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Using conversation analysis to study prosodic problems in a child with language impairment

Christina Samuelsson
Linköping University, Sweden

Abstract

Prosody carries a lot of information relevant for our understanding of spoken messages. In addition, prosody plays an important role in signalling attitudes and emotions. Prosodic features also constitute an important resource that participants use to achieve mutual understanding in interaction. The aim of this study was to point to possible recurring patterns in the prosodic structure of language testing activities. A further aim was to discuss similarities between English and Swedish in these patterns. The main findings indicated a systematic use of prosody in the language testing activity. Questions are mainly posed with rising intonation and answers are produced with rising intonation. Evaluations are produced with a final fall in the intonation. There was also some support for the assumption that this pattern occurs within a similar activity involving an English-speaking child and his SLT. The results of the present study showed that analysis of conversation and prosody in its conversational context is useful in order to reveal possible functions of features that would have been overlooked with a more deficit driven perspective.

Introduction

The term 'prosody' is commonly used to cover a range of features in speech and language; such as pitch, loudness, tempo and rhythm (Cruttenden, 1997). One of the main functions of prosody is to provide the organizational framework for the spoken message. It is useful in analyzing the functions of prosody in a conversational context (Couper-Kuhlen and Selting, 1996). However, the prosodic structure of clinical conversations has to our knowledge not been described in previous research. There are also very few studies of prosody in conversations involving children. The literature review will give a brief overview of Swedish prosody, and prosodic development in children. A description of the prosodic abilities of children with language impairment (LI) is followed by a summary of conversation analysis, a method which can be used to study prosody in conversation.

Swedish prosody

Compared to English, Swedish has a relatively complex prosodic system and is often referred to as a pitch accent language (Cruttenden, 1997). There are contrasts of word stress, i.e. initial vs. non-initial stress, as well as contrasts in tonal word accents, i.e. Accent I (ˈ) and Accent II (ˑ) (Bruce, 1998). The difference between Accent I and Accent II can be described as a difference in the timing of the tonal gesture in relation to the beginning of the stressed syllable. As opposed to Accent I, Accent II has a connective function at the word level; it shows that a sequence of morphemes belongs to the same word. In contrast to Accent I, Accent II requires a series of at least two syllables and consequently the contrast between Accent I and II never occurs in monosyllabic words (Engstrand, 1997). About 350 minimal pairs distinguished by tone alone can be found in 'Swedish, e.g. /t'omtɛn/ = 'the lot' – /t'omtɛn / = 'Santa Claus'.

Word stress is used in different ways in the languages of the world. Many languages have so-called fixed word stress, e.g. Finnish and Turkish. In such languages stress takes on a strong boundary-signalling, so-called delimitative function. This implies that the word stress is placed near the boundary of the word and not in the middle. In Swedish, word stress is used distinctively in a less predictable way; the word stress can be placed on any syllable of the word. A number of minimal pairs can be found where the placement of stress is distinctive, e.g. /'fɔrmɛl/ = 'formula' – /fɔr'mɛl/ = 'formal' (Bruce, 1998).

Interrogatives fall basically into two major classes: yes/no interrogatives and question word interrogatives. These two classes differ from each other both grammatically and prosodically. In Swedish as in English, yes/no questions are often produced with a final rise but they also have a fall as an alternative. For question word interrogatives the relationship is the opposite; final falls are the dominant pattern, but rises are available as an alternative, which is also similar to English (Cruttenden, 1997).

Development of prosody

Studies of infant cry and non-cry vocalizations suggest that children use precursors of intonation from the age of three to nine months. However, intonation before intentional communication is governed by respiratory patterns and by early developing associations between pitch and emotion (Snow and Balog, 2002). Language development in general, and especially prosodic development, is influenced by the ambient language. It has been shown that prosodic and vocalic properties in infant-directed speech are adapted to the developing child's communicative needs and constraints (Sundberg, 1998). Language input to infants has culturally universal characteristics that facilitate language learning (Kuhl et al., 1997). According to Crystal (1979: 37–45), five stages of prosodic development can be distinguished where children go from biologically determined vocalizations (stage I) through a period of awareness of prosodic contrasts in the ambient language (stage II), varied vocalizations (stage III), learned patterns of prosodic behaviour (stage IV) to 'prosodic integration of sequences of items, usually two, into a single tone-unit' (stage V). This last stage is generally mastered around 18 months of age.

The predominant prosodic characteristics of the adult system are usually reflected in infant productions. Hallé et al. (1991) studied four infants each exposed to French (which has a preponderance of rising sentence intonation contours) and Japanese (with typically falling contours). The Japanese children produced a majority of falling level contours and the French children produced a majority of rising contours. Thus, a global effect of the dominant intonation pattern of the ambient language was found before the age of two years, and this was true for both lexical items and babbled utterances. In a study by So and Dodd (1995), it was found that children mastered the six tones of Cantonese before the age of two years. Moreover, the pattern of order and rate of acquisition were identical across children.

There are few studies of prosodic acquisition in Swedish children. Engstrand et al. (1991) showed that Swedish children were beginning to produce accent II-like fundamental frequency contours at 17 months and that they also used these contours to mark the appropriate words. Those findings were confirmed in a more recent study (Engstrand et al., 2003) where it was shown that the accent II tonal word accent was perceptually distinct in the vocalizations of Swedish children at the age of 18 months. Holmberg et al. (1971) found that Swedish children with typically developing language had acquired the contrasts of the tonal word accents in an adult-like pattern by the age of five years. This is in accordance with a study by Wells et al. (2004) where it was found that the ability to produce intonation in a functional manner was largely established in typically developing English-speaking five-year-olds. However, it appears that the age of acquisition of specific prosodic abilities may vary and some specific intonational features are not completely mastered until the age of eight (Wells et al. 2004). To summarize: irrespective of language there seems to be an emerging ability to use intonational contrasts from about 18 months. However, the production of prosody in young children is variable and a complete adult system is not mastered until the age of five.

Prosodic problems in children with LI

The complexity of Swedish prosody makes Swedish an interesting case for the study of prosodic problems. In a study of prosody in Swedish children with LI, it was shown that as many as 41% of Swedish children with language impairment had some degree of prosodic problems (Samuelsson et al., 2003). The definition of LI used in Swedish clinical praxis, i.e. that the language problems are the most dominant problem for the child, was adopted in the data collection as well as in the present study. This means that the criteria are not as strict as the criteria for Specific Language Impairment (SLI). In another study, children with LI in combination with prosodic problems were compared to age-matched controls (Samuelsson and Nettelbladt, 2004). The results showed significant differences between cases and controls regarding all investigated aspects of prosody. For English-speaking children the prevalence of prosodic problems seems to be significantly lower; in a study by Wells and Peppé (2003) intonation abilities of English-speaking children with language impairments were compared to the intonation abilities of language-matched controls (LC) and age-matched controls (CA). No significant differences were found between the LI group and the CA group. The LI group scored significantly lower than the controls but this may have been due to ceiling-effects identified in the control group.

Conversation analysis

Conversation Analysis (CA) originates in ethnomethodology as developed by Garfinkel (1967) and has since been adopted and developed by sociologists and linguists (Heritage, 1989) in order to study a range of interactional contexts. Fairly recently, CA has successfully been adopted for the study of conversations involving people with communicative disabilities (e.g. Goodwin, 2003, for a representative overview). Studies of adult talk-in-interaction have shown that prosodic features constitute an important resource that participants use to achieve mutual understanding in interaction (Couper-Kuhlen and Selting, 1996). In a study by Wells and McFarlane (1998), possible prosodic resources that enable recipients to monitor the course of turn-projection are described.

In a few earlier studies a CA methodology has been applied to analyse children's conversation. In a study by Corrin et al. (2001) a CA perspective was applied to the study of emergent syntax. It showed

that CA was useful to demonstrate the collaborative shaping of the conversations and the development of the child's syntax. In addition, the importance of prosodic resources was pointed out; specifically it was interactionally evident that pitch height accomplished turn continuation for the child (Corrin et al., 2001). How children use prosodic cues in talk-in-interaction was investigated using CA in a study by Wells and Corrin (2003). This was a case study of one child in mother-child dyads where turn taking was investigated. The authors showed that CA offers the possibility to warrant functional categories from the observable behavior of participants in the interaction (Wells and Corrin, 2003). The applicability of CA in indirect speech therapy, as a tool for training parents and other caretakers in carrying out the intervention, has been described by Gardner (2006). Radford and Tarplee (2000) used CA to analyse the speech of a 10-year-old child described as having pragmatic problems. They found that the subject was able to manage conversational topics but had difficulties in collaborating with his conversational partners. In another study (Tarplee and Barrow, 1999) CA was used to analyse conversations of a 3-year-old child with autism and his mother. It was shown that the child's echoes serve him in important ways as a resource for engaging in reciprocal talk with his mother and that echoing has an important role in the co-construction of intersubjectivity. Detailed CA also showed that the echolalic utterances varied in their form, especially regarding their prosody so that the boy could echo his mother's utterance with a different prosody to indicate the function of his contribution.

For comparison to the main data of the present paper a description of an English-speaking child, David, with prosodic problems is used. This boy has been previously described in a case study by Wells and Local (1993). Data were recorded within a clinical setting and the conversations analysed were between David and a Speech and language therapist (SLT). It is described in some detail here since it is relevant to point out prosodic similarities between these two conversations despite the different prosodic systems of English and Swedish. David was considered to have some degree of prosodic problems. It is shown that David consistently places the main prominence at the final syllable, even if it would occur on the first syllable of a di- or polysyllabic word according to the adult norm, e.g. 'teddy bear', 'postman' or 'letter box', see lines 3, 6 and 12 in example 1. He also has a strong preference for final pitchrise, see e.g. lines 3, 6, 8 and 14 in example 1. This pattern has some negative consequences for David's signaling of information focus. For example, in 'I already /d&d/ that', where 'that' becomes focused on instead of 'said'; see line 18 in example 1.

Example 1 (All names are pseudonyms)

1 SLT: What do you think it is David?

2 P: 3.5

3 D: Teddy bear

4 SLT: Yes it could be a teddy bear=

5 Who's that there coming up the path?

6 D: Postman

7 SLT: What's he going to do?

8 D: Get out a letter

9 SLT: Get out a letter

10 D: Yes

11 SLT: And what's he going to do with the letter?

12 D: Put it in (1.7) put it the letter box

13 SLT: He's going to put it in the letter box

14 D: Yes

15 SLT: And who's this do you think?

16 D: Girl

17 SLT: it's a girl

18 D: I already /dɛd/ that

19 SLT: she's already?

20 D: I already /dɛd/ that (0.3)

21 D: I did

However, this pattern also serves as a very effective system for marking the end of his turn at talk. The greatest phonetic prominence occurs on the final syllable of an utterance, and this is oriented to by the SLT as a marker of turn completion, as is evidenced by the fact that she then takes her turn even when David's turn completion is not syntactically evident as in lines 6 and 7. The SLT asks several of her wh-questions with a final pitch-rise, even though the typical prosodic pattern of a wh-question in English would be a final fall. Her evaluations of David's answers are mainly produced with a falling contour. This might be interpreted as an expression of confirmation rather than evaluating David's answers as right or wrong. The overall prosodic structure of the conversation between David and the SLT seems to be a routinized way of carrying out clinical question-answer-evaluation sequences.

Institutional conversation

The conversations analysed in this paper are recorded within clinical settings. They represent the social practice between clinician and client. Both clinicians and clients typically assume their roles with a presupposition of the client's problem as the focus of attention (Simmons-Mackie and Damico, 1999). The request-response-evaluation (RRE) structure, which is common within the clinical practise has also been observed in language testing situations, where the evaluations often take the form of repetitions (Samuelsson et al., 2005). In many other types of adult-child conversation, e.g. teacher-pupil interaction, this structure also occurs (Sinclair and Coulthard, 1975). In a study by Hellerman (2003) the prosodic packaging of recurring turn sequences of classroom discourse was explored. The analysis focused on the third slot of the RRE, where the teacher makes repetitive feedback following student responses. The results showed that prosody was used systematically in the teacher's repetitions so that rising pitch most often indicated incorrect student answers and that a confirmation was marked by falling or level pitch. This is in accordance with Brazil (1995), where it was suggested that low key may indicate that no further comment is necessary. However, in a further study of English by Hellerman (2005) it has been shown that for another type of classroom activity, the 'quiz game', the prosodic packaging of the RREs was different. The teacher's production of both initiations and evaluations in these sequences were characterized by falling pitch contours whether the answer was correct or not.

Sequential analysis of classroom conversations between a child with problems with language comprehension and her specialist teacher, her mainstream teacher and a peer was carried out in a case study by Ridley et al. (2002). The results showed that the conversations mainly followed the RRE structure where the specialist teacher, the mainstream teacher and the peer mostly made the request, the child with comprehension problems responded with different degree of adequacy and the teacher or peer evaluated and closed the sequence. The main difference between the different conversational partners was in the third slot where the specialist teacher and the peer provided an upgraded version of part of the child's turn and more often continued with a personal contribution which led to a more genuine exchange of opinions. A teacher's frequent use of initiating question turns is also described in a study of asymmetry in classroom discourse (Radford et al. 2006). The importance of the first turn in an RRE sequence as a key to the type of information generated and the range of possibilities in the third slot is pointed out.

In summary, different types of institutional conversations, e.g. language therapy/testing conversations and classroom conversations, often follow the RRE structure. However, there are some differences between teachers and SLTs, mainly occurring in the third slot of the RRE sequence where the teachers use rise or fall to indicate whether the response was correct or not and the SLTs and the specialized teachers uses the third slot to open up for a continuation from the child.

The aim of the present study is to describe the prosodic structure of conversations between children with LI and speech language therapists (SLT) within a clinical language testing context. It is of interest to investigate both the contributions of the SLT and the contributions of the children, since they probably influence each other. Hence, the specific research questions are as follows:

1. Does the SLT use prosody in a systematic way throughout the test sequence?
2. Does the child with LI adapt to the prosody of the SLT?

Methods

The data for analysis in this study come from clinical conversations that took place during data collection for the project 'Prosody in Swedish children with LI', in April 2000 (FORSS, F2003-152). While investigating the prosody of 25 conversations between children with LI and SLTs we found indications of a special prosodic pattern. We chose one of the conversations, where this particular prosodic packaging was rather apparent, for in-depth analysis. This boy, Richard (R), aged 4;10 years,

is described in more detail below. The recordings were made with a Sony TCS-580V stereo cassette recorder at the Ear, Nose and Throat department at a large city hospital in the south east of Sweden. The purpose of this particular visit was to collect data for the project, but he was regularly receiving language therapy for his speech and language impairment at the department. A Sony ECM-MS907 condenser microphone was used and the mouth-to-microphone distance was approximately 50 cm.

By checking relevant medical records the following data regarding R was extracted: nothing abnormal in the pre-, peri-, or postnatal period; no heredity for language impairment; intermittent problems with otitis media with effusion (OME), however without symptoms during the test period. He has also had infectious asthma and several bouts of tonsillitis. Regarding motor development normal early milestones were reported. Pre-testing included tests of phonology, language comprehension, grammatical production and oral motor skills. R has severe phonological problems, problems with expressive grammar, problems with language comprehension but age adequate oral motor skills (see Table 1). In addition, he has problems with lexical as well as supralexic prosody, which is shown by his results on a prosodic assessment procedure (Samulesson et al. 2003). At the word level R has reduced contrasts of tonal word accents, at the phrase level he makes some omissions of unstressed syllables and he produces contrastive stress patterns with equalized stress, at the discourse level his prosody in both narration and conversation are assessed as deviant, inter alia due to monotonous fundamental frequency (see Table 2).

Table 1 Richard's test results by the time of the recording (phonology was measured as PCC, the other results are the actual scores, age norms are shown in the table headings)

Test	Phonology, Percentage Consenents Correct, PCC (Shriberg & Kwiatkoski)	Language comprehension (SIT, Hellqvist, 1982), age norm 38	Grammatical production (LuMat, Holmberg & Stenkvist, 1978), age norm 50	Oral motor skills (ORIS, Holmberg & Bergström, 1996), age norm 16
Results	43%	32	39	15

Table 2: Richards results on the prosodic assessment procedure in relation to maximal possible results (no age norms available)

Subtest	Richard	Max
Vowel length	2	4
Word stress	4	6
Plural	6	8
Word accents	1	9
Copula	4	10
Indef art. De. Form	5	10
Verb part. Prep. Phrase	0	4
Questions	2	2
Conversation	2	3
Narration	2	3

R was first assessed by an SLT at 3;02 years and he was then diagnosed with phonological and grammatical LI. R has further received language intervention regularly by the same SLT with a focus on auditory phoneme discrimination and basic semantics. At a later assessment the diagnosis was changed to receptive language disorder, since his language comprehension was found to be impaired. The specific purpose of this session was to collect data for the project and the SLT poses question

following a script from a specific test procedure chosen to get an overview of the boy's general everyday knowledge and his conversational skills (Holmberg and Sahlén, 1986); see Appendix 1.

The data have, in previous research, been transcribed for the purpose of prosodic measurements and analyses (Samuelsson, 2004). For the aims of this study, further details were taken into account in the transcriptions, such as pauses, hesitations and overlaps alongside previously acknowledged prosodic features. The analysis was then carried out in accordance with the main CA principles; every contribution was analysed with respect to its sequential function, with no preconceived opinion about either form or function of the contributions.

The perceptual analysis of the conversation was made by the author through listening to the recordings. Special attention was paid to intonation patterns, pitch levels and tempo. Recurring patterns regarding these categories were perceptually identified, transcribed in detail and acoustically analysed.

An acoustic analysis was undertaken in this study to illustrate and describe trends mainly regarding pitch and F0-contours. The recordings were digitized on a PC and analysed with the speech analysis software Soundswell (2000). As a routine the signals were sampled at 16 kHz and analysed with narrowband spectrograms; the bandwidth was 34 HZ, since our main interest was F0- patterns.

Data analysis

The main structure of the conversation follows the typical, previously mentioned RRE structure. The SLT asks a question, R answers and his response is then evaluated by the SLT before she asks another question. R seems to be familiar with this turn organization, but on some occasions he treats the evaluation or confirmation as a question. This leads to overlaps in conversation since the SLT does not wait for him to answer but goes on with her next question, see example 1. Below follows the analysis of the conversations in order to explicate the patterns of a) SLT questions with rising intonation + responses with a rise from R, b) questions with level intonation + responses with level intonation, c) evaluations with falling intonation responded to in overlap with the next question, and d) evaluations getting no response. The sequences are analysed by detailed turn-by-turn analysis in combination with acoustic analysis of the intonation patterns. In this conversation there are 9 examples of type a, 12 examples of type b, 2 examples of type c, and 2 examples of type d.

Questions with rising intonation _ responses with a rise

In example 2, the SLT asks a wh-question with a final rise in line 1. In line 2, R gives a minimal response, also produced with a rise. The SLT evaluates R's response by a repetition of the response. This pattern is reproduced twice in this example; in lines 6, 7 and 8 as well as in lines 10, 11 and 12. The SLT exclusively initiates conversation by asking a question according to her script. The questions are wh-questions and in this conversation the SLT asks the whquestions listed in the script with a rising pitch. This might indicate a specific prosodic pattern used in test sessions. The final rise used by the SLT is also reproduced by R, who produces his responses with a rise. The final rise used by R appears to function as a means of signalling turn-endings, as is shown by the fact that after the final rises, the SLT takes her turn.

Example 2

1 SLT: Hur gammal e du Ri kard?
How old are you Richard?

2 R: F yra å r↑
Four years

3 SLT: F yra å r.↓
Four years.

4 SLT: Va [heter]
What [name]

5 R: [Jaa]
[Yes]

6 SLT: Va he ter du I ef ter namn?
What name is your last name?

7 R: Björ k e g r en↑

8 SLT: Björkegren.↓

9 R: [Ja]

[Yes]

10 SLT: [Va] heter din mamma då?

[What] is your mother's name?

11 R: Ka rin↑

12 SLT: Ka r in.

Questions with level intonation _ responses with level intonation

On some occasions the SLT asks follow-up questions with mainly level pitch contour, see example 3. This happens predominantly when R's first answer was tangential or wrong. A turn-by-turn analysis shows that in line 1 the SLT asks a wh-question with a slightly rising intonation on the final syllable. In line 2, R gives the wrong answer with rather level intonation. In line 3, the SLT asks a follow up question with less rising intonation than in the wh-question in the beginning of the example. This gets yet another incorrect answer in line 4, produced with level intonation. In line 5, a further follow-up

question is asked with level intonation. To this question R gives a minimal but correct response with level intonation in line 6. This type of sequence, i.e. follow-up questions to wrong or tangential answers, is the only exception from the pattern of questions being asked with a salient final rise, followed by answers with a rise described in the previous examples.

Example 3

1 SLT: Vad kan man säga att de e för årstid nu?
What can you say that it is for season now?

2 R: Vin t er
Winter

3 SLT: E de s o m m a r?
Is it summer?

4 R: Jaa::
Yes

5 SLT: Riktigt så varmt e de in :te va?
It isn't really that hot, is it?

6 R: Nää::
Noo

When R on one occasion takes the initiative and makes a comment the final pitch rise is less prominent and more on level pitch; see example 4. In line 1 the SLT comments on the previous topic, this comment is followed by a pause in line 2 and then continued in line 3. R takes an initiative in association to her comments in line 4. This utterance is produced with level intonation, and responded to by the SLT with a repetition with level intonation in line 5. This example further adds to the argument that there is a particular prosodic pattern typical of the questioning from a script activity often used in language testing.

Example 4

1 SLT: Jag tror att de e vår.
I think it's spring.
2 P(3.7)
3 SLT: De börjar ju bli lite soligt o fint.
It's beginning to be a bit sunny and nice.
4 R: Jaa (0.5) kan man haa håå cyke:l.
Yes you can soon ride a bike

5 SLT: Kan man snart åka cykel.
You can soon ride a bike

Evaluations with falling intonation _ response in overlap with the next question

The predominant pattern of the SLT's evaluation is repetition of R's response, but produced with falling intonation. In example 2, R orients to these repetitions as clarification requests, shown in lines 5 and 9, where he responds with a 'yes'. It is, however, clear that the SLT do not use the repetitions as requests for clarification since she produces her next question in overlap with R's 'yes', lines 4 and 10.

Evaluations _ no response

In example 5 (which is the continuation of example 2), the SLT in line 1 asks her question. In line 2, R gives a minimal response which is evaluated by repetition in line 3. This evaluation is followed by a short pause where R refrains from answering. In line 5, the SLT asks her next question. The interpretation of this example is that R has captured the format of this particular activity, i.e. response-request-evaluation, where the evaluation closes the sequence. After the two RRE sequences shown in example 2, where R orients to the SLT's evaluations as clarification requests, R inhibits his response to the SLT's repetitions.

Example 5

1 SLT: = [Va] heter din ma mma då?
[What] is your mother's name?

2 R: Ka rin↑

3 SLT: Ka r in.

4 P: 1.33

5 SLT: Har du några sys kon?
Do you have any siblings?

Discussion

The SLT's initiating wh-questions are often produced with a rising pitch contour. This seems different from the intonation patterns of the teachers' elicitations within classroom settings. The teachers use mainly high pitch with a falling intonation in their initiations both in regular question-answer talk and in quiz games (Hellerman, 2005). However, the prosodic data on classroom conversations are solely in English. According to the analysis of the present paper, asking questions with a rising contour might be habitual for SLTs in conversations within the clinical setting, especially the language testing activity. Since this is observed for both the Swedish SLT analysed in the present study, and the English SLT analysed by Wells and Local (1993), it might also be a phenomenon that occurs within the framing of speech therapy regardless of the prosodic structure of the language. 'Rules' of intonational structure, as described in e.g. overviews of languages, are often violated and used in different ways in different communicative practices, but in this particular activity there seems to be a systematically used pattern that follows the sequential structure of RREsequences. Nevertheless, this points to the importance of collecting more data from clinical conversations and of carrying out cross-linguistic comparison.

The child's responses are produced with a final pitch rise, when the question is asked with rising intonation. Questions typical for the conversations occurring within clinical testing situations asked by SLTs, e.g. asking to name an object or questions regarding personal circumstances appear to be produced with rising intonation by routine. The same pattern occurs for the English-speaking child David, as described by Wells and Local (1993), where the same type of questions are asked even though it is not a specific language testing context. Wells and Local explain David's final rising intonation as his mean of signalling turn endings, but they do not analyse the prosody of the SLT at all. However, the data of the present paper in addition to the data from Wells and Local might indicate that there is a particular prosodic packaging with rising pitch contours, as a routinized pattern within language testing conversations between SLTs and children. Again, since the data comes from only two children (Richard and David), this needs to be further explored.

Regarding the third slot of the analysed conversation sequences, the SLT's evaluations, it is shown that these are produced mainly with falling contour. This is in accordance with previous findings of the prosodic structure in classroom settings where teachers used falling contours in the evaluations in the quiz game (Hellerman, 2005). However, in the regular question-answer talk between teachers and pupils the teachers mainly used rising pitch to signal incorrect answers and falling pitch to signal affirmation (Hellerman, 2003). This also gets some support from the present data where follow-up questions to incorrect or tangential answers are produced with level intonation. There is also some evidence for the evaluations being used as acknowledgement by the SLT but oriented to as confirmation checks by R. However, after two sequences of overlaps R seems to learn that the evaluations are not clarification requests, since he leaves them without response. The pattern of falling intonation in the evaluations occurs also in the conversation between the English-speaking child and the SLT, which gives further support for the possibility that this fall is part of a possible pattern through RRE-sequences typical for clinical conversations.

The child analysed in this paper has known prosodic problems at both the word and the discourse levels. From a first superficial analysis his particular pattern of prominent final pitch rises was interpreted as a consequence of his language impairment and especially of his prosodic problems. With this indepth analysis it is shown that this prosodic pattern might be a result of the particular prosodic packaging introduced by the SLT, typical for conversations that take place during activities in speech therapy in general and language testing in particular. R is able to take on the prosodic cues produced by the SLT by responding with rising intonation when the question is produced with a rise and responding with level intonation when the question is produced with level intonation. This may indicate a higher level of prosodic ability in interaction than what is displayed in standardized testing of prosodic production abilities. Observations such as this could easily be overlooked by a more deficit driven approach that limits itself to identifying problems and errors.

The analysis in this paper points to some similarities between the prosody of a Swedish- and English-speaking child within the clinical context, in spite of the fact that English and Swedish have very different prosodic systems, where Swedish has a more complicated system than English.

Clinical implications

The findings of the present paper are of clinical importance, since they point to the fact that interactional resources may be overlooked with a deficit driven perspective. A further limitation of the analytical approach commonly used to investigate prosody in children with LI is that it focuses mainly on errors made by the child and also only on the particular target features of the assessment procedure. This makes assessment of prosodic abilities from an interactional perspective of great clinical interest. The terminological framework of CA is a useful tool for SLTs in the analysis of how children with LI use their interactional resources. In addition, it is of great interest to analyse in what ways the contributions of the SLTs influence the children's contributions.

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Appendix 1: English translation of the script followed in the test activity

Subtest 1, conversation

The questions are partly taken from Holmberg, E. och Sahlén, B. (1986): Neurolingvistisk undersökningsmodell för språkstörda barn (NELLI) [A Neurolinguistic Investigation of Children with Severe Language Disorders].

1. How old are you?
2. What is your last name?
3. What is your mother's name?
4. Do you have any siblings? What are they called?
5. Where do you live?
6. Which season is it now?
7. Why shouldn't you play in the street?
8. Why do you need shoes?

9. Why is it good to have lamps?
10. Why are there doors on houses?