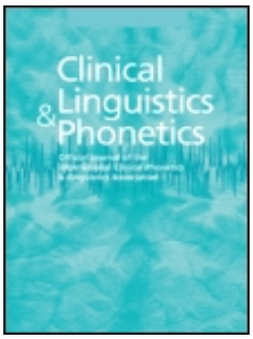

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Maternal recasts and activity variations: A comparison of mother–child dyads involving children with and without SLI

STEFANO REZZONICO[1,2], GENEVIÈVE DE WECK[1], ANNE SALAZAR ORVIG[2], CHRISTINE DA SILVA GENEST[1,2], & SOMAYEH RAHMATI[1]

[1]*Université de Neuchâtel, Institut des Sciences du Langage et de la Communication, Centre de Logopédie, Switzerland and* [2]*Université Sorbonne Nouvelle Paris 3, RFC EA 1483, CLESTHIA, France*

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Abstract
This study investigated maternal recast and the children's responses comparing dyads made up of a mother and a child with typical language development (TD) or a child with specific language impairment (SLI). More specifically, this article deals with the influence of the type of activity being carried out on the number and types of maternal recasts. A sample of 17 French-speaking children with SLI (age 5 to 7 years) matched with 17 TD same-age peers was observed in interaction with their mother during four different activities (joint reading, symbolic play, question guessing game and clue guessing game). The results showed that group and activity had an impact on the number and type of recasts. Mothers of children with SLI offered more recasts than mothers of TD children. The former preferred phonological recasts whereas the latter preferred lexical ones. Moreover, recasts were more frequently used in joint reading than in other activities. Regarding the children's responses, no significant difference was observed between the two groups. Children with SLI took up the maternal proposition more frequently after a lexical recast than after a recast of another type. The findings provide evidence for considering the features of the activities in clinical settings.

Keywords: Children's responses, dialogue, mother–child interaction, recast, specific language impairment

Introduction

In the field of typical and impaired language acquisition, special attention has been paid to recasts (or reformulations) as one facet of language scaffolding. It has frequently been claimed that conversational and formal features of recasts can explain their effectiveness. Strangely enough, however, little attention has been paid to two other aspects of their dialogical nature: the influence of the type of interaction on the number and nature of recasts, and children's responses to them. This article aims to gain further insight into the contextual conditions in which maternal recasts are found and to determine the factors affecting children's responses.

Correspondence: Mr. Stefano Rezzonico, Université de Neuchâtel, ISLC- Logopédie, Espace Louis-Agssiz 1, Neuchâtel, NE, CH 2000, Switzerland. Tel: 0041327181933. E-mail: stefano.rezzonico@unine.ch

Maternal scaffolding and recasts with typically developing children and children with SLI

In an interactionist approach to language acquisition and clinical intervention, recasts belong to the domain of scaffolding (Bruner, 1983; Wood, Bruner, & Ross, 1976). This concept rests on Vygotsky's (1978) zone of proximal development (ZPD) and is defined as a process by which adults guide children through ZPD by helping them to accomplish a task that they would not be able to accomplish by themselves. In first-language acquisition, it enables them to reach a higher level of competence. Linguistic scaffolding has two main facets: on the one hand, discourse models, guiding utterances and various aspects of child-directed speech and fine-tuning (Snow, 1995) that simplify the linguistic task for the child, and on the other hand, different kinds of replies to the child's ill-formed utterances, such as repetitions, recasts and reformulations, clarification requests and explicit approvals or disapprovals (Bernicot, Salazar Orvig, & Veneziano, 2006; Chouinard & Clark, 2003; de Weck, 2001, 2006; Gallaway & Richards, 1994; Snow & Ferguson, 1977). This article focuses on recasts.

Whereas some authors (Chouinard & Clark, 2003; Clark & Bernicot, 2008) prefer the concept of reformulation, most use the term ''recasts'', defined as an adult's repetition of a child's utterance that retains its meaning while providing one or more corrections of form. In a more extensive definition, a recast can also expand or modify the child's utterance (Bohannon, Padgett, Nelson, & Mark, 1996). Most studies have focused on corrections provided at the morphosyntactical level, whereas Chouinard and Clark (2003) emphasize the fact that recasts can also pertain to phonology and lexicon.

Recasts (Chouinard & Clark, 2003; Farrar, 1992; Saxton, 2000, inter alia) provide the child with negative (rather than positive) evidence, that is, they indicate to the child that she/he has produced an incorrect sequence. Unlike explicit disapprovals, recasts and reformulations give this negative evidence while achieving other conversational goals, such as confirming the child's intended meaning (Chouinard & Clark, 2003) and placing it in the common ground of the current conversation (Clark & Bernicot, 2008). The reciprocity of recasts helps them enhance joint focus of attention on a specific linguistic segment (Bernicot et al., 2006; Veneziano, 2005). Contingency with the referential and topical meaning of the child's utterance thus appears to be a factor in explaining recast effectiveness in language development (Nelson, 2000; Proctor-Williams & Fey, 2007).

The number and types of recasts vary according to age (Snow, 1995) and linguistic skill (Demetras, Post, & Snow, 1986). Insofar as recasts are more frequent following erroneous utterances, young children receive more negative evidence than do older ones (Chouinard & Clark, 2003; Saxton, 2000; Strapp, Bleakney, Helmick, & Tonkovich, 2008).

Studies on mothers of children with SLI have obtained more controversial results. Whereas some studies (Fey, Krulik, Loeb, & Proctor-Williams, 1999; Proctor-Williams, Fey, & Loeb, 2001) have shown that children with SLI benefit from recasts in a similar way to typically developing children, other studies have shown that SLI-directed recasts are simpler (Conti-Ramsden, 1990; de Weck, 2001) or less frequent than those addressed to linguistically matched control children (Nelson, Welsh, Camarata, Butkovsky, & Camarata, 1995) or siblings (Conti-Ramsden, Hutcheson, & Grove, 1995). Obvious differences in methodology (population, definition of recasts) make it difficult to compare these studies and could account for these opposite results. Other facts must be considered, however. Given that children with SLI are older than linguistically matched control children, and the fact that mothers also take into account their cognitive development, their recasts differ in type and frequency (Saxton, 2005). Furthermore, studies have demonstrated that despite quantitative similarities, parental productions differ in terms of their conversational use of recasts and more generally of their responses to the discourse of children with SLI (Vigil, Hodges, & Klee, 2005). These findings are consistent with the pragmatic

dimension of recasts previously outlined, and with a socio-pragmatic conception of language acquisition, in general (Bruner, 1983; Nelson, 2007; Tomasello, 1999).

The role of recasts is now being studied in clinical settings where children with SLI interact with a speech and language therapist (SLT) or with their mother in the presence of the specialist. Some studies have attempted to prove the therapeutic efficacy of various intervention modes. For example, therapy based on recasts produced by the SLT during conversations with the child seems to promote better language development in children with SLI than a therapy based on repetition tasks (Nelson, Camarata, Welsh, Butkovsky, & Camarata, 1996; Saxton, 2005; for a discussion see Proctor-Williams, 2009). Concerning mother–child (or father–child) interaction, some models propose interventions based on the interactional profile of the target family (Kelman & Schneider, 1994), with the aim of improving fine-tuning between the child and his/her parent.

Children's responses to recasts

To the best of our knowledge, there are few studies on children's responses to maternal scaffolding. Following a recast or negative evidence, children repeat the correct form (Chouinard & Clark, 2003; Farrar, 1992; Saxton, 2000; Strapp & Federico, 2000) or acknowledge the recast with responses like ''yeah'', ''uh-huh'' rather than repeating their original error. It has been observed that, when mothers do not give any feedback, children reproduce the ill-formed utterance (Strapp & Federico, 2000). Chouinard and Clark (2003) suggested that when children repeat adult reformulations of their own productions, they treat them as negative evidence of their own production and appropriate the conventional forms of the linguistic system. In the longitudinal study of a French-speaking child (between the ages of 1.6 and 2.11) Morgenstern, Leroy-Collombel and Caët (2012) observed a twofold evolution. Before the age of 2.4 the child tended to repeat her original utterance after a repair from her mother, with corrected utterances appearing later and becoming dominant after the age of 2.4. In addition, the child gradually integrated her mother's corrections so that by the end of the period, self-repairs replaced maternal repairs and solicitations.

Fey et al. (1999) and Proctor-Williams and Fey (2007) underlined the existence of a ''recast paradox'', that is, children with SLI do not process recasts as efficiently as younger TD children, probably because of information processing difficulties. On the other hand, de Weck (2001) found that a lower rate of uptake by children with SLI was linked to the illocutionary nature of the mother's contribution. More generally, these results must be related to children's conversational abilities. Children's responses have been explored more thoroughly in the field of requests for clarification. Some studies have shown that children with SLI's reactions to maternal scaffolding reflect difficulties in conversational behaviour. These children generally tend to give more inadequate replies to questions (Bishop, Chan, Adams, Hartley, & Weir, 2000) and to requests for clarification (Brinton, Fujiki, & Sonnenberg, 1988).

Recasts and types of interaction

From this quick review, it appears that recasts need to be situated in the dynamics of a specific interaction. While some studies have highlighted the fact that the number of recasts can vary according to the setting (home versus clinical, for example), the role of the adult (mother versus father), or the age of the child, very few have focused on variations in the number or nature of recasts according to the type of activity being carried out (see, e.g. de Weck, 2001).

For instance, the mothers' demands (Sorsby & Martlew, 1991) and scaffolding (Ingold, Gendre, Rezzonico, Corlateanu, & Da Silva, 2008) vary with the type of activity. Snow, Perlmann and

Nathan (1987) noted that the mother's fine-tuning and contingency are factors of highly routine situations. The lack of extensive studies on differences related to linguistic scaffolding suggests that the structural level is considered independent of activities or genres. However, studies on large corpora (see *inter alia* Biber, 1991; Biber & Conrad, 2009) have demonstrated that utterance type varies as a function of register and genres. According to what the interlocutors are currently focusing on, different aspects of verbal activity will be elicited. For example, in picture reading, which entails labelling, the focus is on vocabulary whereas in personal narratives, the focus will be more on articulating agents and patients, verbs, tense and temporal relations.

This study was aimed at assessing the impact of child group and activity type on the number and nature of recasts and to investigate the children's responses to those recasts. We hypothesized that the number and nature of recasts would vary according to the activity being carried out, and that this would interact with the language difficulties the children experience. We also expected both TD and SLI children's responses to be influenced by the task.

Method

*Participants**

Two groups of 34 French-speaking mother–child dyads were observed: 17 of the children had SLI and 17 were typically developing, from 4.5 to 7.5 years (53 to 89 months). No significant difference ($t(32) = -0.014$) was observed in the mean age of the two groups (SLI mean age: 72.29, SD: 12.44; TD mean age: 72.35, SD: 12.47). All of the children had French as their primary language. Children with SLI were recruited by certified speech and language therapists; they were diagnosed by the clinicians as presenting a phonological-syntactic SLI syndrome (no evidence of other developmental disorders). Children with typical language development were matched to children with SLI on chronological age (± 1 month), sex and geographical origin (Switzerland or France), and not on language level. Given the cognitive level required by some of the tasks, namely the guessing games, it was not possible to compare children with SLI and younger TD children. Control children were recruited by their kindergarten or primary school teachers. They had no language problems and had never been referred to a speech and language therapist. Table 1 presents the data for the children. The larger number of boys reflects the higher proportion of boys in the clinical population of children presenting language disorders (Tomblin et al., 1997).

To contrast production and comprehension skills of children with and without SLI, all children were given six language tests from the *N-EEL* (*Nouvelles Epreuves pour l'Evaluation du Langage*, Chevrie-Muller & Plaza, 2001). The production tests included two phonological tasks (two subtests on frequent word labelling; two subtests on frequent and unusual word repetition), a lexical task (four subsets on frequent word labelling with and without prompting) and a morphosyntactic task (one subtest on sentence completion, only for children attending the primary school). Comprehension was tested using a lexical task (a multiple-choice test for frequent concrete words, two subtests) and a morphosyntactic task (a multiple-choice test, two subtests). Finally, the children were given a verbal memory task (sentence repetition, one subtest for kindergarten children and four subtests for children attending primary school).

The children in kindergarten were evaluated on the basis of 13 scores and the children attending primary school on the basis of 17 scores. Children with SLI obtained scores between 1.5 and 3.0 standard deviations (SD) below the mean on at least 8 scores out of 13 (12 out of 17 for primary

*The population and data were taken from a research program entitled ''Interaction between SLI children and their mothers in speech and language therapy settings: interactional dynamics and scaffolding'' (see acknowledgements). The study was approved by the Swiss National Science Foundation and informed consent was obtained for each participant.

Table 1. Summary of population.

Population	Age group (years)	Range	Mean (Months)	SD	*n*	Sex F	Sex M
SLI	5	4.5–5.6	58.3		6	1	5
	6	5.8–6.3	73		5	2	3
	7	6.8–7.5	85.8		6	2	4
	Total		72.29	12.47	17		
TD	5	4.5–5.6	58.3		6	1	5
	6	5.9–6.4	72.8		5	2	3
	7	6.9–7.5	85.8		6	2	4
	Total	4.5–7.5	72.3	12.44	17	13	28

No significant difference were observed on chronological age between the two groups ($t(32) = -0.014$).

school children), and no more than 3 scores that were only 1 SD below the mean (no more than 4 scores for the primary school children). The TD children got scores near to or above the mean (with a tolerance of 3 scores below the mean but no more than 1 score below 1 SD).

Materials

Four activities were employed: a joint picture-book reading (JR), a symbolic play (SP) and two guessing games (QG and CG). In JR, participants were given a wordless book and asked to tell the story together as they were used to doing. In SP, the mother–child dyad was asked to play and make up a story with a Playmobil® set (house and farm). In the first guessing game (Question Guessing Game, QG), each participant, in turns, had to guess an item pictured on a card by asking questions; in the second guessing game (Clues Guessing Game, CG) they had to make the interlocutor guess the item by giving clues.

The instructions for each activity were as follows:

JR: ''Here is a book. We would like you to look at it and tell it together. Do as you are used to doing at home. Take as much time as you need.''
SP: ''Here is a house with some people, animals, and other objects. We would like you to play together, making up a story. You have 15 min. Do not worry about time, we will warn you a few minutes before the end. You can start now.''
QG: ''Here is a game board with some objects drawn on it. Here are some cards showing the same objects as on the board. You will draw a card from the pile and the other has to guess what you drew. The one who has to guess should ask questions and the one who knows the card can only answer yes or no. Every time the guesser asks a question he/she moves his/her man one step forward. The guesser wins when he/she finds the right object. He/she has to guess before his man gets to the end of the path. Whether he/she wins or loses, you switch roles. You may not ask for a specific object unless you are sure it is the right answer. You can start now.''
CG: ''This time each player has his/her own man. One player draws a card from the pile and has to give a clue to the other player. The other player has to guess what object is on the card. You may not show the card or say what is on it. If the object is guessed after the first clue, the one who gave the clue moves his/her man forward by two steps. Otherwise he/she gives clues until the other player guesses the object. In this case, he/she moves his/her man forward by one step only.''

Given that the goal in these activities was to accomplish the complete task, no time limit was set, except for SP. Each activity lasted between 12 and 20 min for JR, about 20 min for SP and between 20 and 40 min for CG and QG. The four activities were accomplished in two sessions on two different days, one for the joint picture-book reading and the symbolic play and one for the two guessing games. All participants received the tasks in the same order. All interactions were audio- and video-taped, and then transcribed including nonverbal contributions (see Appendix A for conventions).

Preliminary analyses

Turns were divided into moves defined as one or more utterances having the same illocutionary value. On this basis participation rate was measured for both mother and child by dividing the number of moves of each participant by the total number of moves in the interaction. Moves were also the basis of the two following separate analyses: maternal recasts and children's responses to recasts.

Maternal recast coding

We considered recasts to be moves in which the mother repeated the child's immediately preceding verbal production with a formal modification. Recasts were classified into four categories: phonological, morphosyntactic, lexical and referential.

Phonological recasts modify one or more phonemes of the child's utterance. In Example 1, the mother recasts the production of the child [titeta] with the target phonological form [sisesa].

(1) SLI, 7;4, JR*

Mother1:	c'est pas une calèche je sais p(l)us. = ((pointage))
	it's not a carriage I don't remember = ((pointing))
Child1:	[titeta] (target form: [sisesa]).
	yes *it is*
Mother2:	**si c'est ça?** [sisesa]
	yes it is?
Child2:	*((Nods in approval))*
Mother3:	voilà!
	right

In *lexical recasts*, the mother gives a more appropriate term. In Example 2, she replaces ''train'' by ''train conductor'' which is consistent with the picture in the book.

(2) TD, 7;4, JR

Child1:	après i(l) demande au train :::
	then he asks the train
Mother2:	**au conducteur**. = ((en pointant l'image))
	the train conductor. = *((pointing to the picture))*
Child2:	au conducteur d'y aller à l'intérieur
	the train conductor to go inside

Morphosyntactic recasts involve either the utterance structure or the choice of grammatical units. In Example 3, the mother adds both the subject and the object to her child's answer.

*Captions indicate the child's group (SLI or TD) and age, and the current activity (JR, SP, QG or CG).

(3) SLI, 5;6, JR

Mother1:	qu'est-c(e) qu'i fait là? = ((pointe le cochon voyageur))
	what is he doing there? = ((points to the travelling pig))
Child1:	prépare.
	preparing.
Mother2:	**il la prépare ouais**
	he's preparing it yeah

In *referential recasts*, the modification concerns inappropriate uses of first- or second-person pronouns or mandatory substitutions while recasting at another linguistic level. In Example 4, the recast concerns both of these aspects since the mother replaces the tonic pronoun with a clitic one and switches from first to second person.

(4) SLI, 5;8, CG

Child1:	ah? moi moi moi moi moi moi moi moi [tɔnɛ] pas {les/le} [tɔt].
	ah? me me me me me me me me me don't know the rooster {s}.
Mother1:	**tu connais pas le coq?**
	you don't know the rooster?
	{ah si/vas-y ¡} moi j'avance de deux. un: deux. = ((avance son pion))
	{ah yes/go ahead ¡} I move two steps forward. o:ne two. = (moving man)
Child2:	deux.
	two.

Children's response coding

Six types of responses were distinguished.

Uptake: The target form given by the mother is repeated by the child or integrated into a new utterance (Child2 in Example 2).

Modification: The child modifies his/her production without correcting all aspects targeted by the mother. In Example 5, the child makes a phonological correction but not the morphosyntactic one.

(5) SLI, 5;6, JR

Mother1:	((très doucement)) {dis-moi ¡/tu vois.}* °qu'est-ce qu'i(l) fait/papa cochon?°
	((very quietly)) {tell me ¡/you see.} °what is the daddy pig doing?°*
Child1:	°((regarde la page suivante))° [pa]. (target form:[paʁ])
	°((looks at next page))° leaving.
Mother2:	i part. = ((pointe le cochon voyageur))
	he's leaving. = ((points to the travelling pig))
Child2:	**[paʁ].**
	leaving.

Self-repetition: The child repeats his/her production without modification, as in Example 6.

(6) SLI, 6;3, CG

Child1:	un [anozwaʁ] je savais. (target form: [aʁozwaʁ])
	a watering can I knew.
Mother1:	un arrosoir.
	a watering can.
Child2:	**c'est ça. un. un [anozwaʁ].**
	that's it. a. a watering can.

Approval/refusal: The child refuses or accepts the maternal recast without taking up on it. This case was particularly frequent after a request for confirmation (Child2 in Example 1).

No response: Regardless of the degree of constraint in the mother's recast, the child goes on with the activity (Child2 in Example 7).

(7) SLI, 7;5, JR

Child1:	[lamɛʒɔ]. = ((pointe l'image)) (target form: [lamɛzɔ])
	the house. = ((pointing to the picture))
Mother1:	la maison.
	the house.
Child2:	***((turns the page))***
	il dit ''merci!"
	he says ''thanks!"

Lack of opportunity: In some cases, the child simply does not have the floor or the opportunity to reply because the mother goes on with her turn after the recast (Example 4).

Uncertain: Some responses were unclassifiable (inaudible, incomplete, etc.).

Reliability

Coding was performed by several coders using the same codebook, after intensive training and numerous discussion sessions. A blind inter-coder agreement rate was calculated on 10% (randomly chosen) of each interaction, using Cohen's kappa. All categories obtained very satisfactory results (kappas over 0.75 and agreement rates over 90%).

Statistics

Rates were computed for the total number of recasts, types of recasts, types of responses and participation. In these analyses, each move was coded according to a taxonomic system based on specific criteria, so it was necessary to consider relative frequencies in order to compare observations of different lengths. Conventional multivariate statistical methods (e.g. MANOVA, OLS) are not adequate for this kind of data because of their assumptions (e.g. continuous variables ranging between plus and minus infinity). This issue is traditionally addressed by avoiding multivariate methods altogether and using non-parametric bivariate significance tests instead (e.g. Mann–Whitney *U* test). However, the latter methods consider only one factor at a time and do not incorporate individual variation. We ran a multivariate regression analysis, the binomial mixed-effects logistic regression, which allows one to consider the relationships between the independent variables themselves, but also to take into account different control variables (e.g. participant, sex). This method also allows one to fit ''large, unbalanced data sets'' (Baayen, Davidson, & Bates, 2008). For this study, binomial mixed-effects logistic regression was run, with activity, population and age (in months) as fixed effects and participant and sex as random effects. The same statistical tests were conducted for both maternal recasts and children's responses to recasts.

Results

Maternal recasts

Mothers of children with SLI offered a recast in 3.37% of their moves ($n = 604$), which was significantly more than mothers of TD children (Est. = 1.64, SE = 0.20, $z = 8.14$, $p < 0.001$), who offered recasts for only 0.60% ($n = 104$) of their moves (see Table 2). Age in months did not

Table 2. Summary of the generalized mixed effects model (binomial) for maternal recasts.

	Symbolic play			Joint picture book			Clue game			Question game			Overall		
Parameter	Est.	SE	*z*	Est.	SE	*z*	Est.	SE	*z*	Est.	SE	*z*	Est.	SE	*z*
Fixed effects															
Activity	–	–	–	–	–	–	–	–	–	–	–	–	0.45	0.04	11.19***
Population	1.70	0.28	6.12***	1.33	0.32	4.14***	1.75	0.43	4.00***	2.10	0.37	5.58***	1.64	0.20	8.14***
Age (months)	−0.01	0.01	−1.33	−0.01	0.02	−1.09	−0.04	0.01	−2.83**	−0.01	0.01	−1.20	−0.01	0.00	−1.86
_const	−4.39	0.36	−5.73***	−3.48	0.95	−3.67***	−2.68	1.10	−2.44*	−4.47	1.06	−4.46***	−5.35	0.62	−8.53***
Variance of the random effects															
Participant	0.21	0.45		0.49	0.70		0.00	0.00		0.59	0.76		0.22	0.47	
Sex	0.05	0.21		0.16	0.40		0.00	0.00		0.00	0.00		0.04	0.21	

Est. = Estimate; SE= Standard Error; *z* =Estimate/Standard Error; *$p < 0.05$; **$p < 0.01$; ***$p < 0.00$.; the variable number of trials per observation were taken into account by participant; SP: $n = 9611$; JR: $n = 5716$; CG: $n = 5949$; QG: $n = 12\,239$; Overall: $n = 33515$.

appear globally as a significant variable. However, we found a significant negative slope between age and recast rate for the CG: only in this activity mothers of younger children had a significantly higher (Est. $= -0.04$, SE $= 0.01$, $z = -2.83$, $p < 0.01$) recast rate than did mothers of older children.

The type of activity also played a crucial role (Est. $= 0.45$, SE $= 0.004$, $z = 11.19$, $p < 0.001$). JR favoured recasts (4.48%; versus SP: $z = 3.78$, $p < 0.001$; versus CG: $z = 3.41$, $p < 0.001$; versus QG: $z = 4.34$, $p < 0.001$) whereas in CG (1.21%) and QG (1.42%) the mothers hardly offered recasts. SP turned out to be an intermediate activity with respect to the recast rate (2.14%, versus QG: $z = 3.43$, $p < 0.001$; see Figure 1 and Table 3). However, we did observe a significant difference between the two groups of mothers in each activity.

Furthermore, the recast rate did not correlate with the mothers' participation rate in any of the activities (Spearman's rank correlation: $p = 0.2567$).

Concerning the types of recasts, mothers of TD children offered significantly more ($z = 2.75$, $p < 0.01$) lexical than phonological recasts, whereas mothers of children with SLI offered significantly more phonological recasts (versus lexical: $z = -5.30$, $p < 0.001$; versus morphosyntactic: $z = -4.76$, $p < 0.001$; versus referential: $z = -6.83$, $p < 0.001$). Referential recasts were marginal in both populations (see Figure 2 and Table 4).

Phonological recasts were produced proportionally more often by mothers of children with SLI than by mothers of TD children (Est. $= 2.16$, SE $= 0.39$, $z = 5.46$, $p < 0.001$; see Table 5), and

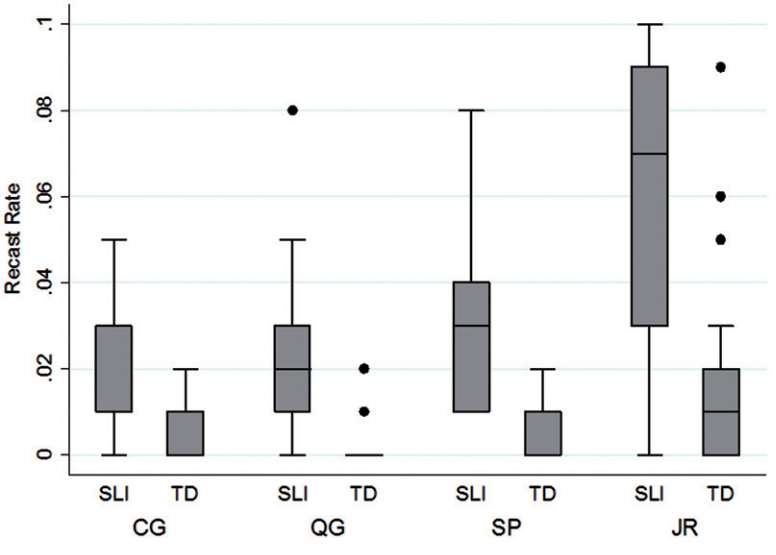


Figure 1. Maternal recasts rate by group and activity.

Table 3. Summary Wilcoxon matched-pairs signed-rank test for comparing activities by recast rate of mothers.

	Joint picture book *z*	Symbolic play *z*	Clue game *z*
Joint picture book	–		
Symbolic play	3.78***	–	
Clue game	3.41***	1.05	–
Question game	3.43***	3.43***	−0.054

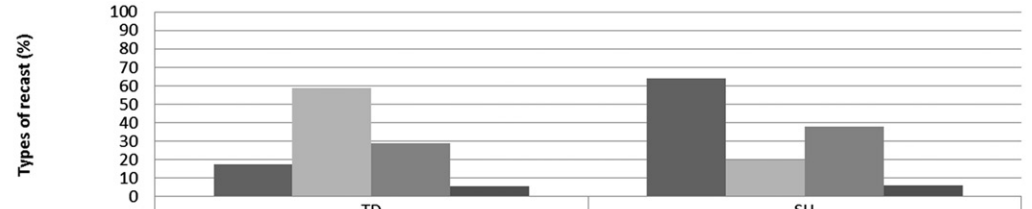


Figure 2. Types of recast rate by group.

Table 4. Summary Wilcoxon matched-pairs signed-rank test for comparing types of recast by groups.

	Phonological *z*	Lexical *z*	Morphosyntactic *z*
TD children			
Phonological	–		
Lexical	2.75**	–	
Morphosyntactic	1.54	−1.580	–
Referential	−2.88**	−4.182***	−3.943***
Children with SLI			
Phonological	–		
Lexical	−5.30***	–	
Morphosyntactic	−4.76***	2.343	–
Referential	−6.83***	−4.915***	−6.201***

Table 5. Summary of the generalized mixed effects model (binomial) for phonological recasts.

Parameter	Estimate	Standard Error	*z*
Fixed effects			
Activity	−0.24	0.09	−2.61**
Population	2.16	0.39	5.46***
Age (months)	0.00	0.01	0.05
_const	−1.12	1.08	−1.03
Variance of the random effects			
Participant	0.48	0.69	
Sex	0.06	0.24	

$n = 708$; z = Estimate/Standard Error; *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$; the variable number of trials per observation were taken into account by participant.

lexical recasts were produced proportionally more often by mothers of TD children than by mothers of children with SLI (Est. = −1.64, SE = 0.33, $z = -4.84$, $p < 0.001$; see Table 6).

Activity also had an impact on phonological (Est. = −0.24, SE = 0.09, $z = -2.61$, $p < 0.01$) and lexical (Est. = 0.23, SE = 0.10, $z = 2.32$, $p < 0.05$) recasts. When each activity is analysed separately, group differences were observed only in JR, both for lexical (Est. = −2.99, SE = 0.47, $z = -6.34$, $p < 0.001$; see Table 7) and morphosyntactic (Est. = 2.16, SE = 0.60, $z = 3.60$, $p < 0.001$; see Table 8) recasts.

Table 6. Summary of the generalized mixed effects model (binomial) for lexical recasts.

Parameter	Estimate	Standard Error	z
Fixed effects			
Activity	0.23	0.10	2.32*
Population	−1.64	0.33	−4.84***
Age (months)	0.00	0.01	0.33
_const	−0.69	0.98	−0.70
Variance of the random effects			
Participant	0.00	0.00	
Sex	0.00	0.00	

$n = 708$; z = Estimate/Standard Error; *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$; the variable number of trials per observation were taken into account by participant.

Table 7. Summary of the generalized mixed effects model (binomial) for lexical recasts in joint picture book activity.

Parameter	Estimate	Standard Error	z
Fixed effects			
Population	−2.99	0.47	−6.34***
Age (months)	0.12	0.26	1.30
_const	−6.09	1.25	−0.35**
Variance of the random effects			
Participant	0.11	7.82	
Sex	0.80	1.14	

$n = 256$; z = Estimate/Standard Error; *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$; the variable number of trials per observation were taken into account by participant.

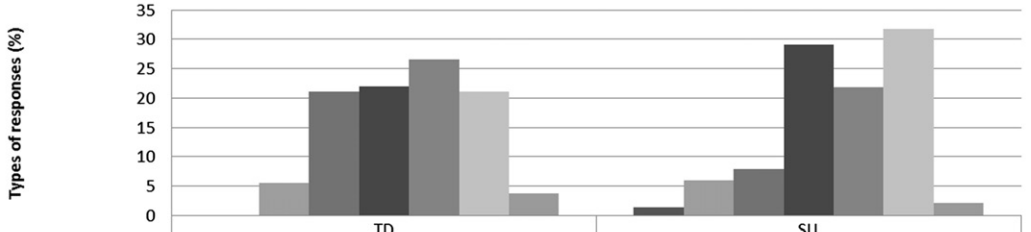
Table 8. Summary of the generalized mixed effects model (binomial) for morphosyntactic recasts in joint picture book activity.

Parameter	Estimate	Standard Error	z
Fixed effects			
Population	2.16	0.60	3.60***
Age (months)	0.00	0.31	0.43
_const	−2.77	1.07	−2.59***
Variance of the random effects			
Participant	0.19	0.44	
Sex	0.00	0.00	

$n = 256$; z = Estimate/Standard Error; *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$; the variable number of trials per observation were taken into account by participant.

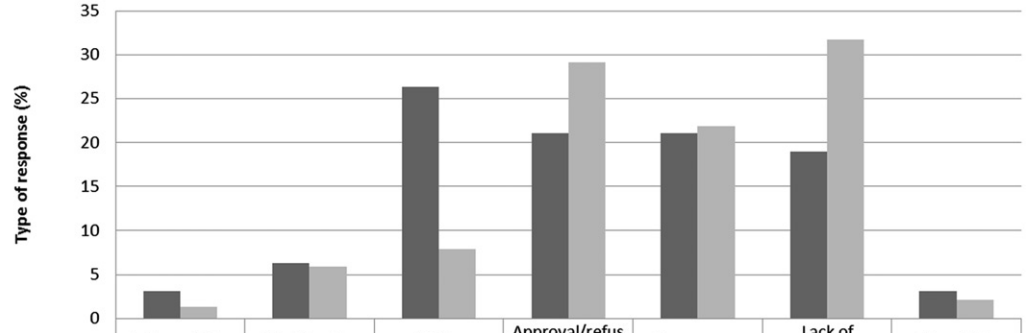
Children's responses

As Figure 3 shows, more than 50% of the recasts were not followed by a response, not only because children did not respond (26% TD, 21% SLI), but also because they did not have the opportunity to do so (21% TD, 31% SLI). Concerning responses, children with SLI took up on their mother's proposal less than their age-matched peers but the difference was not significant. The other types of responses were marginal and showed no difference between the groups.



	TD	SLI
Self-repetition	0	1.32
Modification	5.5	5.95
Uptake	21.1	7.93
Approval/refusal	22.02	29.09
No response	26.61	21.82
Lack of opportunity	21.1	31.74
Uncertain	3.67	2.16

Figure 3. Children's responses types by group.



	Self-repetition	Modification	Uptake	Approval/refusal	No response	Lack of opportunity	Uncertain
Lexical-only	3.16	6.32	26.32	21.05	21.05	18.95	3.16
Other cases	1.32	5.95	7.93	29.09	21.82	31.74	2.16

Figure 4. Children with SLI response types after lexical-only and other types of recast.

These results concern all responses, regardless of the type of recast. However, as children were not exposed to the same proportions of lexical recasts and other kinds of recasts, they may not have responded in the same way to each type. To explore this issue, we compared responses to lexical recasts and responses to the other types of recasts in each group.

Figure 4 shows that children with SLI took up on their mother's lexical recasts much more often than for the other types of recasts (Est. = 1.76, SE = 0.31, $z = 6.64$, $p < 0.001$) (see Table 9). Moreover it seems that other types of recasts offered them less opportunity to respond than lexical recasts did (Est. = −0.60, 0.29, −2.34, $p < 0.05$) (see Table 10).

Discussion and conclusion

This study was about the reciprocal effects of the scaffolding mothers propose to their children and how the latter respond to these strategies. This issue was examined by comparing SLI and TD

Table 9. Summary of the generalized mixed effects model (binomial) for uptakes of children with SLI.

Parameter	Estimate	Standard Error	z
Fixed effects			
Activity	−3.09	0.15	−2.00*
Lexical versus others	1.76	0.31	6.64***
_const	−4.54	0.56	−8.82***
Variance of the random effects			
Participant	0.00	0.25	
Sex	0.92	0.26	

$n = 604$; z = Estimate/Standard Error; *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$; the variable number of trials per observation were taken into account by participant.

Table 10. Summary of the generalized mixed effects model (binomial) for absences of reaction due to lack of opportunity of children with SLI.

Parameter	Estimate	Standard Error	z
Fixed effects			
Activity	−0.06	0.84	0.77
Lexical versus others	−0.60	0.29	−2.34*
_const	−4.45	0.32	−10.21***
Variance of the random effects			
Participant	0.00	8.16	
Sex	0.83	4.61	

$n = 604$; z = Estimate/Standard Error; *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$; the variable number of trials per observation were taken into account by participant.

children. Two sets of questions were addressed. Firstly, considering that prior studies do not converge on the importance of recasts directed at children with SLI, we aimed to assess the effect of one possible factor that might account for these discrepant findings, namely the type of activity in which the participants are involved when they interact. Secondly, considering that little is known about how children receive recasts, we wanted to evaluate the frequency and types of reactions they have and possible differences induced by their language development. Overall, we sought to better understand the dynamics of this fine-tuning process and the potential differences between individual dyads.

For the first set of questions, our results showed that the group variable (SLI versus TD) had a significant impact on the recast rate. Mothers of children with SLI produced more recasts than mothers of their age-matched TD peers. Moreover, the recast rate was not correlated with the participation rate, which suggests that the results are not dependent on individual styles or on the degree of adult-child asymmetry in the interaction: the mothers' behaviour was not affected by how much the child contributed to the current activity. We also observed a qualitative difference: mothers of children with SLI produced proportionally more phonological recasts whereas mothers of TD children offered more lexical ones. It is not surprising to find more phonological recasts with children with SLI because they are impaired at that level. These results confirm the hypothesized specific behaviour of mothers of children with SLI and support the mutual influences (finely tuned) of these interacting participants.

Unlike other studies, we compared the proportion and types of recasts in four different activities: joint reading, symbolic play, clues guessing game and question guessing game. Activity type had a significant impact on the recast rate. Mothers produced recasts much more frequently

during joint reading than during guessing games. Symbolic play fell in-between. The type of activity also affected the type of recast: mothers of TD children offered lexical recasts mostly in JR, whereas mothers of children with SLI also produced more morphosyntactic recasts in this situation. Moreover, it follows that the characteristics of the groups were amplified in joint reading while diminishing in the guessing games. Thus, our study shows that differences in the number and types of recasts depend not only on the children's linguistic level but also on the features of the current activity.

Theoretically, these results can be explained in terms of the pragmatic and discursive features of the current activity. More specifically, according to the nature and goal of each activity, participants were not focused on language in the same way. In storytelling, they focused on the co-construction of a discourse (the narrative), while in the guessing games discourse was a means of winning the game. The symbolic play combined utterances pertaining to objects, practical actions and some fictional discourse. In storytelling, the mother's goal was to enlist the child in achieving the narrative task, while in the guessing games her goal was to be efficient or help her child be so. This means that to better understand recasts, we need to examine more carefully when and why a mother offers a recast in a particular activity and when and why she does not. The impact of the current activity could be a cue in accounting for the controversial results of former studies. Our results also have methodological consequences for language studies and testing: they confirm the idea that activities are not interchangeable and that their specific pragmatic features must be considered when designing observation settings.

The second set of questions we explored concerned the way in which children respond to recasts. As we saw before children with SLI tend to present interactional difficulties in, for example, information processing, taking up maternal offers and responding to questions (e.g. Bishop et al., 2000; Brinton et al., 1988; de Weck, 2001; Fey et al., 1999; Proctor-Williams & Fey, 2007). Thus, we expected lower rates of uptake for these children. However, although their rates were lower, no significant difference from the TD children was observed.

Even though they turned out to be nonsignificant, group differences deserve to be more thoroughly investigated. In order to understand these results, it is necessary to consider the pragmatic dimension of recasts. Recall that not all recasts required a reaction. Moreover, the mothers frequently offered a recast and then continued their turn without leaving an interlocutory space for the child. The higher rate of non-response in our study can be explained by the fact that mothers focused more on accomplishing the activity than on eliciting utterances from their child, unlike most experimental and clinical settings where the child is expected to respond to the adult's solicitations (Proctor-Williams & Fey, 2007). It is important to note that, in our study, the mothers offered more opportunities to respond after a lexical recast than after a phonological one. This can be accounted for by the fact that phonological corrections seem less central than lexical ones during task achievement (here narration, symbolic play, guessing games) whereas the contrary would be true if the focus were only on linguistic performance. A more fine-grained analysis showed that children with SLI took up the maternal recast significantly more often after a lexical recast than after other types of recasts. This analysis permitted a second comparison between the two groups of children: the fact that the TD children dealt mostly with lexical recasts, confirmed that there is no difference in the children's sensitivity to recasts. Not only was the recast response rate intertwined with the type of recast in the context of a specific task, but the response was related to the interaction dynamics. In further studies, we need to look in greater detail at the way in which opportunities to react interact with other features of maternal recasts.

The results of this study have some clinical implications. On the one hand, within a naturalistic approach to the treatment of language impairments, recasting is a crucial strategy. But it should not be used without regard to the nature and goal of the current activity because the latter has an impact on the frequency and types of recasts. In clinical settings, (e.g. in guidance programmes as

well as in SLT–child interactions), activities presenting a higher recast rate should therefore be preferred. On the other hand, insofar as recasts do not automatically trigger a reaction by the child, SLT should, in an interaction setting, create the pragmatic conditions that will give the child the opportunity to take up on the SLT's proposals. However, these proposals need to be supported by comparing more thoroughly SLT–child and mother–child interactions and by identifying the specificities of the clinical setting. Moreover, it would be particularly relevant to study SLTs' offers and the responsive behaviour (including pragmatic aspects) of children with SLI.

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Declaration of interest

The authors report no conflicts of interest.

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Appendix A

Transcription conventions

- () Elision (excepted for schwas)
- {} Uncertain transcription or hesitation between two transcriptions
- : :: ::: Syllabic lengthening
- . Assertion
- ? Interrogation
- ! Exclamation
- / // silence less than 3 sec long
- (3 sec.) Silence
- = Simultaneity between verbal and non-verbal behaviours
- (()) Non-verbal behaviour
- °(())° Simultaneity between two non-verbal behaviours