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Narrative in adolescent SLI: a comparison with peers across two different narrative genres.

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Abstract

Background: Narrative may provide a useful way in which to assess the language ability of adolescents with specific language impairment (SLI) and may be more ecologically valid than standardised tests. However the language of this age group is seldom studied and furthermore the effect of narrative genre has not been explored in detail. **Method:** 99 typically developing (TD) adolescents and 19 peers with SLI were given two different types of narrative task: a story telling condition and a conversational condition. Four areas of narrative (productivity, syntactic complexity, syntactic errors and performance) were assessed. **Results:** The group with SLI were poorer on most aspects of narrative confirming recent research that SLI is a long term disorder. A number of measures also showed interactions between group and genre, with story-telling proving to be a disproportionately more difficult task for the SLI group. Error analysis also suggested that the SLI group were making qualitatively different errors to the TD group, even within genre. **Conclusions:** Adolescents with SLI are not only poorer at both types of narrative than peers, they also show different patterns of competence and error and require more support from the narrative-partner. **Clinical Implications:** Assessments of adolescents are less frequent than at younger ages. This is partly because of the sparsity of tests available in this age range. Qualitative analysis of narrative might prove a useful alternative. The findings suggest that in every day conversation, young people with SLI manage their difficulties more discreetly and this might make them harder to identify in a mainstream setting.

Introduction

The diagnosis of SLI is complicated and is based predominantly on exclusionary criteria. The prevalence rate for SLI could be as high as 7% and there is some evidence to support an underlying genetic basis for SLI (see Leonard, 1998). Children with SLI can have difficulties in many aspects of language including lexical, phonological and pragmatic abilities. In particular those with SLI have well documented deficits in their morphosyntactic abilities. Increasingly, research has shown that children with SLI may also present with cognitive difficulties despite their normal range performance on nonverbal IQ tasks. Specifically, poor performance on nonword and sentence repetition tasks suggests a deficit in phonological working memory, but there may also be a decline in general non-verbal IQ (Botting 2005) and in non-memory spatial tasks (Hick, Botting and Conti-Ramsden 2005). Recent studies have shown that the effects of SLI are not restricted to childhood. Even into adulthood SLI can affect social relationships, employment opportunities and may even lead to mental health problems (Beitchman *et al*. 2003; Clegg, *et al*. 2005; Conti-Ramsden and Botting 2004).

Narrative development

Narrative is a task that is distinct from others in a number of ways. Narrative requires the successful integration of a multitude of elements: linguistic skills, cognitive skills, the use of world knowledge and an awareness of the listener in order to successfully convey both the message and additional information about the characters or events involved. For the purposes of this paper a narrative is defined as a verbal account of any sort. Narratives are a familiar oral and written style in which even very young children are well-versed (Stein and Glenn 1979, 1982; Appleby, 1978). In his developmental study, Appleby (1978) found that two-and-a-half–year-olds had a notion of what a story was, and similarly Stein and Glenn (1979,

1982) in their work on story grammar, showed understanding and recall of story narratives in four-year-old children.

Although typically developing children show good knowledge of the narrative genre from a very young age, there are clear developmental changes in their ability to engage with and produce narratives. Some researchers believe the development of narrative ability has reached a peak in complexity by about 10 years of age (Liles, 1987), where others have found that various aspects of narrative ability continue to improve throughout adolescence and into adulthood dependent on the individuals' proficiency as a speaker (Berman and Slobin, 1994). With increased age (some might argue with increased experience), narratives of all types tend to be longer and more complex both syntactically and episodically and include greater information about emotions (Bamberg and Damrad-Frye, 1991; Liles, 1987, 1993; Westby, 1984). A recent study by Berman and Nir-Sagiv (2004) sought to examine the effect of genre in typically developing children.

Narrative use and development has implications for both literacy and socialisation skills. Children with poor narrative ability at preschool age have been shown to be at risk of poor reading development (Boudreau and Hedberg, 1999; Westby, 1989) and poor academic achievement (Bishop and Edmundson, 1987). Narratives are also integral to creating and maintaining social relationships between individuals from childhood to adulthood. Children's language shows a large proportion of personal narratives (Beals and Snow, 2002; Aukrust, 2002; Preece, 1987) and friendships are made and strengthened through shared experiences (Bliss, McCabe and Miranda,1998; Preece, 1987).

Studies examining the narratives of individuals with SLI

Narrative abilities of children with SLI have long been of interest. In the UK, 'The Bus Story' narrative task by Renfrew (1991), in which a picture prompted story is re-told by the child, has been used by a number of researchers and is a regular clinical tool (Bishop and Edmundson, 1987; Botting et al, 2001). In addition, a picture book called ' Frog, Where Are You?' (Mayer, 1969) or 'The Frog Story' as it is commonly referred to, has also been used with children who have SLI as a picture-prompted story generation task. A number of recent studies have confirmed the finding that narratives by those with SLI are poorer than typically developing children (e.g., Botting 2002; Norbury and Bishop 2003; Reilly et al. 2003). In such studies, syntactic measures are often the most successful at discriminating between those with SLI and typically developing (TD) groups. Liles et al. (1995) found that two of their measures (percent of grammatical T-units and percent of complete cohesive ties) correctly categorized children with language impairment from typically developing children in their studies. Botting (2002) also found that a syntactic measure: number of tense marking errors was among the best predictors of SLI group membership (from a larger group of SLI, pragmatic language impaired (PLI) and typically developing children) when using both the Bus Story and the Frog Story. A study by Boudreau and Hedberg (1999) found that children with SLI produced narratives that were less syntactically complex than those of their peers. Norbury and Bishop (2003) found that syntactic measures of sentence complexity and number of tense errors showed a statistical difference between those with communication impairment (SLI ,PLI or ASD) and control groups (but not between the three clinical groups). Using a personal narrative task, Miranda, McCabe and Bliss (1998) found that children with SLI omitted information and provided 'leap-frogging narratives' with little cohesion or structure at all. In a study by Reilly et al., (2003) which compared a number of clinical and TD groups, the SLI group produced shorter stories than their typically developing peers at all ages and

those in the oldest age group produced narratives that were shorter than those produced by the youngest typically developing children. Thus, much can be gained by the detailed analysis of lexical, syntactic and semantic features (micro-analysis) of narratives across language disordered and TD groups.

Traditionally linguistic analysis of narratives has concentrated mainly on the structure of error-free utterances. In more recent years, more global measures of narrative skill, such as performance and fluency errors, awareness of listener needs, and even the degree of support provided by the listener, have also been included as narrative measures, particularly in clinical populations (Thordardottir and Ellis Weismer, 2002; Boscolo, Ratner and Rescorla, 2002).

Narrative as an assessment tool

It is clear that children with SLI show persistent yet subtle language deficits throughout childhood in the many facets of narrative language production. Indeed, narrative assessment may be able to provide information about language ability, supplementary to that provided by standardised language tests. It allows researchers and clinicians to observe and assess language in an ecological way, as used by the child in everyday situations. Narrative assessment has also been proven to have good predictive power of later language and literacy (Botting et al., 2001; Hohnen and Stevenson, 1999; Bishop and Edmundson, 1987).

However, the term narrative is umbrella-like in the sense that differing methodologies can result in quite distinct genres of narrative. These may include story telling (Berman and Slobin, 1994) and story retelling (Stothard, Snowling, Bishop, Chipchase, and Kaplan, 1998), conversational speech samples obtained when the clinician or investigator asks a series of questions to prompt some naturalistic speech (e.g., Southwood and Russell, 2004; Wagner,

Nettelbladt, Sahlén and Hilholm, 2000), free-play sessions (e.g., Redmond, 2004; Southwood and Russell, 2004; Robertson and Ellis-Weismer, 1997) using a single picture to get a descriptive oral sample (Fiestas and Pena, 2004; Temple, 2002). Some samples take the form of prompts whereby the participant is specifically asked to give descriptions or directions on a particular topic i.e. "what would you have to do if you were organising a party?" (Temple, 2002). Despite this body of investigation, research that explicitly compares narrative genres is uncommon, especially in clinical populations such as specific language impairment.

The present study

The aims of this study were to replicate and expand on previous research by eliciting two different types of narratives from adolescents with typically developing language and adolescents with SLI and comparing them on four aspects of language: a) productivity, b) syntactic complexity, c) syntactic errors and d) performance related factors (described fully in methods). Based on Liles (1993) and numerous other studies showing that younger children with SLI find narrative more difficult than peers (e.g., Reilly et al, 2003), it was predicted that: 1) adolescents with SLI would show impoverished narratives in all areas: productivity, syntactic complexity and syntactic errors, and performance; Furthermore given that research has shown an effect of genre even within story-telling paradigms (e.g., Botting, 2002) it was predicted that 2) the type of narrative would affect results: Story telling was predicted to be more difficult than spontaneous conversational narrative for both groups and following Reilly et al (2003) that 3) the frequency and type of errors made would differ between the SLI and TD groups.

Method

<u>Participants</u>

Typically developing adolescents

A large group of 99 typically developing adolescents (61 = female, 38 = male) were recruited through two secondary schools in central England. The adolescents had no history of speech and language therapy or special needs educational support as reported by school or parents. English was their first and only language. The young people were recruited from 3 age groups: 13 yr olds, 14 yr olds and 15 yr olds. Table 1 shows the mean age and gender profiles. A large group of comparison children was felt necessary to provide age appropriate normative information on the tasks.

Adolescents with Specific Language Impairment

The group consisted of 19 adolescents recruited from a wider study (Conti-Ramsden et al., 1997, Conti-Ramsden and Botting, 1999, Conti-Ramsden et al., 2001). All adolescents had a classic SLI profile at least at one time point in the study (i.e. Each child had a nonverbal IQ of ≥ 80 and scores of at least one standard deviation below the normative mean on one or more standard language assessment tests at either 7, 8 or 11-years-old). However at the point of testing, 4 children had a non-verbal IQ below this threshold. The mean age and gender profile of the group of adolescents with SLI can also be found in table 1.

The current language profiles of the group were mixed, but the majority still scored below 1SD on at least one part (i.e. expressive or receptive) of the Clinical Evaluation of Language Functions (CELF 3; Semel, Wiig, Secord, 1995). The main shift in profile since recruitment was towards lower performance IQ scores. Eight of the 19 participants with SLI had a lower

than normal performance IQ (< 85) when assessed for the present study at 14 years of age. Of the 19 adolescents recruited with a history of SLI, 9 adolescents still fitted the SLI profile. Information regarding educational placement was unavailable for 2 adolescents with a history of SLI however the remaining 17 all attended mainstream schools at the time of the current study. Of the 17 adolescents, 10 adolescents (58.8%) had some educational support within the school environment (varying in degree from 1 hour a week to every lesson). The group profiles can be examined in table 2.

Tasks

There were two genres of semi-structured naturalistic oral narrative tasks: a story telling task and a spontaneous personal narrative. These tasks were chosen because they were thought to well better represent the everyday language skills of older children than some standardised language measures. Personal narratives form a large proportion of all language (Beals and Snow, 2002) Whilst story-telling, may not be an 'everyday' activity, it is certainly evident in educational curriculums and social communication. Moreover, the ability to construct a cohesive structured 'story' relates directly to the essay skills required of adolescents in the UK school examination system. Formal standardised tests are known to be less specific as children get older and often have inadequate normative data for adolescent populations. Both tasks have previously been used with this age of participant and have yielded interesting results (see below for details). Furthermore, they represent complementary paradigms in a number of ways: One has picture prompts, while the other does not; one is based on a fictional scenario, while the other is a real-life description; one encourages past tense use, while the other is more likely to elicit present tense structures. In this way, the story task is likely to draw more heavily on working memory resources as the participant mentally holds the story elements together at the same time as constructing linguistically accurate sentences.

The conversational task on the other hand, has less externally guided structure, which may mean that individuals choose to use less complex language or need more guidance from the researcher. The two tasks are described in detail below.

Story telling narrative task – Frog, where are you? (Mayer, 1969)

[Figure 1 about here]

'Frog, where are you?' by Mercer Mayer is a wordless 24-picture storybook telling the adventures of a boy and his dog who are in search of their frog that has escaped from a jar in the boy's bedroom (see Fig 1 for pictures). It provides an excellent prompt for looking at structural language ability. The 'Frog Story' as it has become known, has been widely used as a narrative tool in the literature as it provides a series of events that give structure to the narratives and can be used to provide a semantic score as a measure of information included. Data have been collected using this task from typically developing children and adults (Wigglesworth, 1997, Berman and Slobin, 1994, Reilly, 1992, Bamberg and Damrad-Frye, 1991) and special developmental populations including children with autism (Tager-Flusberg, 1995) and children with focal brain injury (Reilly et al., 1998) as well as those with language impairment (Norbury and Bishop, 2003, Reilly et al., 2003, Botting, 2001, Van der Lely, 1997). In this study the protocol used by Van der Lely (1997) was followed to collect the narratives (see figure 2a). Adolescents are asked to choose a story from an envelope so that the researcher apparently doesn't know which story has been picked. This encourages thorough and complete narratives with no 'assumption of knowledge'. Note that while in this procedure adolescents were *told* that there were 4 different but similar stories, in fact *each envelope contained the same 'Frog Story'* as described above. This procedure was used because following van der Lely (1997), it was thought to be an appropriate protocol to encourage complete narratives from participants in the adolescent age range. It also meant

that data collected would be comparable in kind to previously reported studies. The present study also encouraged the adolescents to tell the narratives in the past tense. This was done in order to give the adolescents the opportunity to use past tense forms, which have been reported in the literature to cause specific difficulties for children with SLI (see Leonard, 1998 for a review). However, the *Frog Story* itself also lends itself to past tense narration, since the participants are asked to 'tell the story' rather than describe what is happening. Adolescents in this study had no difficulty responding to the prompt to complete the task in past tense.

[Figure 2 about here]

Spontaneous narrative task, (Ingham, personal communication).

This task was used to elicit conversational style spontaneous narratives and encourage the adolescents to use verbal 3rd person singular –s. Agreement errors have also been widely reported for children with SLI (for example see Clahsen et al., 1997, Clahsen, 1999, Schütze and Wexler, 1996). Figure 2b details the protocol for this narrative. This narrative does not constitute a story in order to provide contrast with the story-telling task above. However it does ask the participant to recount 'actions' which are sometimes felt to be a key definition of narrative. Furthermore, although this task was about 'annoying features' it did not result in list of attributes but rather personal narratives about another person. This type of verbal account is also felt to be more characteristic of everyday language for teenagers than story telling.

Narrative analysis and reliability coding

Narratives were transcribed by the first author using the CHAT and CLAN systems (MacWhinney, 2000 3rd. ed). Four main areas of narrative were examined: productivity, syntactic complexity, syntactic errors, and performance. These are described below.

For *productivity,* 2 measures were taken: The total **number of morphemes** - this count excluded repetitions, hesitations and unintelligible speech but included all additional bound morphemes (plural –s, 3rd person singular –s, past tense –ed and present progressive –ing: for example 'jumping' was counted as two morphemes); **number of different words -** this count was included in order to measure lexical diversity.

For *syntactic complexity*, 2 measures were recorded: **Total number of syntactic units**. The definition used for this measure was taken from Norbury and Bishop (2003). A single syntactic unit was classed as a full main clause and any subordinate clauses belonging to it. Simple and complex sentences were counted as one syntactic unit (e.g. "while the boy was sleeping, the frog escaped") and compound sentences were counted as two syntactic units (e.g. "the boy went to sleep and the frog escaped"); **Total number of complex sentences** comprised subordinate clauses, complement clauses, verbal complements and passive constructions.

For s*yntactic errors*, 9 error types were coded and these are detailed in table 3.

[Table 3 about here]

There were 4 measures of *performance*: **Amount of support required from INV** and **amount of prompts required from INV**: Utterances made by the investigator were assessed. If they were empathetic, reassuring or agreeing without questioning or being essential to the continuation of narrative then the utterance was counted as a support. For example <uh-huh> or <oh dear!>. If an utterance took the form of a question or had the intonation of a question it was counted as a prompt. For example <what happened then?> or

<and?>. Where the investigator replied to a question from the participant, it was only counted as a prompt if the answer was essential to continue. It was counted as support if no direct information was given. The qualitative nature of each individual prompt was not recorded.

Total number of fillers - this measure counted the number of fillers present and was used to assess the fluency of the narratives provided by the participants.   The main fillers that were counted were <um>, <er>, <you know>, <sort of> and <like>. The latter two were only counted when they were not the main verb or were not being used to make a comparison or simile. Usually the latter two were used in conjunction with <um> or <er> and were then counted as two separate occurrences of a filler; **Total number of corrections -** this measure counted the total number of disfluencies in the narratives. False starts and retracing, both with and without corrections (all coded separately in CHAT), were included in this measure.

As this study aimed to directly compare narrative genres, measures of story structure were not included here (because they apply only to the story telling task). More information on this aspect of performance can be found in Wetherell et al (in press) which examines narrative performance in relation to non-verbal IQ.

As a measure of inter-coder reliability, a second transcriber checked 25% of the CHAT transcripts and overall agreement exceeded 93% (story telling narratives 93% and spontaneous narratives 94.3%). A second coder coded 25% of the narratives following the coding scheme detailed above. For all measures agreement exceeded 90%.

Where the data were categorical Cohen's Kappa was used to create an index of inter-rater reliability.   The outcome on Kappa is between 0-1.00 with larger values indicating greater

reliability. Anything above 0.7 is considered as satisfactory agreement. All measures were above this 0.7 cut off (range 0.71-0.98).

General Procedure

The adolescents were visited individually either at school or at home after school (depending on school access policy and personal preference). The tasks took approximately 15 minutes in total to complete. Both tasks were recorded onto minidisc using a Sony® MZ-R35 portable minidisc recorder with an external Audio-Technica® ATR97 Omni-directional Condenser Boundary Microphone. The adolescents with SLI also completed a battery of other standardised language tests to assess their current language profile and other skills related to the wider study. British Psychological Society (1995) ethical guidelines were followed throughout and participants could choose to opt out of the study at any time.

Results

Group differences on the measures of narrative were explored through a series of repeated measures analyses of variance (ANOVAs). Cohen's *d* refers to 'effect size' (where 0.2 is small, 0,5 is medium and 0,8 and above is considered large, Cohen 1988). Results from each area of assessment are presented in turn.

Productivity

There were no significant main effects of group for either length in morphemes ($F(1,116)=2.3$, $p=0.13$, cohen's $d=0.37$) or number of different words ($F(1,116)=1.1$, $p=0.30$, cohen's $d=0.27$). However a main effect of genre was found, with both groups producing longer story telling narratives ($F(1,116)=236.14$, $p<0.001$, cohen's $d=2.3$), with more different words used than in their spontaneous narratives ($F(1,116)=240.4$, $p<0.001$, cohen's $d=2.2$). This is as one might expect: a story telling narrative based on a 24-page picture book will very likely prompt narratives that are longer with more different words than a spontaneous narrative based on one specific topical question. No significant interactions were found on productivity variables in group x genre analyses (morphemes: $F(1,116)= 2.7$, $p= 0.11$; different words: $F(1,116)= 0.45$, $p= 0.50$). See table 4 for details.

[table 4 about here]

Syntactic complexity

Table 6 shows the measures of syntactic complexity by group and genre. There was a main effect of group for the number of syntactic units ($F(1,116)=4.1$, $p=0.045$, cohen's $d=0.48$). However, it was the adolescents with SLI who produced more units overall (see table 5). There was no significant main effect of group for complex sentences used ($F(1,116)=0.04$, $p=0.84$, cohen's $d=0.04$). There was a significant main effect of genre both of the variables in this category: The story telling narratives had a greater number of syntactic units

(F(1,116)=224.2, p<0.001, cohen's d=2.3) and contained more complex sentences (F(1,116)=24.1, p<0.001, cohen's d=0.7). As with measures of *productivity*, between genre main effect findings are as one might expect, considering the nature of the genres. No difference was found between the adolescents with SLI and typically developing adolescents on the overall number of complex sentences across narrative type. No significant interactions were found on these variables in group x genre analyses (syntactic units: F(1,116)= 2.0, p=0.16; complex sentences, F(1,116)= 0.51, p= 0.48).

[Table 5 about here]

Syntactic errors

As predicted, the adolescents with SLI made significantly more errors than their peers (F(1,116)=32.9, p<0.001, cohen's d=1.0). There was also a main effect of genre, with more errors being made in the story telling condition (F(1,116)=19.1, p<0.001, cohen's d=0.4), see Fig 3. In addition, there was a significant interaction showing a difference in the effect of genre x group (F(1,116)=7.4, p=0.007). Table 5 has details of total error data.

[Fig.3 about here]

Furthermore, when errors were broken down by type, a different *pattern of errors* was evident between groups on each genre considered separately. This analysis was largely descriptive in nature. Using comparative statistics at this fine-grained level of analysis where the numbers involved are further reduced would be unwise given the general assumptions on which statistical tests are based.

Story telling

For the story telling task the groups were comparable on the percentage of lexical and subject omission errors made (approximately 20% and 15% respectively). In contrast, the adolescents with SLI made a higher percentage of both tense (21.7%) and agreement (19.3%) errors when compared to their typically developing peers (9.9% and 7.6% respectively). The typically developing adolescents made a greater percentage of omission errors (42.7%) than the adolescents with SLI (18.1%). Where the typically developing adolescents made more of the errors classed as 'other' (including plural and negative exclusions and articulation errors; 5.3%), the adolescents with SLI made added morpheme errors (4.8%).

Spontaneous narrative

The most striking difference between the story telling and spontaneous narrative data was the increase in the number of subject omission errors in both groups suggesting that both the typically developing adolescents and the adolescents with SLI are sensitive to the change of listener demands across genre. However, although the percentage of subject omission errors made by the adolescents with SLI did increase (to 51.5% of total errors), it was not as high as that of the typically developing adolescents for whom subject omission errors made up 72.6% of all errors due to the distribution of other error types. Moreover, as with the story telling data, the adolescents with SLI made a greater number of tense (3%) and agreement (15.2%) errors than their typically developing peers (0% and 5.5% respectively). In addition, the spontaneous narrative data also showed a greater number of lexical and added morpheme errors (both 6.1%) in the SLI group compared to the typically developing adolescents (4.1% and 1.4% respectively). In the spontaneous narrative data both groups made comparable amounts of omission errors (16-18%).

Table 6 shows the mean number of each type of error made by each group in each narrative genre. Qualitatively comparing the means and standard deviations between the typically developing adolescents and the adolescents with SLI on each genre, the adolescents with SLI had a higher mean number of errors and higher standard deviations than their peers for each error category. The typically developing adolescents were the only speakers to make errors that fell into the category of other errors (plural, negation and phonological errors) although they were very rare and only in the story telling data. It is also interesting to note that the typically developing adolescents did not make a single tense error in the spontaneous task or a single added morpheme error in the story telling task.

[Table 6 about here]

The current study found that adolescents with SLI not only make more errors than their peers, but also appear to make different types of errors depending on the genre of narrative they are attempting.

Performance

Four measures of performance were taken and table 7 shows the results. The number of prompts from the investigator showed main effects of group ($F(1,116)=138.0$, $p<0.001$, cohen's $d=1.8$) and genre ($F(1,116)=26.7$; $p<0.001$, cohen's $d=0.36$). There was also a significant interaction between these two factors with the SLI group needing proportionately much more prompting in the spontaneous condition ($F(1,116)=11.2$, $p=0.001$) thus suggesting a larger effect of genre on this group's independent performance. The number of supports needed also showed a main effect of group ($F(1,116)=34.8$, $p<0.001$, cohen's $d=1.0$), but not genre ($F(1,116)=0.008$, $p=0.93$, cohen's $d=0.37$) – mainly because of the large interaction

between group x genre ($F(1,116)=18.3, p<.001$) shown in Figure 4. Conversely, there was only a borderline main effect of group on the use of fillers ($F(1,116)=3.7, p=0.058$, cohen's $d=0.5$), but a significant main effect of genre ($F(1,116)=8.8, p=0.004$, cohen's $d=0.1$) and a significant interaction $F(1,116)=10.2$, $p=0.002$). The number of corrections was significantly different across group ($F(1,116)=5.5$, $p=0.02$, cohen's $d=0.5$), genre ($F(1,116)=64.7$, $p<0.001$, cohen's $d=1.0$) and showed an interaction between group and genre ($F(1,116)=6.3$, $p=0.013$).

[Fig 4 about here]

<u>Discussion</u>

Previous narrative research has included children up to the age of 12 and adults, but the narratives produced by adolescents (with and without SLI) has not been well documented. The predictions of the study were partially borne out in the data.   The individuals with SLI did indeed find all measures of narrative difficult compared to peers even though they were well into adolescence. The type of narrative task also produced different types of narratives in both groups. However, the adolescents with SLI found story telling narrative disproportionately more difficult than spontaneous narrative compared to their peers.

Previous research directly comparing narrative genres in typically developing children has shown wide variation in the findings across task type and studies. Several studies have shown conversational tasks to elicit more oral data, complex language and errors than story generation tasks (Southwood and Russell, 2004; Morris-Friehe and Sanger, 1992). However, like Reuterskiöld Wagner et al. (2000) who found the reverse, the present study found that the spontaneous task used here (a free response to a single question prompt) elicited shorter narratives (in both words and syntactic units), with fewer different words, less complex sentences, fewer corrections and fewer errors than the story telling task. These differences may result in part from the different definitions of conversational tasks used, ranging from producing a spontaneous narrative from memory to answering a series of questions and from the age of participants.

The most interesting finding, however, was the interactions between group and genre seen on a number of the narrative measures, for example, number of errors. To the authors' knowledge this interaction of genre and language status has not been previously documented for oral narratives although written narratives of children with SLI have been shown to have

errors of a different nature to those of their chronological and language age matched peers (Mackie and Dockrell, 2004). The present findings suggest that oral narrative production can also be qualitatively different from peers in those with a history of SLI. Berman and Nir-Sagiv's (2004) studied inter-genre differences in typically developing adolescents. They found that the two genres explored (personal experience narratives and expository discussions) showed very different use of language across a number of measures. Furthermore, they concluded that mature text construction combines the two different sets of style required by the different genres. This would be an interesting factor to directly explore in a group of adolescents with SLI to examine whether this is a contributory factor in poor narrative production.

The adolescents with SLI not only made proportionately more errors on the story telling task but also demanded more scaffolding from the researcher than their peers on this task. This is contrary to the TD group who needed less input for the story telling task than the conversational one. Furthermore, one might expect intuitively that the presence of picture prompts in the story telling paradigm would alleviate the need for support somewhat. The input from the investigator is rarely documented in the literature, save for the ways in which its effect is controlled for within the experimental design of studies. Leinonen and Letts (1997) compared children with pragmatic impairment and typically developing children (aged 6 to 8 years) on a referential communication task and found that differences between the groups were greatest when experimental support was low (i.e. when not enough information was given). The children with pragmatic impairment were also less likely to request clarification from the investigator. The Leinonen and Letts study supports the suggestion that the need for greater input from conversational partners might be a feature of interaction from

groups with communication difficulties.   Further research into the role of the listener would be extremely valuable.

The use of fillers and corrections also increased from spontaneous narrative to the story telling task more markedly for the SLI group than for TD peers.   Children with SLI have sometimes been shown to have a higher incidence of disfluencies (fillers and corrections) in spontaneous speech and narrative language samples (Boscolo, Ratner and Rescorla, 2002; Thordardottir and Ellis Weismer, 2002; Navarro-Ruiz and Rallo-Fabra, 2001; Nettelbladt and Hansson, 1999). In contrast, Miranda, McCabe and Bliss (1998) found that the children with SLI in their study and an age matched typically developing group did not differ in the total number of disfluencies in their narratives. Miller and Klee (1995) have suggested that as high numbers of disfluencies were not always seen in children with SLI they may constitute a particular subgroup of children with language impairment. However this study suggests that this performance indicator may be more associated with type of narrative genre.

The adolescents with SLI not only made more errors in both tasks but also showed different patterns of difficulty when compared to typically developing peers.   The existence of increased numbers of errors in the narratives of children with SLI has been well documented in the literature (Norbury and Bishop, 2003; Reilly et al., 2003; Botting, 2002; Scott and Windsor, 2000; Leonard, 1998; Gillam and Johnson, 1992). However, due to the substantiated morphological difficulties of children with SLI, narrative studies typically focus on only tense and/or agreement errors within the data (see for example Norbury and Bishop, 2003). One exception is the study by Reilly et al. (2003), that recorded a range of error types and showed that although children with SLI made fewer errors in the older age groups, they still made more errors than their typically developing peers at age 12. The present study

broadens previous findings to adolescents with SLI up to 15 years of age and also illustrates that adolescents with SLI make not only more errors of tense and agreement than their peers but also more lexical, subject omission and added morpheme errors. It may be worth noting here that whilst proportionately errors were more frequent in the SLI group, the actual frequency of errors in both groups was relatively low (e.g., mean total errors was 4.3 per narrative in the SLI group story telling task) and this reflects findings from other studies (e.g., Norbury and Bishop, 2003). Moreover, whilst all subject omissions were coded, they may not have strictly always constituted 'errors' (in that English is not a null subject language and in some cases it is quite acceptable to omit the subject). In the spontaneous task in particular, subject omission might be partly due to the type of prompts used. Nevertheless the difference in use between groups is of interest and may reflect a generally more 'complete' and fluent language style in those with TD (mean number of corrections and prompts for the group with SLI were reasonably high).

Similarities to peers

Typically, children with SLI have been documented as producing narratives that are shorter in length in words than their age matched typically developing peers (Reilly et al., 2003, Botting, 2002, Scott and Windsor, 2000). However, the present study found no difference between the groups on this measure and also found that those with SLI used more syntactic units than the TD group. Norbury and Bishop (2003) determined that 9-year-old children with SLI were not significantly different to their peers on length of narrative (measured in morphemes). Using the same storybook prompt, Van der Lely (1997) also obtained narratives from children with SLI that were comparable to those of their peers in length (in words). Given the age of participants in the present investigation, it is possible that they may have learned to compensate for their linguistic difficulties by 'saying more'. A second possibility

is that the measure of number of syntactic units used in the present study was not sensitive to differences in the use of syntax in this older age group.

This study also found no difference in measures of lexical diversity. The existing literature presents mixed findings in this respect. Some studies report that children with SLI are less lexically diverse than their peers and appear similar to younger MLU matched typically developing children (Redmond, 2004; Goffman and Leonard, 2000; Leonard, Miller and Gerber, 1999; Conti-Ramsden and Jones, 1997; Watkins, Kelly, Harbers and Hollis, 1995) whilst other studies have established no difference between children with SLI and groups of typically developing children (Owen and Leonard, 2002; Thordardottir and Ellis Weismer, 2001; Scott and Windsor, 2000). The differences between the findings are perhaps the result of differences in the measures used to calculate lexical diversity. The differential findings might also be affected by age. Scott and Windsor (2000) for example assessed children aged 9 to 12 years and found that number of different words did not differentiate between those with language learning disabilities and typically developing children. Redmond (2004) suggests that the measure is not sensitive for an older age group such as those in the study by Scott and Windsor (2000). Thus, the similarity across groups in the present study may indeed be a result of assessing an older, adolescent population.

The adolescents with SLI were comparable to their peers on the number of complex sentences they used. Previous studies have suggested that the proportion of complex syntax used within narrative tasks increases with age but also that older children with SLI use a more restricted range of complex syntax than their typically developing peers (Reilly, 2003; Norbury and Bishop, 2003). The present investigation may suggest that when the age of individuals is extended, the participants with SLI show a degree of catch up in their use of complex

sentences. This would support the finding by Fey et al (2004) which found significant improvements in narrative quality for a large SLI group between 6 and 9 years of age. However, these findings may result partly from the SLI group having a considerable amount of language testing and therapy throughout childhood in which sentence construction is often a focus point. Nevertheless, this study suggests that more general measures of narrative such as length, number of syntactic units and number of complex sentences, are not necessarily as 'useful' clinically as performance measures in distinguishing the narratives of those with SLI from a typical developmental profile in an adolescent population.

Concluding remarks and clinical implications

The study used a large number of typically developing adolescents to create a context of typical development with which to compare the abilities of a group of 13 to 15 year old adolescents with SLI.   The data collected enabled two genres to be compared and an in depth analysis of both linguistic and conversational features was undertaken.

By adolescence, language production is a fundamental skill for optimum participation in and access to the educational curriculum. It is not only concerning that individuals with SLI experience difficulties with narrative of all kinds, it is also worrying that apparently intact 'surface' characteristics such as length of narrative and lexical diversity, might serve to mask the crucial underlying difficulties in classroom settings. It is important to note that even professionals involved with very young children do not always feel confident in addressing speech and language needs in the classroom and often do not feel that their training needs in this area are met (Letts and Hall, 2003). By secondary school age, the professionals who have contact with the adolescents in the present study may feel even less well equipped. Furthermore, communicative ability has been shown to be fundamental to social relationships

(Clegg et al.,2005; Brinton, Robinson and Fujiki, 2004; Preece, 1987). Adolescents with SLI are known to be at risk for difficulties in the creation and maintenance of friendships, at a time in their lives when acceptance amongst their peer group is vital to feelings of well-being (Conti-Ramsden and Botting, 2004). It is thus vital that educators and personal supports for young people with SLI are aware that difficulties still exist in adolescence and also that certain types of task might prove particularly difficult for this group. The present findings suggest that the linguistic challenges of adolescents with SLI are not just greater but also *qualitatively different* from those of typically developing peers. Indeed the type of differences in the errors and supports needed suggests something about the nature of managing a language impairment. It appears that given more control over the content and style of the narrative (as in the spontaneous condition), young people with SLI reveal less about their difficulties. However when required to produce more restricted style and content, persistent language difficulties are evident. Whilst this may be a useful immediate strategy in the social world of adolescents, it may also mask important impairments that restrict educational progress and limit an individuals conversational range. Analysis of the narrative abilities of adolescents over time towards adulthood needs further research investment to provide much needed information about the long-term pathways of SLI.

What this paper adds box:

> **What we know**: Narrative ability is a useful tool for assessing naturalistic language. However, the narrative skills of adolescents with SLI are rarely examined. Furthermore, narrative genres are not often compared directly.
>
> **What this paper adds**: The narratives of those with SLI are impoverished even into adolescence when compared to peers. Story-telling genres may prove particularly difficult for those with language difficulties. Performance measures, such as the need for conversational prompts, might be more revealing at older ages than traditional linguistic measures such as length and lexical diversity.

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Table 1: Age and gender profiles for the two groups

Groups	Mean age (s.d.)	Minimum age	Maximum age	N and % male
Typically developing (n=99)	14.5 (.84)	13.1	15.9	38 (38.4%)
SLI (n=19)	14.3 (.64)	13.3	15.3	14 (73.7%)

Table 2: Language profile for adolescents with a history of SLI

SLI (n=19)	CELF expressive language score	CELF receptive language score	CELF total language score	WISC Perform. IQ	WISC Verbal IQ	WISC Full IQ
Mean (s.d.)	70.05 (10.07)	84.79 (17.26)	75.84 (13.23)	88.95 (13.14)	82.53 (13.98)	84.63 (12.25)
Minimum	50	50	50	66	54	60
Maximum	86	112	98	119	115	108

Table 3: Type of errors made

Group	Explanation	Example
Tense	Included over regularisation, exclusion of past tense morpheme –ed and incorrect use of irregular verbs	He's breaked [*] the jar/ He fall [*] down (in past tense context)
Agreement	Where an agreement marker was excluded or included erroneously	There was [*] two frogs
Lexical	Included when a lexical item was substituted for an incorrect one or when the lexical item was made up	I see two frogs with little toads [*] as well/ he caught it with his hoops [*]
Subject omission	Where the subject of the sentence was omitted	0 [*] annoys the teacher
Other omission	Where a lexical item (other than subject) was omitted	The dog 0 [*] sleeping on the end
Added morpheme	Where morpheme was added to a word when it was not required	He looked unders [*] his bed
Other errors:	Included plural exclusion, pronunciation or inappropriately marked negation	And these massive like branch [*] Chickmunk [*] / The boy's upset because obviously he has [*] found the frog yet

Table 4: Productivity means across group and genre

Productivity scores	TD (n=99) Story telling	TD (n=99) Spontaneous	SLI (n=19) Story telling	SLI (n=19) Spontaneous
	Mean (s.e)	Mean (s.e)	Mean (s.e)	Mean (s.e)
Total number of morphemes	311.9 (13.1)	94.5 (5.2)	366.5 (29.8)	97.5 (11.8)
Total number of different words	109.8 (3.1)	51.2 (2.2)	118.3 (7.2)	54.3 (5.1)

*s.e. = standard error

Table 5: Group means for syntactic complexity and total error measures across genres

Syntactic complexity scores	TD (n=99) Story telling	TD (n=99) Spontaneous	SLI (n=19) Story telling	SLI (n=19) Spontaneous
	Mean (stand. error)	Mean (stand. error)	Mean (stand. error)	Mean (stand. error)
Total number of syntactic units	30.1 (1.2)	9.6 (0.5)	35.8 (2.8)	11.0 (1.1)
Total number of complex sentences	5.1 (0.4)	3.0 (0.24)	5.3 (0.8)	2.6 (0.6)
Total number of errors	1.3 (0.2)	0.7 (0.2)	4.3 (0.5)	1.7 (0.4)

Table 6: Mean number of errors across type and group and percentage of total errors by genre

Error Type	TD (n=99) Story telling		TD (n=99) Spontaneous		SLI (n=19) Story telling		SLI (n=19) Spontaneous	
	Mean (s.d.)	%	Mean (s.d.)	%	Mean (s.d.)	%	Mean (s.d.)	%
Tense	0.1 (0.4)	9.9	0.0	0.0	1.0 (1.9)	21.7	0.1 (0.2)	3.0
Agreement	0.1 (0.4)	7.6	0.04 (0.2)	5.5	0.8 (1.3)	19.3	0.3 (0.7)	15.2
Lexical	0.3 (0.6)	19.1	0.03 (0.2)	4.1	0.9 (1.2)	20.5	0.1 (0.3)	6.1
Subject omission	0.6 (1.0)	15.3	0.1 (0.8)	72.6	0.8 (1.9)	15.7	0.3 (0.6)	51.5
Other omission	0.2 (0.6)	42.7	0.54 (1.2)	16.4	0.7 (1.5)	18.1	0.9 (1.5)	18.2
Added morpheme	0.0	0.0	0.01 (0.1)	1.4	0.2 (0.5)	4.8	0.1 (0.5)	6.1
Other errors	0.1 (0.3)	5.3	0.0	0.0	0.0	0.0	0.0	0.0

Table 7: Group means for performance measures across genres

Performance scores	TD (n=99) Story telling	TD (n=99) Spontaneous	SLI (n=19) Story telling	SLI (n=19) Spontaneous
	Mean (stand. error)	Mean (stand. error)	Mean (stand. error)	Mean (stand. error)
Total number of supports from investigator	0.7 (0.2)	2.0 (0.2)	4.6 (0.5)	3.2 (0.5)
Total number of prompts from investigator	0.02 (0.08)	0.3 (0.1)	1.6 (0.2)	3.1(0.3
Total number of fillers	3.5 (0.5	3.6 (0.3)	6.8 (1.1)	3.4 (0.7)
Total number of corrections	5.8 (0.6)	2.0 (0.2)	9.5 (1.3)	2.2 (0.5)

Figure 1: Boy and frog picture

Figure 2: Task protocols

Figure 3: Mean number of errors by group and genre

Figure 4: Mean number of supports needed by group and genre

Frog, where are you?

−1−

Figure 2 a : Story telling narrative protocol

- Before beginning the main task, a conversation with the participant was initiated by the investigator about something that happened to them yesterday or last week ("can you tell me about something you did yesterday/last week?").

- All four envelopes were placed on the table. The investigator instructed the participant as follows: "Each of these envelopes contains a picture book that tells a story about something else that happened yesterday/last week. The four stories are almost the same, but some things that happened are just a little bit different in each story.

- The investigator then asked the participant to choose an envelope and look at it without showing the investigator.

    ("Choose one of the envelopes and then take it over there away from me and have a good look at all the pictures in the book. Then come back and tell me the story. I have to guess which story it is.")

- When the participant was ready they were invited back to the table where they could use a screen to hide the book from the experimenter. The investigator then instructed the participant: "Now tell me the story of what happened yesterday / last week remember to tell me all the details so I will know exactly what happened and who did what, then I can guess which story you have. I will get you started. Last week…".

- The investigator listened as they told the story and signalled that she was following by nodding and encouraging. She did **not** intervene unless the participant stopped narrating and then encouragement was given to carry on. If the participant was not looking at the book whilst narrating the story they were encouraged to do so.

- The participant was encouraged to tell the story in the past-tense thus if the participant started in the present tense, a prompt like "what happened then?" was used. If the participant continued in the present after two prompts, no further prompts were made.

Figure 2 b : Spontaneous narrative protocol

- The investigator instructed the participant as follows: "Think of the most annoying person you
  know."

- The investigator then asked the question: "Can you tell me some of the things this person does
  everyday that annoy you?"

- The investigator listened as they told the narrative and signalled that she was following by nodding
  and saying "uh-huh" or responding conversationally when necessary ("yes that would be
  annoying!"). She only intervened if the participant stopped narrating and then encouragement was
  given to carry on and to speak for as long as they wished on this topic.

- The participant was encouraged to use the verbal 3rd person singular –s thus if their response did
  not take this form, a prompt like "what other things does he/she do everyday that annoy you?" was
  used. However if the participant continued to use a different form after two prompts, no further
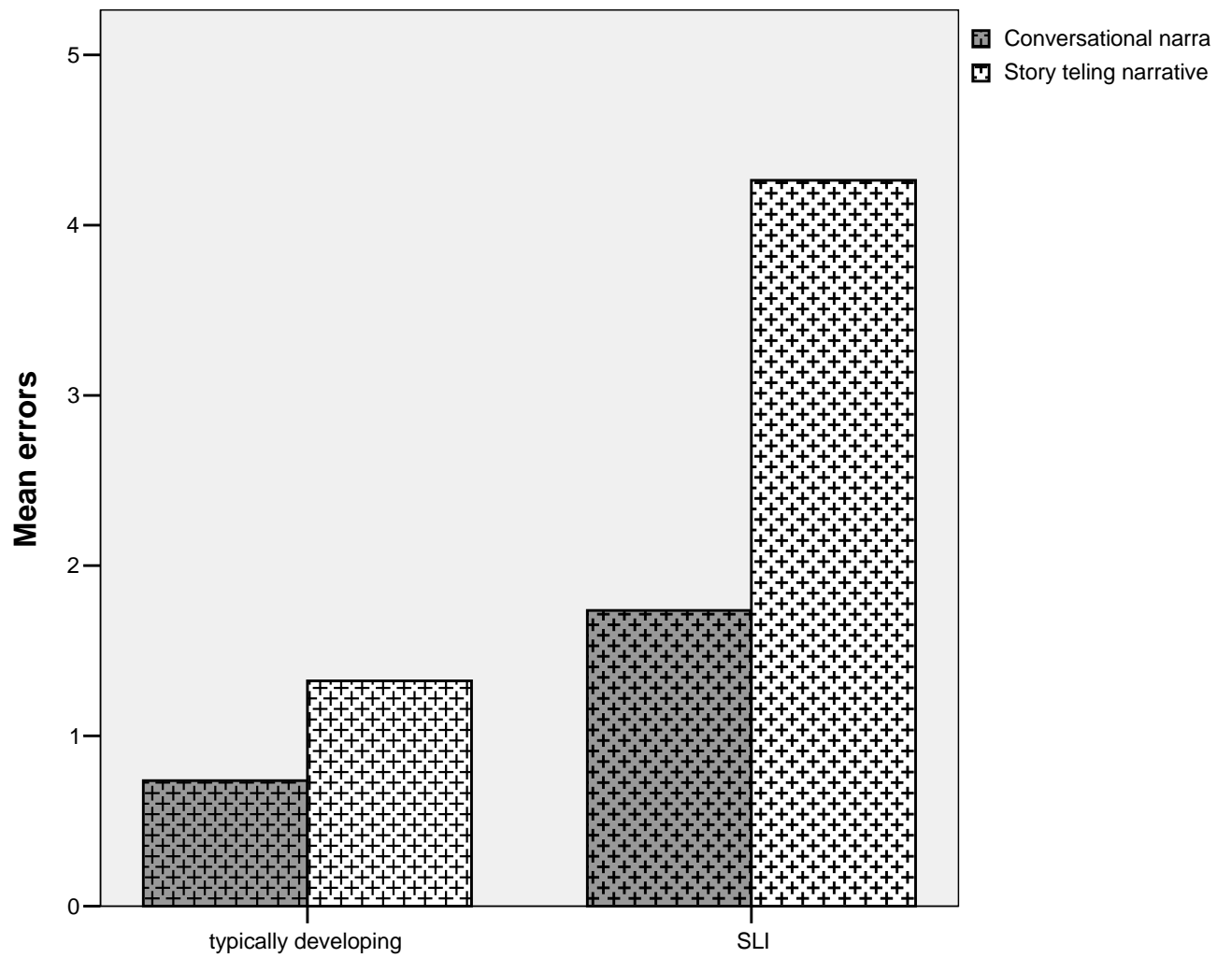 prompts were made.

Fig.3:

Fig. 4: