



## Narrative skills in Swedish children with language impairment

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### ABSTRACT

This study investigated the development of narrative skills in Swedish children with language impairment between age 5 and age 10. Seventeen children with LI and two control groups of age peers with typical development participated in a picture elicited story telling task. Analyses included measures of story content, cohesion and grammar. Our subjects showed development in different areas from age 5 to 10, but they did not perform at the level of the controls at age 10 on number of different verbs used and percent grammatically correct C-units. We conclude that preschool children with LI develop in their narrative skills over time, but not to the level of their age-peers at age 10.

**Learning outcomes:** The reader will be able to describe areas of vulnerability in Swedish-speaking children with language impairment in general, and related to narration in particular. Furthermore, the reader will be able to describe similarities in narrative skills between Swedish-speaking and English-speaking children with language impairment.

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### 1. Introduction

In this paper we explore narrative skills in Swedish children with language impairment (LI) at age 5 and age 10 in comparison with chronological age controls. We focus on narrative content, linguistic structure and cohesion. Many studies have found that narration is a particularly vulnerable level of language production in children with language impairment (LI) and that preschool oral narrative skills are useful in predicting academic achievement, particularly emergent literacy skills and later reading comprehension (Bishop & Edmundson, 1987; Dickinson & McCabe, 1991; Feagans & Applebaum, 1986; McCabe & Rollins, 1994). In kindergarten and the lower grades, narratives constitute the medium for a transition from oral language skills to written language skills (e.g. Kaderavek & Sulzby, 2000). Story-telling is a highly complex task placing significant processing demands on the child's cognitive and linguistic skills simultaneously.

#### 1.1. Narrative development

Narrative skills begin to develop in the preschool years (e.g. Appelbee, 1978; Lahey, 1988) and continue to be refined throughout childhood and school-age. Development is demonstrated through the use of increased numbers of episodes and complex embedding strategies (Hedberg & Westby, 1993), but also through pragmatic features, such as the more advanced use of referencing and adjustments to the listener's needs (e.g. Lahey, 1988). The story grammar model (Stein & Glenn, 1979) has been used extensively to describe and analyze narrative content in children. Seven content units are described in Stein and Glenn's model with the setting initiating the story and a conclusion or resolution provided at the end. Stein and Albrow (1997) discuss how children's concepts of goal-directed actions and human intentionality influence their ability to manage

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content, structure and coherence in stories. According to these authors, at age 2.5 children know a great deal about human intentionality, but they also need to have some knowledge about what telling a story requires. At age 3 children tell stories about real-life events with emotional content. They include all parts of a goal-based episode, such as an initiating event and a plan of action. More complex narratives containing multiple episodes develop throughout the early school years.

Narrative production in children has been studied across languages. Berman and Slobin (1994) conducted an extensive cross-linguistic study, which used one of the Frog Stories (Mayer & Mayer, 1975) as an elicitation context. They found that children as young as 3–4 years old constructed text with the correct syntactic and grammatical structure of their target native language. Results also showed, however, that the oldest children aged 9–10 years, did not produce narratives at the level of adults in terms of content, morpho-syntax and semantics. The authors concluded that becoming a proficient speaker is a process, which extends over a long period of time.

The linguistic devices used to create cohesion in narratives are called cohesive ties or cohesive markers. Development of cohesion is the increased ability to tie sentences or units together within a narrative. Narratives have a particularly high density of cohesive markers compared to conversation (McCabe & Peterson, 1991). Halliday and Hasan (1976) described five types of cohesive markers: referencing, lexical cohesion, substitution, ellipsis and conjunctive. Peterson and Dodsworth (1991) studied children aged 2–3.6 and found that the number of cohesive ties increased with age and MLU, and that most children at these ages use all of the categories identified by Halliday and Hasan. Children's semantic skills develop throughout the school years, with support from their advancing literacy skills. One of the cohesive devices commonly used by children in the Peterson and Dodsworth study was conjunction (connectives). According to Halliday and Hasan, the function of conjunctive elements in narratives is to conjoin meaning across sentences and it is independent of sentence grammar. The function of these elements is to clarify how the content expressed is logically connected to previous text, additively, temporary, causally or adversely. In their picture elicited narrative corpora from 191 French-speaking children aged 7–11 years, Vion and Colas (2005) found that temporal connectives were most common, followed by additive, causal and adversative. According to Lahey (1988) the developmental sequence in narrative production progresses from additive to temporal to causal narratives. The type of connective that is used is one of the features indicating which type of relationship exists between propositions. For example, in an additive chain, where the order of the propositions does not matter, the connective *and* is used. In an additive narrative, statements can change place without a noticeable effect on the overall story.

In Swedish narratives utterances are commonly initiated with a connective, such as a temporal adverb, e.g. “then” to create cohesion. Swedish is a verb-second language, which means that the finite verb has to appear as the second element in a sentence. The regular word-order in main clause statement is subject–verb (SV) like in English: Han äter fisk. (SVX) *He eats fish*. When an element different from the subject initiates a main clause, e.g., an adverb or a topicalized object, the word order is inverted and becomes verb–subject: Då äter han fisk. (XVS) *Then eats he fish*. or Fisk äter han inte. *Fish eats he not*. The word order will thus be XVS. Therefore, the use of a cohesive device has consequences for word order in Swedish.

## 1.2. Narratives in children with communication disorders

In an issue of *Topics in Language Disorders*, Johnston (2008) extends her views from her seminal paper (1982) regarding the use of narrative tools for assessment and intervention. She specifies six reasons to target narrative skills in intervention for school-aged children with language impairment: To explore processing deficits, to decontextualize language, to help kids connect, to improve listening skills, to improve reading comprehension and to reveal language learning strengths and weaknesses. Johnston also specifies four required knowledge bases for narration. One such area is content knowledge and another is familiarity with narrative frameworks. A third area is linguistic skills, i.e. the ability to use appropriate linguistic elements to express content and to create a unified text. Finally, a story-teller also needs to be sensitive to the listener's or reader's needs and be quick to make adjustments, if required. Johnston calls this area communicative adequacy.

Narrative production has been described as the most ecologically valid task for the assessment of language skills in children with communication disorders (Botting, 2002). It has been shown that the characteristics of the language elicited from narrative contexts versus conversational contexts differ significantly. In an early study by Merritt and Liles (1987) it was found that children with normal language development produced more complete episodes and more story grammar units than children with language disorders in spite of the fact that they did not produce a higher number of clauses. Furthermore, Liles (1987) found that school-aged children with TL showed better episode organization and a more well-developed use of cohesive conjunctions than children with language impairment. Children with typical development were also more sensitive and made adjustments according to changes in the listener's needs, such as in contexts with shared or non-shared content. A narrative task is thus important to include during the assessment of language skills in clinical populations.

Linguistic competence (Johnston, 2008) including the techniques children use to create cohesion in stories have been assessed through research on the micro-structure of narratives. Factors related to micro-structure have been found to be particularly useful in distinguishing school-aged children with LI from those with TD (Liles, Duffy, Merritt, & Purcell, 1995). In a longitudinal study of narrative skills in school-aged children, Fey, Catts, Proctor-Williams, Tomblin, & Zhang (2004) found that school-aged children with typical language development (TL) produced “stronger” narratives than children with language impairment and the measure that yielded the largest difference between groups was a measure of grammatical accuracy. Children with TL produced stories with higher level of lexical variation, more advanced grammatical complexity and fewer errors than children with language impairment both in second and fourth grade. Children with a kindergarten

diagnosis of language impairment (LI), who no longer showed an LI in grade 2, according to standardized testing, produced narratives like the children with TL in second grade. The stories by these children in fourth grade, however, were more similar to the stories produced by children with a persistent LI. Lexical variation, grammatical complexity and accuracy thus appears to be a persistent problem in English-speaking children with LI.

Norbury and Bishop (2003) compared the narrative skills of four groups of 6–10-year-old children: specific language impairment (SLI – no other developmental delays than in language), high-functioning children with autism (HFA), children with PLI (pragmatic language impairment without autism) and control children with typical development. The researchers used a story-telling task with picture support and found that children with SLI and HFA made more syntactic errors and the latter group was also more inclined to use ambiguous references in their stories. The authors concluded that for good narrative skills to be present, language status, such as syntactic skills, is a more reliable predictor than clinical category (autism, SLI, PLI). Given the complexity of a narrative task, however, more abilities than strong syntactic skills are required.

A few cross-sectional studies have been conducted on narrative skills in Swedish-speaking children with LI. However, none of them have had a main focus on micro-structure analysis (Reuterskiöld-Wagner, Nettelblatt, & Nilholm, 2000; Reuterskiöld-Wagner, Sahlén, & Nettelblatt, 1999). Reuterskiöld-Wagner et al. (2000) found that, in a group of twenty-eight 5-year old children with language impairment, mean length of utterance (MLU) and grammatical complexity were higher in narratives than in conversation, whereas fluency and intelligibility were lower. In a different study Reuterskiöld-Wagner et al. (1999) reported that the same children told stories at the level of 4-year-olds with typical language development in terms of story grammar production and number of words. This is in line with earlier findings from studies of English-speaking children with LI (e.g. Merritt & Liles, 1987). Miniscalco, Hagberg, Kadesjö, Westerlund, & Gillberg (2007) found that twenty-one 7–8-year-olds with a previous language delay at age 2.5 performed below norms in terms of the information given, sentence length and number of subordinate clauses used in the Bus Story test (Renfrew, 1997). In addition they did not perform at the level of age-peers on a test of narrative memory. The authors concluded that difficulties with narrative performance is a persistent problem in children with slow language development and may be present in spite of typical speech and auditory comprehension.

### 1.3. Linguistic skills in LI

As stated above, a range of linguistic skills are required for narrative skills to develop. Until fairly recently, most studies on language skills in children with specific language impairment (SLI) have been conducted with English-speaking subjects. These studies have established that the main difficulty that children with SLI have with language learning lies in the area of grammatical morphology (e.g. Loeb & Leonard, 1991; Rice, Wexler, & Cleave, 1995; see Leonard, 1998 for a review). Children with SLI, growing up with English as their native language have been found to show a significant problem with finite verb morphology, that is, copula forms, auxiliary forms and inflections marking subject–verb agreement and/or verb tense. Such difficulties have been evident both in comparison with the language profiles of age peers as well as younger children matched for MLU. Data from follow-up studies (Rice, Wexler, & Hershberger, 1998) have shown that children with SLI develop in their use of markers of finiteness of verbs, including third person –s and past tense –ed, but they do not quite catch up with age- or language matched controls at age 8. Windsor, Scorr, & Street (2000) studied a group of 11-year-old children with language impairment and found that the error rate for age- and language-controls on correct production of past tense –ed in spoken language was close to zero, while it reached level of 3.9% in their group with LI.

Hansson and her colleagues have studied the manifestation of SLI in grammar in Swedish-speaking children with SLI (Hansson & Leonard, 2003; Hansson & Nettelblatt, 1995; Hansson, Nettelblatt, & Leonard, 2000). Data from spontaneous language samples, as well as elicitation probes, have shown that in Swedish children with SLI there is vulnerability in the use of copula forms, which are deleted and regular past inflections, which are substituted with infinitive or present tense forms (Hansson & Leonard, 2003). Correct tense marking is particularly important in order to represent the temporal-logical relationship in a story.

Children with SLI have problems not only with grammar, but also with their lexical abilities, which are often restricted. They commonly show a late onset in word learning (Leonard, 1998) and a restricted range of lexical variation. Furthermore, they tend to use fewer different words than age-matched controls (Leonard & Deevy, 2004) and in particular, fewer different verbs (Conti-Ramsden & Jones, 1997; Fletcher & Peters, 1984; Leonard, Miller, & Gerber, 1999; Watkins, Kelly, Harbers, & Hollis, 1995). Data from previous studies indicating that children with LI have difficulties with verb variation and verb inflection are usually not from narrative elicitation contexts.

One unusually weak area that Swedish-speaking children with SLI have shown is problems with verb-second word-order in topicalization, where some of these children use SV word order even though VS is required (Hansson & Nettelblatt, 1995; Hansson et al., 2000). Children with typical development seem to know that the verb should be placed in the second position of the sentence already at age two (Håkansson & Nettelblatt, 1996). Given the frequent use of a connector, like a time adverb, as utterance initiator in narration, word-order constitutes a potential obstacle in story-telling in Swedish-speaking children with LI, and is thus important to include in narrative assessment. As Johnston (2008) pointed out, linguistic competence is an important knowledge base for the ability to tell a story, and there are a number of potential areas of difficulty for Swedish-speaking children with LI.

With a few exceptions, there is a paucity of studies investigating narrative skills in school-aged Swedish-speaking children with LI. Given the advantages of a narrative task as a well established context for the assessment of higher order language, our purpose was to investigate the development of narrative production in Swedish children with language

disorders. In the present study we conducted a follow-up assessment of children with a preschool diagnosis of language impairment. Children who had participated in two larger research projects (Hansson, Forsberg, Löfqvist, Mäki-Torkko, & Sahlén, 2004; Sahlén & Nettelbladt, 1995) were again assessed at age 10. At age 10 we included the same narrative task that had been used at age 5. We reanalyzed our narrative data from age 5 and focused on features found to be vulnerable in Swedish-speaking children with LI. We used a picture elicited narrative (One Frog Too Many, by Mayer and Mayer, 1975) with content familiar to a 5-year old child (objects, actions and events). The story line represents the story grammar units described by Stein and Glenn (1979), in other words a familiar narrative framework.

Based on the literature we expected to find less well developed narratives in children with LI compared with children with TL, both at age five and age ten. The study was guided by the following questions:

1. Do children with LI develop their narrative skills with respect to aspects of content and narrative structure, as well as linguistic form and use of lexical features from age 5 to age 10?
2. If there is development, do children with LI reach the level of their age-peers with typical development?

## 2. Methods

### 2.1. Participants

The original group of 28 children has been described in depth in Sahlén, Reuterskiöld-Wagner, Nettelbladt, & Radeborg (1999), and Reuterskiöld-Wagner (1999). Seventeen children from this group, seven girls and ten boys, participated in a comprehensive follow-up study at Time2. Their ages at Time 1 ranged from 4.11 to 5.11 (mean age 5.3) and at Time 2 from 9.10 to 10.6 (mean age 10.1). Two criterion-referenced tests were administered at Time 1. Language production was assessed with the grammatical subtest of the Lund Test of Phonology and Grammar (Holmberg & Stenqvist, 1983). This part of the test includes items probing production of plural forms, possessive structures, prepositions, verb tenses and placement of negation. Children with normal language development aged 4.6–5.0 reached a mean of 43 out of a total score of 46. A score of 37 (the mean – 2 SD) was adopted as a cutoff score, that is an upper limit for a diagnosis of language impairment. All seventeen children included in the present study had scores that fell below 37. Language comprehension was assessed with the Språkligt Impressivt Test för Barn (SIT; Hellqvist, 1989). This test is a picture pointing task and the child is asked to point to the picture, from a choice of three that best matches a spoken sentence. No standardization with norms exists for this test, only a limited amount of reference data from typically developing children. Six of the 17 children performed at the level of typically developing children their age, and the remaining 11 performed well below. Pretesting on both occasions included NVIQ, at Time1 measured with the WIPPSI (Weschler, 1990) and at Time2 with RSPM (*Ravens's Standardized Progressive Matrices*; Raven, Court, & Raven, 1990). At Time1 the mean result of the groups was 96.12 (range 78–120, SD 11.36) and at Time2 88.41 (range 73–111, SD 10.46). On both occasions all children passed a hearing screening at 20 dB across the speech frequencies. All children had been receiving speech and language intervention when they were first included in the project at age 5. Speech and language services are not always offered to school aged children in Sweden, but eight of the children were receiving support from special education professionals. Four children did not receive any special services and information was not available for the remaining 5.

Two control groups with children with typical language (TL) development also participated. One served as age-controls for the children with LI at age 5 and another for the children with LI at age 10. Children in mainstream classrooms and with no history of developmental delays were invited to participate. The control subjects had no history of any developmental or academic delay. Mean age of the younger control children ( $N = 14$ , 11 girls, three boys) was 4.9 (range: 4.0–5.5) and mean age of the older control children ( $N = 17$ , seven girls, ten boys) was 10.1 (range: 9.8–10.6). The younger control group was slightly younger (5 months) than the LI group at Time1. This difference was significant ( $t(19.22) = 3.343, p = .003$ ). At Time2 there was no age difference between the control- and LI groups ( $t(32) = .449, p = .657$ ). The children with LI were thus the same at age 5 and age 10, but the children with TL consisted of two different groups of children.

The study was approved by the University Committee on Research Involving Human Subjects at the Medical Faculty, Lund University. Parents received written and oral information about the project and signed an informed consent form stating that they and their child agreed to participate.

### 2.2. Procedures

#### 2.2.1. Narrative elicitation

Narratives were elicited using 7 pictures from the story “One frog too many” (Mayer & Mayer, 1975). The pictures were selected to represent seven story grammar units suggested by Stein and Glenn (1979; also see Westby, 1992). The units were Setting, Initiating event, Response state, Response plan, Attempt, Consequence and Resolution/Reaction.

As a practice item, the test administrator presented the children with a similar picture sequence from a different frog-story “Frog on his own” (Mayer, 1973). As a demonstration, the examiner presented one picture at a time and left all pictures visible on the table while she told the child to first look at all the pictures and then told a model story. Following the demonstration, the test administrator told the child: “Now it is your turn. I am going to show you some different pictures and you will tell me a story. I will help you get started.” The pictures from “One frog too many” were laid out, one at a time, and

the child was asked to look carefully at each picture, in order to be better prepared to tell the story. All the pictures were left on the table in front of the child. The examiner pointed to the first picture, provided a sentence as a story starter: “This story is about a boy and his pets, who are going out on a raft”, and asked the child to continue the story. The setting was thus provided by the experimenter. No support apart from nodding and acknowledging by a “mhm” or a “yes” was provided, by the experimenter, who was explicitly trained not to give support or feedback. In cases when the child was silent or did not continue his story, the examiner provided support such as asking “and then?” or repeating the child’s utterance. When the child had come to the last picture and stopped narrating, the examiner asked “Is that it?” in order to make sure the child was done. In one case the child added information judged to be a story grammar information unit following the final question by the examiner (“Is that it?” “No, and then they went home.”). The child received credit for this utterance. If a child started to drift away from the topic of the pictures, the examiner made one attempt to redirect his/her attention to the stimuli by making eye contact and then pointing to the pictures and saying “Let’s get back to the story.” The procedure was audio- and video recorded and later transcribed. The transcribed narratives were divided into C-units, (Communication units: Loban, 1976) consisting of a main clause and any attached subordinate clause. Criteria were defined based on Hughes, McGillivray, & Schmidec (1997). C-units were coded and a number of measures were included.

### 2.2.2. Number of words and number of C-units

Number of words and number of C-units were included in order to provide information regarding the amount of data that was available for analysis.

### 2.2.3. Story content analysis

A target story representing the events in the picture sequence was constructed (see Appendix A). The story was divided into 6 *Story grammar* units, which were further segmented into story grammar elements, which described the pictures. Each story grammar element produced by the child was credited with 1 point and the total possible score was 16. We refer to story grammar elements as story grammar score. If a child included two story grammar elements in one C-unit, both elements were yielded credit. Carefully selected criteria for each story grammar element were set up for an utterance to receive credit (see Appendix B). If a child produced more than the minimal amount of information specified for a story grammar element, he/she did not obtain a higher score.

### 2.2.4. Linguistic skills

*Tense marking of verbs* was assessed by computing unmarked verbs per total number of verbs. This includes non-finite forms where the tense marker or a modal auxiliary has been omitted as well as forms of verbs of the first conjugation where past tense marking is optional in spoken language. We chose this procedure to avoid a fault-seeking perspective, since it is impossible to judge the correctness of infinitive forms of verbs from the first conjugation. This is the class with highest type frequency in Swedish, and including only verbs from the other conjugations would have reduced the number of verbs in each narrative considerably, resulting in a number that would be too low to compute use in obligatory contexts. Even if it is very possible that all infinitive first conjugation forms are “correct”, a distributional analysis showing that such forms are more predominating in children with LI might indicate that these children are more likely to “select”/use verbs from this class, which doesn’t “require” inflection in past tense.

*Percentage of C-units with an XVS construction*, that is constructions with a topicalized element, was included as a measure of word-order. This syntactic construction is crucial for a narrative in Swedish.

*Number of C-unit connectives* was included as a measure, following earlier studies (Halliday and Hasan, 1976; Lahey, 1988; Vion & Colas, 2005). We analyzed the use of additive, temporal, causal and adversative connectives, which are used to create cohesion in stories. We included *och* (and), *sedan/sen*, *and then* (then, and then), *därför/så* (because/so) and *men* (but). Number of C-unit connectives used between C-units was computed per C-unit.

*Lexical variation* was measured as number of different verbs per C-unit, since this feature has been shown to be a particularly vulnerable aspect of language in children with LI (e.g. Fletcher & Peters, 1984; Conti-Ramsden & Jones, 1997).

*Percent grammatically correct C-units* was computed as a holistic measure of grammatical accuracy.

### 2.2.5. Statistical Analyses

For the longitudinal comparison of the children with LI we used the paired, exact Wilcoxon–Mann–Whitney test. For the cross-sectional comparisons (LI5 and TL5 as well as LI10 and TL10), we used the unpaired, exact Wilcoxon–Mann–Whitney test without a Bonferroni, since this procedure is overly conservative according to Perneger (1998). The Wilcoxon–Mann–Whitney tests were chosen because they do not assume a normal distribution and the exact versions were used to account for the small sample sizes.

## 3. Results

### 3.1. Reliability

The first two authors coded 50% of the narratives from each group independently and 10% of the narratives were used for inter-rater reliability computations. Each of the authors coded 10% of each others narratives, while being blind to the previous

**Table 1**

Longitudinal and cross-sectional comparisons of children with typical language and children with language impairment at age 5 and 10.

Group	Story grammar score	% unmarked verbs	% XVS clauses	C-unit connectives/C-unit	Different verbs/C-unit	Percent grammatically correct C-units	Number of words	Number of C-units
TL age 5								
<i>M</i>	25.92	4.5	29.5	.53	.92	85.78	55.4	9.6
<i>SD</i>	11.55	9.2	22.3	.34	.20	16.68	23.9	3.8
Range	2–7	0–28.57	0–75.0	0–1.0	.5–1.29	40.0–100	21–101	4–17
TL age 10								
<i>M</i>	42.0	3.35	57.2	.82	1.04	95.91	66.6	8.4
<i>SD</i>	11.31	5.58	25.06	.19	.17	7.33	18.1	2.1
Range	4–10	0–15.38	0–100	.27–1.0	.73–1.29	75.0–100	45–98	5–13
LI age 5								
<i>M</i>	23.06	12.53	34.74	.52	.68	73.28	45.8	8.8
<i>SD</i>	12.29	14.27	30.53	.30	.26	22.91	35.5	6.0
Range	0–7	0–50.0	0–83.33	0–.93	.14–1.0	14.29–100	0–124	0–24
LI age 10								
<i>M</i>	40.0	4.32	60.0	.77	.88	84.88	65.9	10.6
<i>SD</i>	14.82	7.25	20.44	.24	.22	15.98	18.1	2.8
Range	3–11	0–21.43	11.11–85.71	.15–1.0	.58–1.33	53.85–100	32–93	6–15

coding by her colleague. Results were then compared. On story grammar score and percent grammatically correct C-units inter-rater reliability agreement reached 100%. On number of XVS structures and C-unit division, reliability reached 98% and for number of unmarked verbs and number of different verbs 97%. Agreement was computed by dividing the total number of codes in agreement by the total number of codes in the transcript. All coding was compared and consensus was reached through discussion. For a narrative with target content, see [Appendices A and B](#) and for descriptive statistics see [Table 1](#).

### 3.2. Comparisons between ages within groups: TL at 5 and at 10

Our cross-sectional data of children with TL at age 5 and at age 10 showed a significant difference between the results for 5-year-olds versus 10-year-olds on all measures but number of words ( $U = 160.5, p = .1$ , Cohen's  $d = 0.53$ ), number of C-units ( $U = 99.5, p = .444$ , Cohen's  $d = 0.39$ ), percent unmarked verbs ( $U = 119.5, p = 1.0$ , Cohen's  $d = 0.15$ ) and number of different verbs per C-unit ( $U = 158.5, p = .118$ , Cohen's  $d = 0.65$ ). Children at age 10 produced more story grammar units than children at age 5 ( $U = 196, p = .002$ , Cohen's  $d = 1.4$ ). One 5-year-old and no 10-year-old child produced story elements that were not included in the story grammar scoring as these elements did not correspond with the target narrative.

The older children demonstrated a significantly higher proportion of XVS units ( $U = 190.5, p = .003$ , Cohen's  $d = 1.17$ ), used more connectives in between C-units ( $U = 182, p = .012$ , Cohen's  $d = 0.05$ ) and produced more C-units that were grammatically correct compared with 5-year-olds ( $U = 171, p = .04$ , Cohen's  $d = 0.79$ ).

### 3.3. LI at 5 and at 10

Our longitudinal data of children with LI at age 5 and at age 10 showed a significant difference between the results for 5-year-olds versus 10-year-olds on all measures but number of words ( $Z = 1.22, p = .221$ , Cohen's  $d = 1.41$ ), number of C-units ( $Z = -1.58, p = .114$ , Cohen's  $d = 0.38$ ), number of different verbs per C-unit ( $Z = 1.76, p = .079$ , Cohen's  $d = 0.83$ ) and percent grammatically correct C-units ( $Z = -1.57, p = .116$ , Cohen's  $d = 0.59$ ). Children at age 10 produced more story grammar units than children at age 5 ( $Z = -3.277, p = .001$ , Cohen's  $d = 1.24$ ). Two 10-year-old children, but no 5-year-old child with LI produced story elements that were excluded from the story grammar scoring as these elements did not correspond with the target narrative.

The older children with LI demonstrated a significantly higher proportion of XVS units ( $Z = -2.172, p = .03$ , Cohen's  $d = 0.99$ ) and they used more connectives in between C-units than they did at age 5 ( $Z = -2.272, p = .023$ , Cohen's  $d = 0.92$ ). Finally, 10-year-olds with LI produces fewer unmarked verbs than they did at age 5 ( $Z = -2.12, p = .034$ , Cohen's  $d = 0.73$ ).

### 3.4. Comparisons between groups within ages: LI versus TL at 5

At age five only one measure yielded a significant difference between the groups. This measure was number of different verbs per C-unit, where our subjects with LI used fewer different verbs than the other group ( $U = 53.5, p = .014$ , Cohen's  $d = 1.03$ ). In a second measure, percent unmarked verbs, there was a tendency of a significant difference ( $U = 68.5, p = .05$ , Cohen's  $d = 0.67$ ) with more unmarked verbs occurring in the narratives from the children with LI. No significant differences were found between groups in the remaining areas: Story grammar units ( $U = 107.5, p = .643$ , Cohen's  $d = 0.24$ ), percent XVC clauses ( $U = 108.5, p = .884$ , Cohen's  $d = 0.2$ ) number of connectives in between C-units ( $U = 110.5, p = .95$ , Cohen's  $d = 0.03$ ), percent correct C-units ( $U = 71.5, p = .089$ , Cohen's  $d = 0.62$ ), number of words ( $U = 85.5, p = .183$ , Cohen's  $d = 0.32$ ) and number of C-units ( $U = 98.0, p = .403$ , Cohen's  $d = 0.16$ ).

### 3.5. LI versus TL at 10

At age 10 there was a significant difference between the two groups on three of the measures: Number of different verbs per C-unit, ( $U = 78.5, p = .023$ , Cohen's  $d = 0.81$ ), percent grammatically correct C-units ( $U = 79.5, p = .017$ , Cohen's  $d = 0.89$ ), and number of C-units ( $U = 82.0, p = .03$ , Cohen's  $d = 0.89$ ). On the first two of these measures the group with LI demonstrated a lower number than the other group, but on the last measure they showed a higher number. The remaining 5 measures yielded no significant differences between groups: Story grammar units ( $U = 132.0, p = .663$ , Cohen's  $d = 0.15$ ), percent unmarked verbs ( $U = 141.5, p = .898$ , Cohen's  $d = 0.15$ ), percent XVC clauses ( $U = 138.5, p = .836$ , Cohen's  $d = 0.12$ ), number of connectives in between C-units ( $U = 127.5, p = .556$ , Cohen's  $d = 0.23$ ), and number of words ( $U = 133.5, p = .705$ , Cohen's  $d = 0.04$ ).

## 4. Discussion

The focus of the current study was narrative skills of Swedish-speaking children with LI at two points in development. We also compared the results of our subjects with the performance of children with typical development at age five and age 10. We found significant changes between ages 5 and 10, in a range of narrative skills both in children with LI and TD. The following section of the paper will include a discussion of two of the areas, which are important for narrative performance according to Johnston (2008): content knowledge and familiarity with narrative frameworks as well as linguistic skills. Each area will be discussed in terms of development over time as well as in terms of differences between groups.

### 4.1. Content and narrative structure

According to Stein and Albro (1997), at the age of three children with TD include all parts of a goal-based episode, such as an initiating event and a plan of action. More complex narratives, in terms of number of episodes, however, continue to develop throughout the school years. In one of our own earlier studies (Reuterskiöld-Wagner et al., 1999), we found that children with LI include fewer story grammar units in their narrations than children with TD. This has also been a finding in studies of English-speaking children with language impairment (Merritt & Liles, 1987). Based on the literature, we expected children with TD to perform at ceiling and include all target content units in their stories. This was not the case, however. The group of 5-year-olds with LI included approximately 23% of the target elements and the 5-year-olds with TL included 32%. Both groups of 10-year-olds included approximately 40%. There was no significant difference between groups at age 5 or at age 10. Miniscalco et al. (2007) found that Swedish-speaking 7–8-year-old children with a language delay at age 2.5 did not produce narratives with content judged to be at the level of age-peers. The story used in the current study was a basic story without multiple episodes. The story used in Miniscalco et al. (2007) was the Bus story (Renfrew, 1997), which has a slightly longer and more complex story line. One possible explanation is that the typically developing children at age 10 in the current study perceived the brief sequence of pictures as juvenile and did not make a serious effort to perform well.

### 4.2. Linguistic skills

We did not find any difference in number of words produced by any of our groups. There was also no difference between number of C-units comparing the younger groups or comparing the children with LI at 5 or at age 10. At age 10, however, the group of children with typical development produced fewer C-units than their age-peers with LI. There was no difference in number of words or story grammar units, which indicates that the latter group produced stories that were as long as those produced by their age-peers and with as much content, while using more C-units. This result might indicate a lower level of linguistic complexity in the group of children with LI. At age 10, the group of children with LI showed a significantly lower level of grammatical accuracy as compared with the children with TD, but no measure of linguistic complexity was included in the current study. Future studies of linguistic skill in Swedish-speaking children with LI should include measures of linguistic complexity, such as number of subordinate clauses. In order to assess subordination, however, elicitation contexts resulting in longer and more complex narratives than the stories in the current study are needed.

Results from previous larger studies (e.g. Fey et al., 2004; Norbury & Bishop, 2003) have shown that grammatical accuracy and complexity are persistent core problems for children with LI. Grammatical accuracy was not analyzed in terms of particular errors made in the present study. We focused on the percentage of utterances produced without any errors and our findings can be interpreted as corroborating earlier studies showing that children with an early diagnosis of LI still struggle with grammatical accuracy, when they are well into their school years. Children with TL showed fewer ungrammatical C-units at age 10 compared with age 5, but in the group with LI there was no significant difference over time. Children with LI showed lower accuracy than the control groups both at age 5 and age 10, but the difference was only statistically significant at age 10. Although there is development over time, children with LI do not seem to reach the same level of linguistic accuracy as their peers at age 10.

A range of skills related to linguistic structure are important for the creation of narratives in particular in terms of cohesion. Earlier studies have found that this level is a particularly vulnerable aspect of narration in children with LI (e.g. Liles, 1987; Liles et al., 1995). In this study we included a number of measures, most of which have been identified in earlier studies as difficult for Swedish-speaking preschool children with LI (verb tense use, word order, grammatical accuracy, use of connectives and number of different verbs used) (e.g. Hansson & Nettelbladt, 1995). With respect to verb forms, Swedish children with SLI have shown a preference for infinitive or present tense forms over the use of copula forms and regular past tense inflections (Hansson & Leonard, 2003). Studies of English-speaking children with LI have shown that these children develop over time in their use of verb morphology, although not quite to the level of school-aged children with TL (Rice et al., 1998; Windsor et al., 2000). At age five, our children with LI showed more unmarked verbs than their age-peers with TL, but they produced significantly fewer unmarked verbs at age 10 compared with age 5. At age 10 there was no longer a difference between the two groups of 10-year-olds, and the verb system of the children with LI seemed to have matured. The fact that our subjects with LI did not show an extensive use of these immature forms at age 10, is reassuring, as the presence of non-finite verbs in contexts requiring a finite form in spontaneous speech is highly unusual and stigmatizing in older individuals. Our results showed a decrease from approximately 12% of all verbs being unmarked at age 5 to approximately 4% at age 10 in the group with LI. Swedish-speaking children with LI thus follow a similar pattern of development as English-speaking children with LI in the development of their mastery of verb forms.

Earlier studies have shown that children with LI show less lexical variation, particularly regarding verb use (Conti-Ramsden & Jones, 1997; Fletcher & Peters, 1984; Leonard et al., 1999; Watkins et al., 1995). Our results showed that Swedish-speaking children with LI used significantly fewer different verbs per C-unit compared with age-peers at age 5 and the difference was still significant at age 10. Apparently, lexical variation in terms of verb usage is a vulnerable feature in language impairment both in English and in Swedish. Furthermore, it does not appear to be particularly context dependent, since elicitation contexts in previous studies have not included narratives. Lexical variation is a feature that should be further investigated in future studies on language skills in Swedish LI.

In narratives in Swedish, the XVS construction is salient, as many statements are initiated with an element other than the subject, in most cases some sort of adverbial connective (then, so). We expected our group with LI to show difficulties in this area, based on previous research (Hansson & Nettelbladt, 1995; Hansson et al., 2000). We found no significant difference between groups, however, and both groups of 10-year-olds used more of the XVS-structures at age 10 compared with age 5. Our subjects with and without LI used approximately 35% XVS constructions at age 5 and 60% at age 10. XVS word order is a result of the connective initiating the clause, and both groups used fewer C-unit connectives at age 5 than at age 10. In Swedish conversational speech, XVS sentences constitute around 40% of all statements (Jørgensen, 1976). To our knowledge, there is no information regarding the rate of use in adult narratives. The high number shown at age 10 is probably a task-specific result, which reflects the use of a specific word-order feature commonly used in narratives. The fact that there was a 35% use of utterances with XVS-word order at age 5, but a higher proportion of use at age 10 in both groups may be viewed as evidence that the ability to use word order variation as a tool for manipulating information structure in narratives is already present at age 5, but continues to develop through the school years. However, since there is no available information regarding word order patterns in adult narratives, the expected proportion is unknown.

Liles (1987) found that children with LI showed less sophisticated use of cohesive conjunctions compared with children with TL. Vion and Colas (2005) and Lahey (1988) have described a developmental hierarchy in the use of different types of connectives. We noticed an increased use of connectives at age 10 compared with age 5, in both groups, and here was no significant difference between the groups at any of the two ages of assessment. These results indicate that this particular aspect of narrative cohesion develops during the school-years in most Swedish-speaking children. When we looked more closely at the types of connectives used, however, we found that our subjects with and without LI followed the outlined developmental hierarchy, but that children with LI seem to develop at a slower pace. At age 10 there was a tendency for children with LI to use more additive conjunctions than the children with TL, who used more of the more advanced structures (temporal, causal and adversative) than the other group. Our results should be interpreted with caution, however. Gillam and Johnston (1992) chose to exclude the connective *and* from their analyses of oral and written narratives produced by school-aged children. They cited Thompson (1984) and stated that it is often difficult to distinguish between the use of *and* as a connective and as a discourse adverbial. Although the Swedish conjunction *och* (and) can be used both as a connective and as a discourse adverbial, the narratives in the current study were rather limited in length and the occurrences were interpreted as additive connectives. In a temporal narrative the connectives *then* or *and then* are usually used and the order of propositions cannot shift places without the narrative changing in content. Finally, the connectives *because*, *cause* and *so* indicate a causal relationship between content units, and constitute the most advanced level of narrative development. There were very few causal and adversative relationships expressed in our samples, as a whole. Perhaps the short picture sequences did not encourage the use of these more advanced structures.

#### 4.3. Methodological discussion

In the present study only one manner of eliciting stories from children was used. We provided a model story before we asked the child to start his/her narrative. Other studies have shown that availability of pictures and exposure to the story



(although our model was different than the target) lead to longer and more complex stories that pictures without support (Kaderavek & Sulzby, 2000). Future studies of narrative skill in school-aged Swedish-speaking children should include more taxing narrative elicitation contexts, such as longer and more complex picture generated stories, story retelling tasks and narratives following story starters (e.g. Hedberg & Westby, 1993). There is also a need for studies including other speaking tasks, such as expository tasks in studies of school-aged children with and without language impairments (Nippold, Hesketh, Duthie, & Mansfield, 2005).

A drawback is that in order to offer the child help with initiating the story, the experimenter provided a story starter, which constituted a story grammar unit, the “setting.” At age 5, this proved to be a procedure that gave the children the gentle push needed to start their narration. At age 10, this was unnecessary and may have limited children in their creativity, but we elected not to make any changes to the procedure in order to obtain comparable results between assessments.

Some of our measures may be somewhat interdependent, e.g. number of utterances and story grammar score and furthermore, this is a study with a small sample size. Children were recruited from a rather widespread geographical area in southern Sweden at age 5 and only 17 of the original group of 28 children were interested in participating the second time of testing.

## 5. Conclusions

Children with early language impairments develop over time in their narrative skills, but they are still at academic risk with poor story telling skills at age 10. An area of particular concern, based on the present study, is grammatical accuracy. Lexical variation in terms of different verbs used, as well as use of developmentally more advanced connectives also seem to be areas of concern and should be investigated more in depth in future studies. These results correspond well with the results from the Fey et al. (2004) study, in which school-aged English-speaking children with TL produced stories with higher level of lexical variation, more advanced grammatical complexity and fewer errors than children with language impairment.

Narratives have traditionally not been a focus of language intervention with Swedish-speaking children, although narrative-based language intervention has been found to be useful for children with specific language impairment and children with cochlear implants (Justice, Swanson, & Buehler, 2008; Swanson, Fey, Mills, & Hood, 2005). We recommend that narrative skills be included as intervention goals and that these target both structural aspects and features related to story content and listener needs in a variety of contexts for practice.

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## Appendix A

### A.1. Target narrative

*Swedish:* Den stora grodan sparkar av den lilla grodan från flotten. Den lilla grodan blir rädd. Den stora grodan skrattar och tittar på den lilla grodan i vattnet, medan flotten åker vidare. Den lilla grodan blir rädd. Det ser sköldpaddan. Han skvallrar till pojken och hunden. Sköldpaddan och hunden blir arga på den stora grodan. Den stora grodan blir rädd när de är arga. “Åh nej” säger pojken. Alla säger “vi måste leta efter den lilla grodan.” De letar överallt och ropar på den lilla grodan. De kan inte hitta honom. De får gå hem utan den lilla. Pojken är jätteledsen. Hunden morrar på den stora grodan. Den stora grodan skäms. Han får inte följa med hem.

*English translation:* The big frog kicks the little frog off the raft (or boat). The little frog is frightened. The big frog is laughing as he watches the little frog in the water, while the raft is floating away. The little frog is frightened. The turtle sees this. He tattle-tales on the big frog. The turtle and the dog get angry at the big frog. The big frog gets frightened. “Oh no” says the boy. They all say “we have to look for the little frog.” They look everywhere and call out for the little frog. They can’t find him. They have to go home without the little one. The boy is very sad. The dog is growling at the big frog. The big frog feels ashamed. He is not allowed to walk home with the others.

## Appendix B

Story grammar scoring. Each minimal utterance yielded a score of 1 with a total score of 16 points.

Story element	Minimal utterance
<u>Initiating event:</u> 1. The big frog kicks the little frog off the raft (or boat).	Big frog kicks little frog off (he kicks him off).
2. The big frog is laughing as he watches the little frog in the water, while the raft is floating away. The little frog is frightened.	Big frog is laughing. Big frog happy/smiling.
<u>Reaction:</u> 3. The turtle sees this.	Turtle watching/sees
4. He tells the boy and the dog.	Tattle-tales on the big frog/turtle tells boy and/or dog.
5. The turtle and the dog get angry with the big frog.	They are angry/upset.
6. The big frog gets frightened	Big frog (he) is frightened.
7. "Oh no" says the boy.	Boy (he) is upset/surprised/ (a negative reaction).
<u>Plan:</u> 8. They all say "we have to look for the little frog."	Have to look/search.
<u>Action:</u> 9. They look everywhere and call out for the little frog.	They go looking/searching (indicate more than one character as agents).
<u>Consequence:</u> 10. They can't find him.	Can't find him.
11. They have to go home.	Went home.
12. Without the little frog.	Without little frog.
<u>Resolution:</u> 13. The boy is very sad.	The boy/he is sad.
14. The dog is growling at the big frog.	Dog growling/angry.
15. The big frog feels ashamed.	Big frog is ashamed/sad/feels bad.
16. He is not allowed to walk home with the others.	Big frog stays/is not coming.

### Appendix C. Continuing education

#### CEU questions

1. In a verb-second language like Swedish:
  - a. there is no use of auxiliaries.
  - b. the finite verb has to appear as the second element in a sentence.
  - c. the main verb is placed last in the sentence.
  - d. verbs are always placed first in a sentence.
2. Swedish-speaking children with SLI have shown a combination of vulnerability in the following areas:
  - a. subject-verb agreement and correct verb tense marking.
  - b. correct verb tense marking and pragmatic skills.
  - c. use of the copula, correct verb tense marking and word-order.
  - d. correct use of pronouns and subject-verb agreement.
3. At what age do most Swedish-speaking children know the word-order rules pertaining to the placement of the verb?
  - a. at age 2.
  - b. at age 4.
  - c. at age 3.
  - d. at age 6.
4. The children with language impairment in the current study:
  - a. did not develop their narrative skills between age 5 and 10.
  - b. showed development in all areas of their narrative skills between age 5 and 10.
  - c. showed development in their narrative skills but not in all areas.
  - d. performed at the same level as typically developing children in all areas of their narrative skills at age 10.
5. The 10-year-old children with language impairment in the current study did not perform like children with typical development regarding:
  - a. number of different verbs used.
  - b. percent grammatically correct C-units.
  - c. word order.
  - d. a and b.

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