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**Effects of conversational functioning on early language
acquisition:
When both caregivers and children matter**

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1. Introduction

An English version of Grace Wales Shugar's original article (1975) was published in Waterson & Snow (1978), a collection of papers selected from the Third International Child Language Symposium held in London in 1975. At this meeting the statuses of the International Association for the Study of Child Language, officially created in 1972 in Florence, were approved. It was a time of effervescence in the study of child language when researchers were turning their attention to the communicative, interactional and pragmatic aspects of language acquisition and use. The Florence conference laid down important new guiding principles (although not necessarily prophetic):

"That conference signaled the end of the study of language acquisition as if it were a linear development of innate grammatical rules ... A strong trend emerged to see language as a social phenomenon with explicit attention drawn to input factors and to non verbal communication".

Grace Wales Shugar (hitherto GWS) was an active protagonist of this renewal (see also, e.g., 1976, 1981). Her work, advocating a very dynamic view of language acquisition, was even more innovative. Several important and still very actual points were made in her article. Particularly noteworthy is her position on the nature of early adult-child interaction. She considered conversational activity as a highly interactional affair to whose outcome both adult and child contribute and are mutually influenced by the contribution of their partner. Not only she clearly states such a principle but also gives several hints for analyzing concretely and showing the existence of such a mutual influence, for example when she reports that "confirmation of the child's utterance ... appeared to be an important condition for the child to engage further in active text construction" (1978: 237).

The deep meaning of a genuine interactional approach where the contributions of one partner are seen to depend on and concurrently shape the contributions of the other, is still difficult to grasp entirely and to measure satisfactorily. More common approaches within learning-oriented theories of language acquisition remain single-partner oriented, placing most of the emphasis either on the child's contribution (for example, in the cognitively-based "intentional" approach of Bloom, 1993) or on the adult's skillful framing of interaction, as in the "scaffolding" approach within which most work on social interaction situates itself, going back to Garvey's (1974) and Bruner's early work on formats (1975) and on Bruner's more general socio-cognitive model of development (e.g., 1983).

In much the way that GWS was advancing, the present chapter shows the intricacies of interaction and reports results bearing on immediate and long-term effects of dyadic conversational moves. It will be shown, for example, that early in the second year relating to the topic of one partner crucially depends on the previous response of the other, resulting in exchanges that GWS called "Variant I" (Adult-Child-Adult or longer) and "Variant II" (Child-Adult-Child or longer) where the contributions of the individual partners can hardly be considered independently of each other.

1.1. Studying the effect of conversational functioning: some methodological considerations

Finding evidence for the effect of conversational functioning on early language acquisition and use requires thorough *developmental* and *discursive* approaches advocated in GWS's paper and in other groundbreaking work of that same period (e.g., Bloom, 1973; Greenfield & Smith, 1976; Slobin, 1968; Snow, 1977).

All conversational activity where *minimal* requirements for conversation (turn taking and topic relatedness) are met, need to be retained for analysis, including in this way children's behaviors that present some but not necessarily all of the characteristics of the competence under study. For example, if word learning is aimed at, conversational exchanges involving children's productions not yet easily identifiable as words by an observer, are of utmost interest. If word combination is the target, single word utterances produced in succession and referring to the same event (usually known as SSWUs, e.g., Bloom, 1973), have to be included, particularly those that unfold during the exchange itself. Excluding these early manifestations and the dynamic processes within which they occur greatly limits the understanding of conversation as a process of acquisition.

The "sequentiality" of extended discourse is another essential aspect to be taken into account when studying the effects of conversational exchanges on language acquisition. Indeed, conversational *sequences*, though "created from individual utterances, are more than the sum of their parts" (Clark, 1996:318). The sequence is likely to create new events that the partners may have not foreseen beforehand. Such an "*unforeseen*" novelty of the encompassing totality of the sequence may be the crucial original contribution of conversations to language progress.

Finally, to test the impact of conversational exchanges on later mother-child functioning, the study should dispose of longitudinal data gathered at short intervals. Time intervals greater than a couple of weeks can provide snapshots of development but are unlikely to find specific traces of earlier conversational activity from one time data point to another.

The work presented here attempts to implement these methodological guidelines.

2. The data

The data presented here come from two longitudinal studies of mother-child dyads observed in their homes for at least one hour approximately every two weeks during naturally-occurring interaction (including free play, book-reading and occasional snack-times). In the first study (referred hereafter as HS, for "Hebrew study"), 6 dyads were observed when the children were between 9/10 and 17/19 months old, and were in the process of acquiring Hebrew. The families, considered "middle-class", lived in Rehovoth, Israel, and spoke Hebrew at home.

The other study (referred hereafter as FS, for "French study") concerns 8 dyads in the process of acquiring French. Here we relate the results of one of these dyads, where the child, a girl, was followed between the age of 15 and 26 months.

Some of the analyses presented are based on methods used in earlier work (e.g., Veneziano, 1988, 1999). Other analyses are based on methodology originally developed for the present chapter and will be discussed in the corresponding sections.

3. Topic-related sequences in early mother-child interaction

Mother's and child's adjacent productions are considered to share a topic when they share some content: one partner uptakes and repeats all or part of the other's previous utterance sharing at least sonorities (imitative response¹), or relates only semantically to it (semantic-only response²) (see, for more details, Veneziano, 1988; for a similar definition, see more recently, Bloom, Margulis, Tinker & Fujita, 1996). Content-related conversational exchanges occur both in Child-Mother and in Mother-Child initiated sequences. In both cases, thematic continuity can be discontinued after the second turn (sequences with "simple" thematic continuity) or it may be kept on, giving rise to a sequence containing at least three-turns bearing on the same topic/content (sequences with "extended" thematic continuity). Examples of Child-Mother, and of Mother-Child, initiated sequences are provided in the next section. They present imitative or semantic-only relations and the whole sequence realizes either simple or extended thematic continuity. It should be noted that in a genuine *dyadic* approach, exchanges are no more child than mother initiated. In Child-Mother sequences, the child's first turn may indeed solicit the mother's response - which would make the exchange child-initiated - but it is the mother's response that transforms the child's initial turn into a thematically-linked exchange - and in this respect the exchange is mother-initiated. The same can be said of Mother-Child sequences, where again their realization is due as much to the mother's initiation as to child's responding. If interaction is taken seriously, it is not clear that results reporting for example on mothers being more likely to respond than to initiate exchanges (e.g., Harris, 1992) concern exclusively mothers' rather than mothers and children's functioning. In accordance, in the rest of the chapter, sequences will thus be referred to as "CM-initial" and "MC-initial".

3.1. CM-initial simple sequences: topic continuation with and without imitative uptake

The mother may simply repeat the child's production without altering it. This is mainly the case when the child's production is already on target:

Example 1- HS

Child	: /'oto/	'car'
Mother	: <i>oto</i>	'car'

or she may reformulate (or correct) it in the attributed target's conventional form. Mothers usually provide, at the same time, an interpretation of the communicative intent, sometimes with explicit agreement marking:

Example 2 - FS

Child	: <i>ka</i>	
Mother	: <i>oui c'est un canard</i>	'yes it's a duck'

Example 3 - HS

Child	: /'sese/	
Mother	: <i>ze sefer naxon</i>	'it's a book, that's right'

Whether or not the mother really believes that the child meant to produce the particular word, the linking established by this sort of conversational functioning *creates* or strengthens such a language value of the child's production.

Linking and meaning inferences are allowed also when the mother disapproves the child's form (ex. 4), or considers the word inappropriate to the situation at hand (ex. 5 and 6):

Example 4 - FS

Child : /'ta'to/

Mother : /'ta'to/ ## *ce n'est pas tato que j'ai dit c'est bateau*
'/ta'to/ ## it isn't tato that I said it is boat'

Example 5 - FS

Child : /e•~e/

Mother : *ça c'est pas un chien ## c'est une contrebasse*
'it is not a dog ## it's a contrabass'

Example 6 - FS

Child : /'ka-'se/ (while showing a bottle)

Mother : *elle est pas cassé non*
'it is not broken no'

In examples 1 to 6 above, the relation between the child's production and the target is established explicitly providing the child with the opportunity to find similarities and differences between them and eventually correct the form and reshape the boundaries of its meaning.

In other topic-related exchanges the relation between the mother's and the child's utterances rest upon the semantic link only. Pronominal reference is one of the means to attain it :

Example 7 - FS

Child : /'pu'pe/ /'pe/ (looking at mother)

Mother : *va la chercher, elle est restée à la cuisine*
'go find it, it remained in the kitchen'

Semantic-only links rest upon immediate clear recognition of the child's uttered words that can then be taken as an established starting point for further talk.

3.2. MC-initial simple sequences: topic continuation with and without uptake

Topic continuation by children via imitative uptake, usually selective, indicates they attend actively to the mother's language production, while creating an impression of sharing the context as well as its verbal representation:

Example 8 - HS (the child holds a piece of paper)

Mother : *efo haniyar? efo haniyar shel Tali?* (looking around in the room)
'where is the paper? where is Tali's paper? '

Child : /'ni'a:/ (looking ahead)

Example 9 - FS

- Mother : *voilà le bouchon* (offering a toy bottlecap to the child)
 ‘here is the bottlecap’
- Child : /ʃõ/ (taking the toy bottlecap from mother’s hands)

Semantic-only linking by children rests upon some understanding and shows their ability to use, as GWS might say, "stuff from their store" while taking the lead from offered hints:

Example 10 - HS

- Mother : *ma achalta hayom?* ‘what did you eat today?’
 Child : /'u'ga/ ‘cake’

Example 11 - FS (pointing at the picture of a baby doll in a toy crib)

- Mother : *qu'est-ce qu'il fait là le bébé?*
 ‘what does the baby do in there’
- Child : /'do'do/ ‘night night’

3.3. CM-initial and MC-initial extended topic-related sequences

In examples 1 to 11 the exchanges are "simple". Often however thematic continuity extends beyond the second turn and CM-initial and MC-initial sequences present at least a third topic-related turn. Example 12 provides an example of MC-initial sequence where both the mother and the child keep focalizing on the same lexical item (*saute*, 'jump(s)) - in M2 and C2 - resulting in a four-turns topic-related sequence:

Example 12 - FS (mother and child look at a mechanical frog running and jumping on the floor)

- Mother₁ : *t'as vu la grenouille comment elle saute?*
 ‘have you seen the frog how it jumps?’
- Child₁ : /'sot/ ‘jump(s)’
- Mother₂ : *elle saute* ‘she jumps’
- Child₂ : /sot/ ‘jump(s)’

Example 13 provides an example of CM-initial sequence where mother and child remain on the same topic in four further turns. In this sequence the child modifies her initial production, in C2 and also with the further unfolding of the exchange, in C3:

Example 13 - HS (the child plays with the wheels of a toy truck)

- Child₁ : /ʃe a: 'u'lɛl/
- Mother₁ : *maze? galgal?*
 ‘what's that? ‘(a) wheel?’
- Child₂ : /'a'lo/ (holding the wheel)
- Mother₂ : *galgal #galgal galgal*
 ‘(a) wheel # ‘(a) wheel ‘(a) wheel’
- Child₃ : /'a'lal/ (holding the wheel)
- Mother₃ : *efo galgal? hine #hine# hine galgal*
 ‘where is (the) wheel? here# here # here is (the) wheel’

Exchanges having a minimum of three turns and where, like in examples 12 and 13 above, one lexical item is kept in force through the exchange and is produced across partners, are called *reciprocal* exchanges.

When more than one lexical item circulates across the turns of both partners, the extended thematic sequences are called *discursive*. They can be realized:

- by the child's imitative uptake (of M1, in C2) of a word *different* from the one produced in the child's earlier turn (C1):

Example 14 - HS

Child ₁	: /'aba/	'daddy'
Mother ₁	: <i>abaalach</i>	'daddy left'
Child ₂	: /'a'la/	'alach ≈ left'
Mother ₂	: <i>alach</i>	'left'

- by a child-produced semantic-only relation co-existing with another link within the same thematic sequence. In example 15, an imitative link (established by the mother between M1 and C1) is followed by a semantic-only relation established by the child between C2 and M1. In example 16, the semantic-only relation between C1 and M1 is followed by an imitative link (established by the mother between M2 and C1), followed in turn by an immediate semantic-only relation established by the child between C2 and M2. In M3 the mother pulls everything together:

Example 15 - FS (the child points towards a mechanical frog jumping on the floor)

Child ₁	: /gu/	
Mother ₁	: <i>oui c'est la grenouille</i>	'yes it is the frog'
Child ₂	: /sot/	'jump(s)'

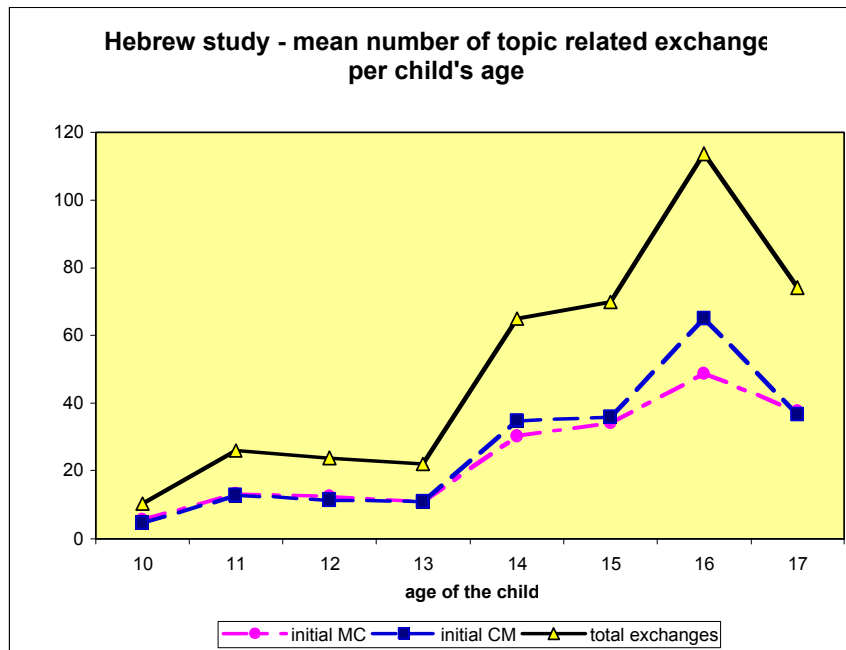
Example 16 - FS (mother and child look at a picture book)

Mother ₁	: <i>où sont les enfants?</i>	'where are the children?'
Child ₁	: /zɛn/	'carrousel' ≈ 'merry-go-round'
Mother ₂	: <i>en carrousel? ils sont dans le carrousel?</i>	'on the merry-go-round? they are on the merry-go-round?'
Child ₂	: /afã/	'enfant(s)' ≈ 'child(ren)'
Mother ₃	: <i>les enfants sont en carrousel?</i>	'the children are on the merry-go-round?'
Child ₃	: hein	

3.4. Developmental results

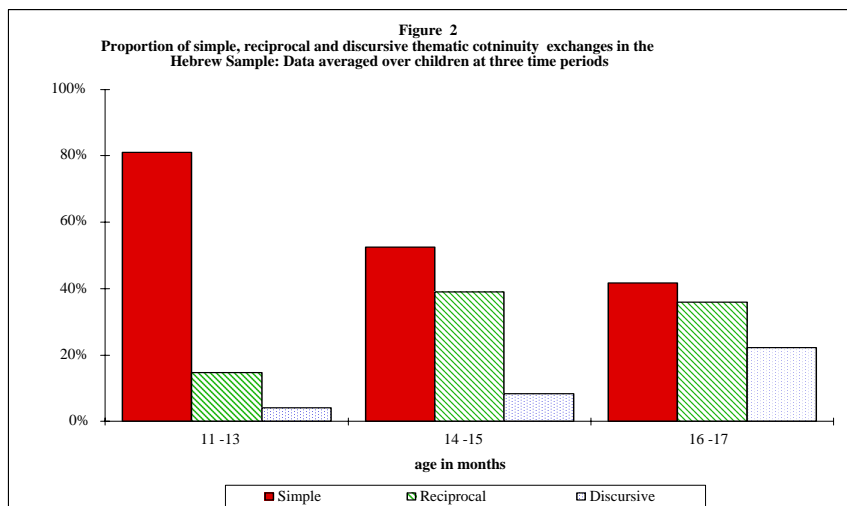
In the Hebrew study topic-related exchanges present two significant increases, one at 14 months ($\chi^2 = 5.1, df=1, p < .05$), and another at 17 months ($\chi^2 = 17.2, df=2, p < .001$) (see figure 1),

Figure 1



Overall, mothers relate to the children's production as much as children relate to the mother's (matched t-test, n.s.). Individually, in only one dyad the mother related significantly more to the child than the other way around (matched t-test performed on 8 longitudinal data points: $t=3.92$, $p<.01$, $df=7$). Throughout the period, thematic continuity is implemented mostly by imitative uptakes, as much by children (mean of 90.3%) as by mothers (mean of 88.7%). Semantic-only relations show a mean increase at 16 months ($\chi^2 \square 13.01$, $p<.05$, $df=6$)⁴.

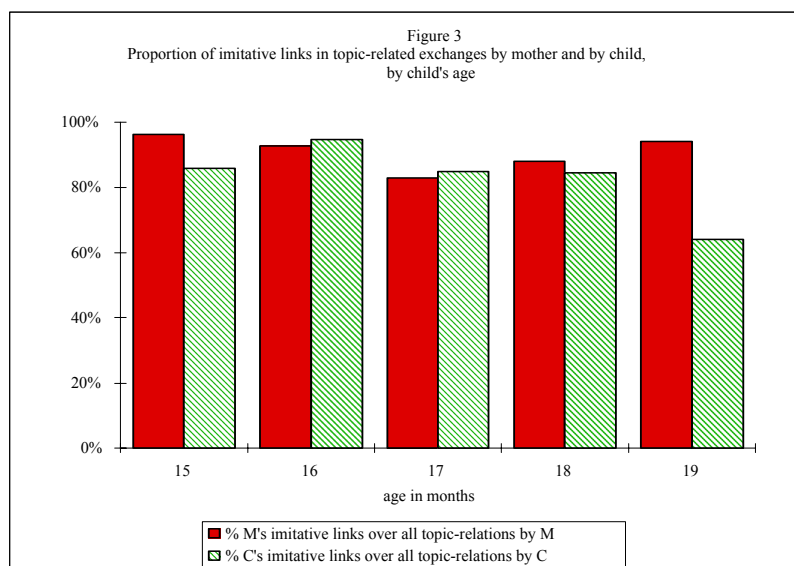
The profile of the three main types of topic-related exchanges - simple, reciprocal and discursive - also changes with children's development (see Figure 2).



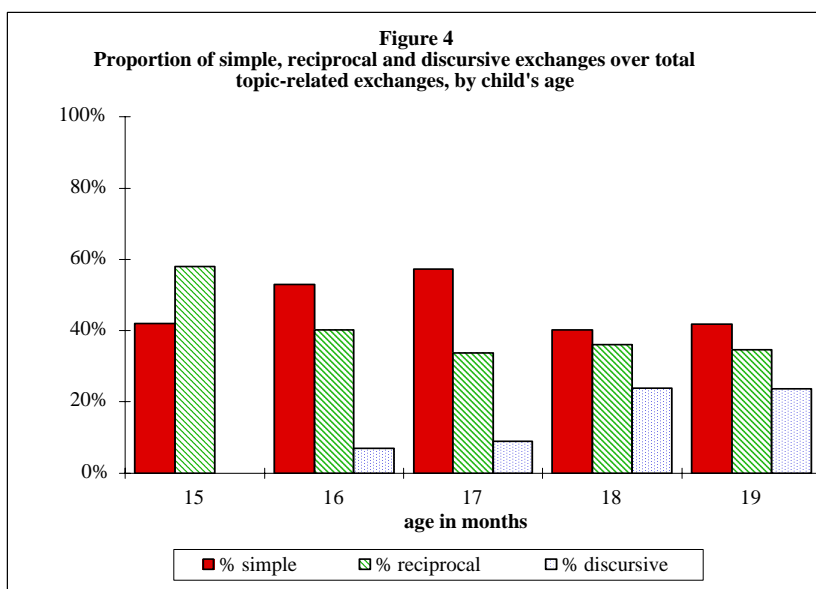
Although simple exchanges remain proportionally most frequent throughout the whole period, up to about 13 months their proportion greatly outweighs that of extended sequences; simple exchanges decrease starting at 14-15 months and, at 16-17 months, extended sequences are proportionally the most frequent.

Reciprocal exchanges increase at 14-15 months and discursive exchanges at 16-17 months.

Similar results have been found in the French study. Also there, thematic continuity is implemented mostly by imitative uptakes (between 75 and 95% of all the exchanges), as much by the child (mean of 82%) as by the mother (mean of 91%). At 19 months the child relates more than the mother does via semantic-only links (see Figure 3).

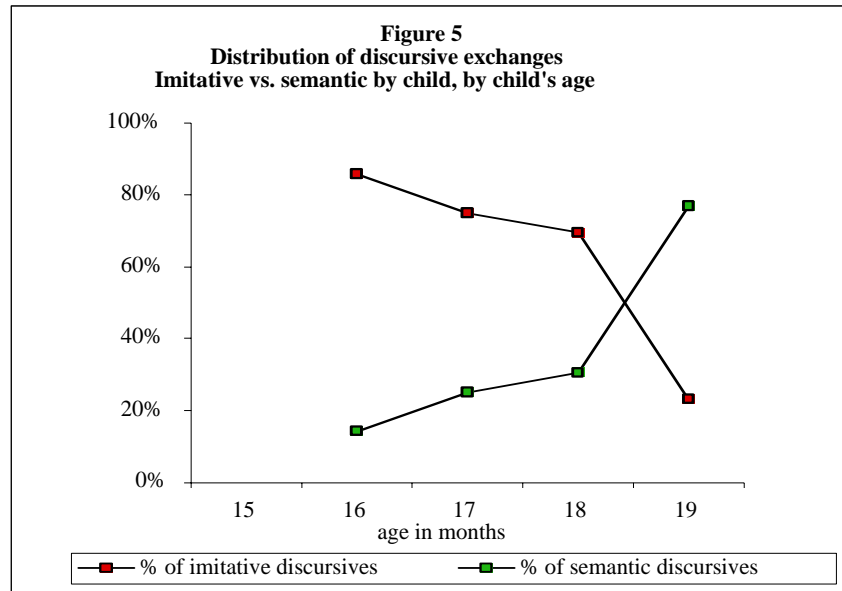


Reciprocal exchanges are already well represented at 15 months, the time the study began for this dyad, when they are proportionally more frequent than simple exchanges (see Figure 4).



As in the Hebrew study, simple exchanges remain proportionally important afterwards but at 18-19 months extended sequences are the most frequent again. After 15 months, reciprocal exchanges continue to occur with proportions similar

to those of the Hebrew study (around 40%); discursive exchanges appear at 16 months and increase at 18 months. The profile of exchange types remains the same at 19 months but, at this time, semantic-only relations are most common in the realization of discursive sequences (see Figure 5).



We turn now to consider the effect of dyadic conversational functioning on children. At first, we will look at its immediate effects during the exchange and then at longer-term effects on the use and early acquisition of language.

4. Effects of conversational exchanges

4. 1. Immediate effects of mothers' imitative uptakes

4.1.1. Opportunities for improved matching

Chouinard & Clark (2003) found that after a corrective reformulation by mothers, children modify immediately after their productions. To measure this effect, in the HS we looked for sequences where the second intervention of the child was better on target than the previous child's intervention (i.e., C_2 is a better approximation than C_1 in $(M)C_1MC_2$ sequences). Excluding sequences where the child's initial production is already on target, we found that adaptive accommodation occurs very rarely before 14 months. In the 14 to 17 months period adaptive accommodation is observed on the average in 34% of the exchanges where accommodation was possible (with a range between 21% and 50%, according to dyads). Significant increases in adaptive modifications were observed at 14 months for three of the children, at 16 months for one child, and at 17 months for the remaining two children.

Thus the first immediate effect of topic-related conversations is to provide children opportunities to actively conventionalize their emerging lexical forms (see also Otomo, 2001).

4.1.2. Opportunities to remain on topic

A second immediate effect of topic-related conversations is to produce further interaction on the same topic (Tomasello & Todd, 1983; Veneziano, 1988). In the HS we found that, starting at 14 months, children are three times more likely to continue the topic if the mother's contribution is itself related to the child's previous utterance than if the mother's utterance initiates a new topic (44.9% vs. 11.5%, at 14-15 months; and 46.8% vs. 17.4% at 16-17 months, the difference between the proportions being significant for the corresponding z-scores with $p < .001$). In other words, children are more likely to attend to an adult's utterance that relates to their own focus of attention than to one that doesn't. Moreover, in this conversational context, children are more likely to continue the topic by restating the initial utterance (giving rise to a reciprocal exchange, see examples 13 and 14 above), than to utter a topic-related verbalization *different* from the one produced earlier (resulting in a discursive exchange like in examples 15 and 16 above). Again, the difference between proportions, measured by z-scores, is significant (with $p < .001$) at all three periods (Veneziano, 1988).

Interestingly, also mothers' topic-relatedness shows the same trend. Mothers are much more likely to relate to the child's preceding utterance when this relates to their own previous utterance than when it does not so relate (55% vs. 14.6%, at 14-15 months; and 52.4% vs. 19.1% at 16-17 months, the difference between the proportions being significant for the corresponding z-scores with $p < .001$). Between 14 and 17 months also mothers are more likely to stay on topic by reinstating explicitly the child-produced word, giving rise to a reciprocal rather than to a discursive exchange (42.8% vs. 12.2%, at 14-15 months; and 40.8% vs. 11.6% at 16-17 months, the difference between the proportions being significant for the corresponding z-scores with $p < .001$).

Children's reinstatement of their own initial production is not independent of the adult's behavior: the child is more likely to repeat his own previous production if the mother has related imitatively to it than otherwise. Indeed, at the 14-15 months, children's self-repetition is significantly more likely to occur when *there is* an intervening mother's topic-related turn between the two productions (C2 in C1MC2, for C1=C2), then when no such intervention is present (C2 in C1//C2, for C1=C2) ($\chi^2 = 10.1, df = 1, p < .001$). Moreover, the child's second production is more likely to present adaptive modifications in the former than in the latter case ($\chi^2 = 68.3, df = 1, p < .001$).

When either the mother or the child take the first step in topic-related responding, a *conversational process* gets started such that the partner is likely to stay on topic and the child - in M1C1M2C2 or in C1M1C2 sequences - has the opportunity to compare productions and eventually to attain better matching to targets (see also Chouinard & Clark 2003; Otomo, 2001).

The influence, on both partners, of the conversational activity of the other is completely in line with results already reported in GWS' original paper as well as with those of other authors (e.g., Folger & Chapman, 1978; Tomasello & Todd, 1983).

4.1.3. Focalization contributes to extended joint attention

Topic-relatedness by the mother may not be the only relevant variable for children's increased tendency to continue staying on topic. Mothers' topic-related

imitative uptakes present, to a greater extent than other turns (i.e., topic-initiating and non imitative topic related turns), the characteristic of *focalization* (Veneziano, 1988). Mothers' imitative uptakes of children's productions tend to be *focalized* within the mother's turn by either being the only elements of the turn or by being separated from the rest of the turn by manually measurable pauses (greater than half a second). Moreover, focalized elements are also often repeated:

Example 17 - HS - focalization with repetition

Child : /a'ma/ (while trying to pull apart a toy drum)

Mother : *ima ima*
'mommy, mommy'

Example 18 - FS - focalization with repetition

(The child touches the prickling spot on the image of a face in a picture book)

Child : /pik/
'sting(s)'

Mother : *pique! ça pique oui, comme la barbe de papa*
'sting(s)! it stings yes like father's beard'

At 14 months, when topic-related exchanges increase significantly, focalization occurs in 39% of mothers' turns. However, while focalization occurs in 30% of unrelated turns, as much as 76% of imitatively related turns focalize exactly the uptaken lexical item (the difference between the proportions is significant: $p(z=12.95)<.001$). Focalization is thus a specific characteristic of mothers' imitations in topic-related turns. Although focalized elements can also be repeated, repetition is not specific to imitative uptakes, as it occurs as much in imitatively-related (32%) as in unrelated mothers' turns (34%).

Children are more likely to relate to *focalized* than to non focalized lexical items. Indeed, while 26.5% of words focalized in mothers' turns are followed by a child's imitative relation, only 14.7% of non focalized items are uptaken, a difference between proportions that is significant ($p(z=5.14)<.001$).

Focalization in mothers' turns then positively interacts with topic-relatedness, contributing to children's continuation of the topic, to the production of reciprocal exchanges and, through the modifications that can occur in these conversational contexts, to improved correspondence between children's productions and target words.

4.2. Long-term effects of conversational functioning

4.2.1. Changes in the interactional language value of children's productions

This analysis looks at whether children's productions involved in imitative CM-initial or MC-initial, simple or extended sequences, function at later sessions as the words to which they have been related to in earlier conversational exchanges. In this case, considering that semantic-only relations conversationally treat the corresponding productions as having relatively conventional forms and meanings, at later sessions, mothers should relate to them more often with semantic-only relations than is the case of children's productions not involved earlier in imitative topic-related exchanges. Moreover, children's productions involved earlier in topic-related exchanges, should also be easily identified by an

observer as the corresponding words when occurring outside of conversational sequences.

To test this hypothesis we first distinguished, for each child, and at each session of the longitudinal studies, lexical items that were observed already at earlier sessions from those appearing for the first time at the session under scrutiny (starting from the session where three "previous" and three "new" items could be identified). Previous and new lexical items were then classified according to whether they were exclusively involved in imitative relations, were involved also, or exclusively, in semantic-only links, or, if not involved in any conversational exchange, were considered by the observer to be used appropriately.

Results show that "new" lexical items (appearing for the first time at the session under scrutiny) are involved significantly more in imitative relations than "previous" lexical items; instead, the latter are involved significantly more in semantic-only relations, or are used appropriately when not involved in any topic-related exchange (see Table 1).

Table 1
Proportion of "previous" and "new" words involved in semantic-only relations, exclusively or not, at the session under scrutiny, per dyad

Individual dyads	"previous" words	"new" words	Chi-square (2x2)
Oded number of analyzed word % exclusively or also in semantic-relations only	23 82.6%	24 50.0%	4.20*
Shimon number of analyzed word % exclusively or also in semantic-relations only	15 93.3%	21 28.6%	12.35***
Nili number of analyzed word % exclusively or also in semantic-relations only	54 79.6%	46 39.1%	15.46***
Yuval number of analyzed word % exclusively or also in semantic-relations only	36 27.8%	70 8.6%	5.43**
Tali number of analyzed word % exclusively or also in semantic-relations only	31 64.5%	66 33.3%	7.13**

* $p < .02$; ** $p < .01$; *** $p < .001$

This is the case for each dyad, at each session where the measures could be performed. For dyad Yuval the proportion of semantic-only relations is lower than for the other dyads (this dyad using highly the imitative link). However the

difference between "new" and "previous" lexical items remains significant and goes in the same direction as for the other dyads.

Between 61% and 97% of "previous" lexical items were earlier involved, at least once, in imitative exchanges, and between 30.4% and 72.2%, at least once in extended reciprocal exchanges. Moreover, when they occur again, these same "previous" lexical items are produced less in imitative exchanges than at previous sessions (for the difference between proportions comparing overall imitative exchanges: $p(z=6.35) < .001$; comparing reciprocal exchanges: $p(z=4.72) < .001$).

These results suggest that imitative relations contribute to the smooth recognition of children's productions as the particular words they have been linked to, allowing straighter discursive semantic relations to occur, and their identification as those same words by an observer. This finding is consistent with earlier studies showing that child-imitated words are used later spontaneously (Bloom, Hood & Lightbown, 1974; Ramer, 1976).

4.2.2. Effects of extended reciprocal exchanges on later lexical acquisition

In the late sixties Slobin (1968) already stated explicitly that sequences in which children imitate mothers' expansions (what we have called here "reciprocal" exchanges) are of great relevance since children are there confronted with a correct model of their own production at a time their attention is already engaged and the situation remains unchanged (1968:440). However, although several other authors, among which GWS (1975, 1976, 1978, 1981), pointed out the particular interest of extended discourse for early language acquisition, most studies have taken into account mothers' expansions and children's imitations independently of each other and very few have tried to assess the effect of extended discourse relative to that of simple pairs of topic-related turns. This analysis has been performed on our data and is presented in this section.

In order to assess the relative effect of "simple" and of reciprocal sequences we looked for a time period in which children had a similar number of words in their repertoire (this was the case at 14 months) — and for a later time in which this measure differentiated the children (in our sample this happened at 17 months) (see Table 2).

Table 2
Cumulatif vocabulary at 14 and 17 months,
by child, and gains in vocabulary in the 14-17 months period

Child	cumulatif vocabulary at 14 months*	cumulatif vocabulary at 17 months**	gains in vocabulary between 14 and 17 months***
Oded	8	26	18
Shimon	17	28	11
Nili	17	41	23
Yuval	20	47	27
Tali	18	66	48

*One-sample chi-square=5.37, n.s. for df=4

**One-sample chi-square=25.31, p<001, df=4

***One-sample chi-square =30.35, p<001, df=4

Results show a specific effect of *reciprocal* exchanges on the rhythm of lexical acquisition by the children (see Table 3).

Table 3
Correlations between gains in vocabulary (between 14 and 17 months)
and conversational activity at 14 months

Mothers' imitative topic-related turns		
Total number	0.794	n.s.
Simple CM sequences	0.072	n.s.
Reciprocal CM-initial sequences	0.884	p<.05, df=4
Children's imitative topic-related turns		
Total number	0.997	p<.001, df=4
Simple MC sequences	0.567	p=.32, df=4
Reciprocal MC-initial sequences	0.976	p<.01, df=4

Both MC-initial and CM-initial reciprocal exchanges correlate significantly with gains in vocabulary, while simple imitative exchanges — expansions by the mother not followed up by a reciprocal imitation by the child (simple CM-initial) and imitative uptakes by the child not followed up by a reciprocal imitation by the mother (simple MC-initial) —, do not correlate.

Overall measures of mothers' expansions do not correlate significantly with gains in vocabulary, while overall measures of children's imitative uptakes do. However, when simple MC-initial exchanges are distinguished from extended

ones, only the latter remain significantly correlated with later vocabulary acquisition.

These results underscore the utmost importance of working within a dyadic approach. Indeed, they show that mothers' imitations and expansions are only *potentially* beneficial to lexical acquisition: their value is realized only through children's back-channel relation to them. Also children's imitative uptakes have greater value for lexical acquisition if the mother provides a back-channel relation to them. These conversational events offer children opportunities to actively compare their own production to that of the mother and to modify their phonological form and possibly adjust their meaning in the immediately subsequent topic-related turn.

5. The overall sequence confers different roles to similar thematic relations

As we have seen above, extended sequences can be reciprocal or discursive (see examples 12 to 15 above). Reciprocal sequences, which explicitly maintain one lexical item in the focus of joint attention, are developmentally prior to discursive sequences, where the child remains on topic through the production of at least one lexical items different from the one produced earlier in the sequence. Here are two further examples whose similarity illustrates well their structural difference:

Example 19 - FS (at 19;3) - Reciprocal exchange

(Mother and child look at a spinning top that mother had just made turn)

Child₁ : /tu/

'turn(s)

Mother₁ : *tourne oui! elle tourne la toupie*

'turn(s) yes! it turns the spinning top'

Child₂ : /tun/

'turn(s)

Example 20 - FS (at 20;15) - Discursive imitative exchange

(Mother and child look at a spinning top that mother had just made turn)

Child₁ : /tun/

'turn(s)

Mother₁ : *elle tourne oui # t'as vu combien elle tourne la toupie?*

'it turns yes # have you seen how long it turns the spinning top?'

Child₂ : /tu'pi/

'spinning top'

Both the reciprocal (in example 19) and the imitative discursive (in example 20) exchanges can be schematized to have a C₁M₁C₂ structure constituted of two pairs of topic-related turns, C₁M₁ and M₁C₂. These pairs, considered in themselves, can be described similarly in the two sequences: the first pair contains an imitative uptake by the mother of the child's preceding production; the second pair, the child's imitative uptake of one of the words contained in the mother's preceding turn. However, when the pairs are considered as *components* of extended sequences, they are rather different systemically and what differs specifically is the *relationship* that C₂ holds to C₁. In the reciprocal exchange, C₁ and C₂ are the same (C₁=C₂) since the relation between C₁ and M₁, and that

between M_1 and C_2 , concern one and the same lexical item "tourne" 'turn(s)'. In the imitative discursive exchange of example 20, C_1 differs from C_2 ($C_1 \neq C_2$) since the relation between C_1 and M_1 concerns one lexical item ("tourne" 'turn(s)'), and that between M_1 and C_2 concerns another lexical item (toupie, 'spinning top'). While in reciprocal exchanges there is mutual focus on the same lexical item establishing it as a shared word, discursive exchanges give rise to a Successive Single-Word Utterance (SSWU), a transitional phenomenon between single-word and two-word utterances (Bloom, 1973; Greenfield & Smith 1976; Ochs, Schieffelin & Platt, 1979; Scollon, 1979; Greenfield, Reilly, Leaper & Baker, 1985; Barrett 1989; Veneziano, Sinclair & Berthoud 1990). Discursive exchanges, containing imitative, or imitative and semantic relations, are in fact particular kinds of SSWUs that are generated by conversational functioning. They have been considered pivotal in the transition and found to be among the first kinds of SSWUs to occur (e.g., Schwartz, Chapman, Prelock, Terrell, & Rowan, 1985; Veneziano, 1999). It appears then clearly that the same type of relation between adjacent turns (for example, an imitative uptake by the child) may have different roles in the overall sequence and may thus have different potentialities for language acquisition. When it is a component of a reciprocal exchange it creates favourable conditions for lexical acquisition; when it is a component of a discursive exchange it contributes to progress in combinatorial speech.

6. Concluding remarks

Starting in the early part of the second year, what children learn of their environmental language they use it to communicate with familiar partners and their interventions occur progressively more frequently in topic-related conversational exchanges where mothers interpret, reformulate or expand their children's productions, and children imitatively uptake words from their caregiver's utterances or relate only semantically to them. These communicatively-driven conversational exchanges are one of the major source of information about the "languageness" of children's early productions, both for the actors (caregivers and children) and for the observer. At the same time they offer children opportunities to learn more about words, the way they are used to express intentions effectively, as well as the way they combine with other words. Although two years old can learn new words even if not directly addressed to (Akhtar, Jipson & Callanan, 2001), conversational functioning may be essential at younger ages, and remain a viable source of information throughout development.

Our results show that conversational functioning has the effect of producing *further* on topic conversation by mothers and by children. Moreover, when children produce a second turn in reciprocal sequences (C_2 , in $C_1M_1C_2$ or $M_1C_1M_2C_2$), they are much more likely to modify their production than if they were simply repeating it *without* the mother's corrective uptake in between them (M_1 or M_2 above).

Our findings show that these immediate effects of conversation have also longer-term effects. On the one hand, productions involved in exchanges at earlier sessions are recognized, at later sessions, as the words to which they have been linked to. On the other, a specific effect of reciprocal sequences, but not of simple ones, was found on the rate of lexical acquisition.

In reciprocal exchanges several important characteristics converge: joint attention on forms and often on referents (e.g., Tomasello, 2003), opportunities for articulatory practice and auditory feedback (e.g., Locke & Pearson, 1992) with likely modification of forms and adjustments in meaning, and the exchange of signs of mutual recognition. This builds up, on the one hand, mother's belief that her child's early vocalizations represent word attempts, a variable found to correlate with lexical acquisition (Murphy, Menyuk, Liebergott, & Schultz, 1983); on the other, an increasing body of children's productions having a selective entry into mothers' responsiveness. Both aspects can be considered to be the underlying and subtle mental basis for mutual understanding.

The specific effect of reciprocal compared to simple exchanges shows the importance of considering extended discourse instead of limiting the analyses to two-turns relations, as is the case of mothers' expansions, imitations and corrections, and of children's different kinds of imitations. It also underscores the fact that what matters is not so much what each partner does individually but what mothers and children do *together*, the activity of one boosting that of the other, and vice versa. This empirical finding completely supports GWS' idea that mutual influence is central to conversational activity and takes it one step further in showing that it is the essential variable in assessing the effects of conversation on early language acquisition⁵.

The types of conversational structures occurring with children's development are another essential variable to be considered. They point out that conversational sequences have "a life of their own" conferring different roles to the individual contributions of which they are composed. In this early period at least, *jointly* constructed sequences give rise to original events that are properly conversational: mutual recognition of forms and meanings, on the one hand, and semantic links between successively produced one-word utterances, on the other. We argue that the *crucial and specific contribution* of conversational activity to progress in language acquisition and use resides in such *properly interactional effects* of the whole discourse sequences. While children use their usual conversational skills (for example, establish an imitative relation with the preceding intervention of the caregiver), the result provided in the *overall* sequence may be *new* and unplanned in advance.

Particularly interesting are discursive exchanges in which children are led, through the unfolding of conversation, to successively utter words that can be meaningfully related one to the other. The new events emerging from such a conversational functioning are SSWUs that children could not have produced at that time, had they relied exclusively on their competences.

Compared to reciprocal sequences, children's functioning for the obtainment of imitative discursive sequences is different: it requires a shift in attention from a previously uttered and related to item (probably focalized in the caregiver's utterance), towards another word that, albeit contained in the mother's utterance, has not been previously attended to. This change doesn't seem to require new conversational or properly linguistic skills. It appears to demand progress in cognitive abilities, like greater representational skills, increased inhibitory capacities⁶ and an opening towards variation in the expression of events and intentions (e.g., Veneziano 2004). It is such a shift in attention by children that is ultimately responsible for generating different conversational outcomes having

different potentialities for progress. It is only gradually that these initial steps can lead to durable changes, as the relations revealed by the overall discourse sequence need to be apprehended and integrated into other habitual functioning.

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¹ These types of relations have been called in previous work Sonorically-Related Turns - SRTs (Veneziano, 1988)

² These types of relations have been called in previous work Nonsonoric Semantically-related turns - NSRTs (op.cit)

³ Tested by the one-sample chi-square test at each point of the distribution after the first. The value at one session has been compared to the expected value taken to be the mean of the distribution up and including the tested value. As it takes into account the tested value, the test is conservative.

⁴ Three dyads contribute most to this mean increase; two others show a progressive increase and yet another a late start (at 17 months).

⁵ Joint conversation has wider and far-reaching influence even at later ages. For example, Haden, Ornstein, Eckerman & Didow (2001) found it to be a relevant variable in 30 to 42 months old children's recall of experienced activities.

⁶ Research should establish whether such a shift in attention is first linked to particular properties of caregivers' utterances. For example, M1, in C1M1C2 sequences, might be linked with a semantic-only relation to C1, or the imitative uptake of C1 could be non focalized. Moreover, while for the dyad studied here, imitative discursive sequences precede semantic ones, other children might better attain a discursive sequence by purely semantic relations that do not require to inhibit the repetition of the child's previous production.