.

In the Book activity, C's evocation is of the same type as in the Jigsaw Puzzle activity at 1;8 and 2;4, i.e. deixis + action (in this case pointing). C's evocation in the Book activity, however, elicits verbal feedback in the form of lexical vocabulary (usually sound imitation or noun) from P. There is a similarity in the development of evocation between the two activities in that C at 2;7 has more verbal content output, seeking confirmation of his own actions. There is, however, also a clear difference in that the focus of evocation only in the Book activity is to elicit feedback on C's own verbal output, i.e. trying out vocabulary and obtaining feedback by getting P to repeat or reformulate correctly or to give a new alternative.

3.5.3. What is repeated by C?

We will now take a closer look at the form and content of what is repeated by C in the different activities. In the early (1;8 and 2;4) interactions, C repeats only feedback morphemes in the Jigsaw Puzzle activity. In the Book activity, he repeats feedback morphemes and animal sounds. At 2;4 he also attempts to repeat nouns with a question intonation.

At 2;7, C is a very active user of repetition in both activities, i.e. he repeats, partially repeats, or reformulates many types of input. He still repeats feedback as well as nouns and onomatopoetic sounds after corrections from P as well as other expressions used as statements or 'identifiers' by P, but he now also tries to repeat whole statements or parts of statements (mainly nouns and verbs with main stress) in both activities, although more frequently in the Book activity. (The input possible to repeat now mostly consists of statements.) Deictic terms are still what is mostly repeated in the Jigsaw Puzzle activity. C's partial repetitions and reformulations of statements are highly 'filtered', sometimes apparently of a more holistic nature, sometimes more of reformulations (cf. examples 16–18 below). At 3;3, repetitions or partial repetitions of statements predominate.

(16) *Book activity at 2;7*
P1: de va stork
'that was stork'
C1: ojk ojk

(17) *Book activity at 3;3*
C1: ha ha ha ha ha haha så
'ha ha ha ha ha haha so'
P1: ja de e en häst ja som skrattar
'yes it is a horse yes that laughs'
C2: a de e en häst skrattar
'yes it is a horse laughs'

(18) *Jigsaw Puzzle activity at 2;7*
P1: där ja ... bra ... va ska du ta ... tak?
'there yes ... good ...what shall you take ... roof'
C1: dä ja tak så ja ha
'there yes roof so I have'

Although there is also a certain overlap between the activities, there is a clear activity difference in what is repeated or reformulated by C.

In the Jigsaw Puzzle activity, feedback morphemes and deictic adverbs dominate (also at 2;7 and 3;3) and repetitions are mainly one-word utterances. There is only small variation in the vocabulary used. Repetition and feedback in general are used as support for the action. At 2;7, repetition is extensively used and there are even a few filtered repetitions or reformulations of longer utterances. At 3;3, however, repetition is no longer used in this activity (with very few exceptions). Speech is now no longer used so much for supporting the activity, but sometimes goes on independently and there is no repetition of feedback or deictic expressions. In the Book activity, C repeats, partially repeats or reformulates mainly animal sounds, nouns, and later verbs and phrases or sentences. This repetition is very limited at 1;8 and 2;4, but shows a wide variety in vocabulary although nouns still predominate at 2;7 and 3;3.

In the Jigsaw Puzzle activity, we can, thus, see how the role of repetition develops from an increasing use of relatively few deictic and feedback expressions supporting the action and interaction, to not being necessary for the action, as the verbal activity becomes detached from the nonverbal activity. In the Book activity, we can see how repetition, partial repetition, and reformulation is actively used in the acquisition of vocabulary and grammar.

3.6. The role of feedback for language acquisition

Feedback can be used in many ways for language acquisition. The mere fact that feedback is a means to keep the verbal interaction going makes it also a means for obtaining linguistic input, as well as for reaching other goals. Whereas for L2 learn-

ers, one can observe conscious as well as less conscious use of feedback for language learning, it is probably mainly a question of less conscious use in L1 acquisition. Some of the acquisition related uses of linguistic feedback mechanisms seem to be:

(a) Elicitation of repetition or explanation of input material from an interlocutor
(b) Making the input continue, elicitation of more input
(c) Repetition as a way of acquiring and practising production whilst eliciting feedback on correctness
(d) Learning interactive routines by trying out and using feedback mechanisms (e.g., turntaking, the feedback system, and various sequences where feedback can be used)

Some possible examples of the listed uses of feedback by C are the following. In examples (19)–(21) we will use the communicative functions described in section 3.1 (C = contact, P = perception, U = understanding, ? = question prosody, expr = expressive function, evoc = evocative function). Feedback items are given in boldface.

(19) *Jigsaw Puzzle at 1;8*

P1:	en bå	expr: focus of attention
	'a boat'	evoc: c,p,u, attention
C1:	*eh*	expr: +C, ?P, ?U
	'eh'	evoc: +C, repetition/paraphrase
P2:	ta båten	expr: c,p,u, wish
	'take the boat'	evoc: c,p,u, nonverbal action
C2:	*äh?*	expr: +C, ?P, ?U, desire for information
	'äh?'	evoc: +C, repetition/paraphrase
P3:	ta båten?	expr: c,p,u, desire for information
	'take the boat'	evoc: c,p,u, confirmation of participation, nonverbal action
C3:	*mm*	expr: +C, +P, ?U
	'mm'	evoc: +C, wait
P4:	ta båten	expr: c,p,u, wish
	'take the boat'	evoc: c,p,u, nonverbal action

From example (19), we can see that C, although mastering very few words at this time, still has a varied repertoire of feedback and uses it to fill his turns (+C), when expected in the conversation. In this sequence, C actually has his back turned to P, and does not respond by action to P's request, being occupied with something else. His intention seems to be to keep up the verbal interaction and fulfill his role in the turntaking system, i.e. to practice interaction, rather than to learn from having the request repeated, since he does not look for nonverbal 'clues' (although we can, of course not be sure). He has learned to use the feedback items *eh* and *äh* which, over and above maintaining contact and turn, have the function of expressing [-P, -U],

thereby evoking action from the interlocutor (e.g. repeating and paraphrasing) which might amend this. His use of *mm* indicates that he can combine contact maintenance with a means to evoke more time for his own processing or action, i.e. that the interlocutor should wait.

(20) *At 2;7*

C1:	[çon] (points)	expr: focus of attention
	'such'	evoc: c,p,u, relevant action directed to this object (give name)
P1:	saft?	expr: (c,p) ?U name
	'juice'	evoc: c,p,u, desire for information concerning C1
C2:	**[façt]**	expr: c,p,u, confirmation (P1)
		evoc: c,p,u, relevant action (confirm)
P2:	saft // a	expr: c,p,u, confirm (C2)
	'juice // yes'	evoc: c,p,u

(21) *At 2;7*

C1:	[hæstse] (points)	expr: belief 1
	'[horse+se]'	evoc: (c,p,u), accept belief 1
P1:	nä gris	expr: 1 reject, name 2
	'no pig'	evoc: (c,p,u), accept name 2
C2:	**[gIs gIs]** (points twice)	expr: (c,p,u), accept name 2
		evoc: (c,p,u) confirmation C2
	'[pig pig]'	<simplified>
P2:	ja	expr: (c,p,u), confirm C2
	'yes'	evoc: p, u (accept C2), c
C3:	**[gIs] [ha]?** (points, then looks at P)	expr: (c,p,u) name 2 + need of reinforcement
		evoc: (c,p,u), affirmation
	'[pig] [ha]?' <pig simplified>	
P3:	ja	expr: (c,p,u), affirmation
	'yes'	evoc: c,p,u

In example (20), C uses the deictic *such* to call attention to an object. Since the purpose of the activity is to name objects, this utterance, too, through implicit assumption about cooperation and rational goal directedness, functions to evoke the name from P. C then repeats P's utterance, showing how he has perceived and understood P's utterance and evoking confirmation for his perception and understanding.

In example (21), P rejects C's first attempt at naming the object pointed to and provides a new name. C then repeats this name, expressing contact, perception, understanding, and acceptance of the new name and evoking confirmation. P confirms and gives the turn back to C to evoke a continuation. C repeats the name, thus expressing what he has heard and understood, but also attempts to evoke additional

confirmation by directing his gaze at P and adding the word *ha* with questioning tone.

In both examples, C elicits repetition of a noun that he is interested in producing himself, thus having the 'model' produced twice by P. In example (6), the function of vocabulary learning comes out more explicitly through C's confirmation question. Here he is also learning the routine of sequencing in the Book activity. In all three examples, the feedback given ensures more linguistic input.

3.7. Summarizing discussion

During the studied period, C's ability to communicate interactively develops significantly. Both the internal complexity of his utterances and his ability to respond relevantly develop. In this development, the acquisiton of feedback interacts with the acquisition of other means of expression that are useful in early communication. The activity specific early use of onomatopoeia in the Book activity is one example where repetition and learning onomatopoeia interact. Other examples are the use of deixis and of nonverbal communicative action. Both are initially more prominent and successful in the action oriented Jigsaw Puzzle (where the physical and artifactual surrounding, as well as the goals and roles of the interaction promote their use) than they are in the Book activity (where they are more restricted, to pointing and *dä*). The use of deixis and nonverbal communicative action also increases when the child takes the initiative, especially in early interactions. It then often has a feedback eliciting function.

We have seen that C's ability to communicate messages and to manage message communication increases and that the adult provides a more and more complex 'evocative context' for C's responses. The latter is evident from the study of preceding utterances produced by the adult (cf. for example, the increase in complexity of questions put by the adult to the child and the changes in linguistic types of communicative acts in general).

The child's ability to provide verbal responses that are in accordance with the main evocative intentions of the preceding utterances, thus, does not always increase quantitatively with his linguistic development, but sometimes decreases as a consequence of the introduction of increasing difficulty in the preceding utterances.

C's development of feedback items from 1;8 to 3;3 (morphemes, operations, combinations, and repetition) shows that more and more feedback is used totally in the interaction and that the diversity of feedback increases with the growth of the total number of words produced and the increase of the MLU, which increases continuously throughout the studied period. However, feedback is already used competently at 1;8. The relative share of feedback, on the other hand (relative to the total number of words) decreases with age and development as other communicative functions become relatively more prevalent. The child, thus, becomes less dependent on feedback and does not have to extend its use, as he acquires other linguistic means of expression.

There is an activity difference in the quantity of feedback utterances at 1;8, where utterances consisting only of feedback are used much more frequently in the

more verbal Book activity, presumably because this is the easiest way for C to cope with the verbal requirements at this stage. When other linguistic means become available, we thus see a larger decrease of feedback use in the Book activity than in the Jigsaw Puzzle activity, where the pressure to use feedback has been smaller all along.

The relative shares of both feedback morphemes and repetition decline in both activities. Repetition declines slightly more, since it is used very much in the first Book activity. In the case of feedback morphemes, we see a clear decline with age/development. Repetition fluctuates a bit more, at certain times being used more in both activities, possibly as a learning strategy of certain developmental stages.

Explicit combination of feedback and other content in an utterance occurs only from 2;7 and to a greater extent at 3;3. The only activity difference in this respect is the greater explicit use of feedback in the 1;8 Book activity.

There is, thus, a considerable use of feedback very early in language learning. However, both the use of morphemes and repetitions for feedback gradually decline relative to the total production, as more language is learned. The feedback system develops from single, monosyllabic morphemes and attempted repetitions, to structurally more elaborate forms and combinations.

We found an activity influence in the high frequency of utterances containing only feedback in the Book activity at 1;8, where C most often responds with attempted repetition or single feedback morphemes. A difference is also found related to the content and functions of repetitions (mainly of feedback words in the Jigsaw Puzzle activity; much more varied in the Book activity) and in functions of evocation (of verbal feedback on own verbal contribution in the Book activity; of action feedback on own action in the Jigsaw Puzzle activity).

We find quite a few examples of how feedback can be used for language learning by the child (some of which were discussed above; see examples 19-21). The picture which emerges from this study is that the linguistic feedback system provides a point of entrance to linguistic interaction which is both central and relatively easy to learn. The feedback system is central in that it allows for participation in most types of linguistic interaction without mastering all the fine mechanisms of a language. It is also central in that it allows for functional differentiation, thus enabling a child from an early age to acquire a repertoire of contextually differentiated patterns of communication. Finally, the feedback system seems to play a central role in that it provides a natural tool for the child to experiment in interaction with an interlocutor.

At the last observation point of the study (3;3), we find that the pattern of feedback use is quite stable, regardless of activity, and that the verbal and action parts of the activity can be kept apart. We also find that new demands are introduced and that, while C is quite proficient in managing message communication at a certain level by feedback, he is still learning about communication of messages, as well as management of message communication.

In the case study, we have been able to follow the development of a part of communication management: feedback. We have seen that the development of feedback is linked to the development of other means of communicative management, such as

turn management (e.g. feedback provides an early means for filling one's turn) and sequences (e.g. the more and more elaborate sequences initiated by the adult call for more and more elaborate feedback). We have also seen how the development of feedback (and communication management in general) is linked to the growing ability to communicate messages (e.g., early in development, the child is much more dependent on feedback as a means of communicating messages, whereas later on feedback changes its role to a more restricted one and thus decreases in relative frequency). We have followed the development over a period of language acquisition (1;8–3;3) and seen many differences between early and late data within this period. We have also seen how differences between the two included activities, the more action oriented Jigsaw puzzle activity and the more verbally oriented Book activity influence communication. The two activities provide different conditions for learning and using feedback as well as other aspects of language, and this shows up most clearly for feedback early in the period.

Appendix 1: Activity description

Determining factors		*Jigsaw puzzle* (JP)	*Book*
Goals	Collective	Videorecording Complete JP	Videorecording Talk about pictures in book
	P	Get C to speak, communicate	Get C to speak, give lexical items
	C	Complete JP Get information	Look at pictures Get information
Roles	P	father help/instructor	father interviewer/model
	C	son, main performer, and study object	son, main performer, and study object
Physical		studio sofa, table JP	studio sofa, table book
Biological		*Both activities*	
	P	Age: 40s, Sex: male	
	C	Age: 1;8–3;3, Sex: male	

Social/ psycho- logical	P	Focus on video recording Responsible for keeping communicative interaction going Helpful, but wants C to act and communicate as much as possible	
	C	*JP*	*Book*
		Focus on JP Do activity Get information/ help	Focus on looking in book Get information

Appendix 2: Transcription conventions

The videorecorded interactions have been transcribed using modified standard orthography (MSO) (Nivre and Sofkova, 1996). The basic features of the transcription conventions are:

(1) Ordinary orthography is used, which is adapted to conventionalized spoken language forms in Swedish.
(2) If a closer transcription is needed, e.g. because the child produces something that is not clearly identifiable, a broad phonetic transcription using IPA is used.
(3) Nonverbal communication and communicative action is decribed in a separate column to the right of the transcribed text.
(4) No sentence punctuation is used.
(5) Special conventions:

CAPITALS	= emphatic stress
?	= rising intonation
//	= pause
[ ]	= overlap, also used conventionally for phonetic transcription of single words
( )	= inaudible or approximation
< >	= comment

A special coding of expressive and evocative functions and the feedback functions, contact, perception, understanding, was used, according to section 3.1 (Method) of the paper.

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