# Specific Language Impairment in French-Speaking Children: Beyond Grammatical Morphology

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**Purpose:** Studies on specific language impairment (SLI) in French have identified specific aspects of morphosyntax as particularly vulnerable. However, a cohesive picture of relative strengths and weaknesses characterizing SLI in French has not been established. In light of normative data showing low morphological error rates in the spontaneous language of French-speaking preschoolers, the relative prominence of such errors in SLI in young children was questioned.

**Method:** Spontaneous language samples were collected from 12 French-speaking preschool-age children with SLI, as well as 12 children with normal language development matched on age and 12 children with normal language development matched on mean length of utterance. Language samples were analyzed for length of utterance; lexical diversity and composition; diversity of grammatical morphology and morphological errors, including verb finiteness; subject omission; and object clitics. **Results:** Children with SLI scored lower than age-matched children on all of these measures but similarly to the mean length of utterance–matched controls. Errors in grammatical morphology were very infrequent in all groups, with no significant group differences.

**Conclusion:** The results indicate that the spontaneous language of French-speaking children with SLI in the preschool age range is characterized primarily by a generalized language impairment and that morphological deficits do not stand out as an area of particular vulnerability, in contrast with the pattern found in English for this age group.

KEY WORDS: children, cross-linguistic, French, specific language impairment

rammatical morphology has become widely known as a hallmark characteristic of specific language impairment (SLI; Leonard, 1998) and has been considered a potential clinical marker for SLI. Although influential accounts of SLI by no means all accord a central status to grammatical morphology, there is a tendency in studies approaching SLI from various theoretical perspectives to use grammatical morphology when testing various hypotheses regarding its origin, invoking specific error patterns in support of different hypotheses as to the underlying cause, including linguistic deficits, processing limitations, or a combination of both (e.g., Gopnik & Crago, 1991; Leonard, 1989; Leonard, Eyer, Bedore, & Grela, 1997; Marchman, Wulfeck, & Ellis Weismer, 1999; Rice, Wexler, & Cleave, 1995; van der Lely & Ullman, 2001). This may have indirectly served to strengthen the association of SLI and morphosyntactic deficits as inseparable constructs. Cross-linguistic studies on SLI focusing on grammatical morphology have yielded mixed results, demonstrating that the aspects of language that are most affected by language impairment vary from one language to the next in terms of error

patterns and accuracy levels (see Leonard, 1998, for a review). It has been noted that errors in grammatical morphology tend to be less frequent in languages that are more highly inflected, possibly because these inflections play a more central role in conveying meaning in these languages or because their high frequency may make them more accessible to learners (e.g., Elin Thordardottir, 2001<sup>1</sup>, 2004; Lindner & Johnston, 1992; Rom & Leonard, 1990). Clearly, the evidence does not uniformly support the notion of morphosyntactic delays as a universal hallmark of SLI.

Across languages, the language development, including error patterns, of children with SLI tends to mirror that of younger typically developing speakers of the same language (Leonard, 1998). In a recent cross-sectional normative study on the spontaneous language production of French-speaking preschool children, errors in grammatical morphology were found to be extremely rare (Elin Thordardottir, 2005). The findings of this study were generally in good agreement with previous studies of the development of French, leading us to question whether grammatical morphology is a good place to look for hallmark characteristics of SLI in French at low language levels. The prominence of morphosyntactic errors in SLI may vary as a function of language as well as of age.

A number of studies of SLI in French have documented difficulties in areas of morphosyntax (Hamann, 2004; Jakubowicz & Nash, 2001; Maillart & Schelstraete, 2003). Particular difficulty has been reported in verb person and tense marking, as well as in the use of determiners and object clitics. Both linguistic deficits and working memory limitations have been proposed as potential sources of such difficulty. Jakubowicz (2003) predicted that tense errors should be prominent in French SLI because of the complexity of the syntactic computations involved. Children with SLI age 5;5 (years; months) to 9 performed significantly less well than control children with normal language development (NL), 3 and 4 years old, on the passé composé<sup>2</sup> and pluperfect<sup>3</sup> past tenses in elicitation, showing essentially no ability to produce the latter. Similarly, Jakubowicz and Nash (2001) reported particular past-tense difficulty in children with SLI age 5-13 relative to younger children with NL, comparing present and past in elicitation. Performance was variable, however, with the oldest children with SLI performing at ceiling levels. Other results on verb inflection include those of Hamann et al. (2003), who examined finite, overt, and null subjects and pronominal clitics in spontaneous language samples of 11 children from 3;10 to 7;11 divided into groups below and above age 5 with a comparison to longitudinal data from a single child of preschool age. Nonfinite verb errors occurred at a rate of 15% below age 5 but were extremely rare in the older group. Franck et al. (2004) also investigated age effects in the use of verb inflection. Automaticity in subject-verb agreement by NL children from 5 to 8 years old, and children with SLI ranging in age from 5;4 to 9;4, was inferred from sensitivity to attraction effects (derailment of agreement based on interference from other nouns that mismatch the subject in number) and to effects of syntactic structure on attraction. Automatized production of subjectverb agreement was not achieved by NL children until age 8. In contrast to Hamann et al. (2003), Franck et al. reported error types whose frequency increased with age between ages 5 and 7.

Paradis and Crago (2000, 2001) have evaluated whether the extended optional infinitive (EOI) account (Rice et al., 1995) could be extended to French-speaking children with SLI (Paradis & Crago, 2001) as well as to second-language learners of French (Paradis & Crago, 2000). Error analysis followed a previous English study (Rice & Wexler, 1996) but differed in that it targeted children approximately 2 years older. Predictions of the EOI account were considered to be met in French SLI: Error rates in tense choice were significantly greater than those of the age-matched children and children matched on mean length of utterance (MLU). In fitting the EOI account to French, a modification was proposed, however, in what constitutes an optional infinitive: the bare verb stem, which is homophonous with present tense for most verbs (thus, with an inflected form), was considered a default, nonfinite form in the acquisition of French (Paradis & Crago, 2001). Comparison with second-language learners of French (Paradis & Crago, 2000) revealed that both groups evidenced error patterns considered consistent with EOI and that such errors were not a reliable marker distinguishing these two groups.

Another area of morphosyntax reported to be central in SLI in French is object clitics. Jakubowicz, Nash, Rigaut, and Gérard (1998) examined subject and object clitics, pronouns, and definite articles and found that children 5–13 years old with SLI performed significantly more poorly than NL control children age 5 on all morphemes except the definite article, leading the authors to propose these error types as potential markers of SLI in French. Because homophonous morphemes with different grammatical functions were differentially affected, the authors attributed the underlying cause to a linguistic deficit rather than to surface properties of the morphemes,

<sup>&</sup>lt;sup>1</sup>This author is cited in this fashion including the given name and patronymic in accordance with the language of origin (Icelandic) in which the given name is the primary one and the patronymic (surname) is not used in isolation. <sup>2</sup>Several French tenses are discussed in this article: The *passé composé* is a composite past tense (perfect): "J'ai mangé" (literally, "I have eaten" but corresponding to the English "I ate"); the *pluperfect* (or *plus-que-parfait*) is also composite: "J'avais mangé" ("I had eaten"); the *imparfait* is a progressive past tense: "Je mangeais" (corresponding to English "I was eating"); and the *futur simple*: "Je mangerai" (corresponding to English "I will eat"). The passé composé is the most frequently used past tense form in spoken language. French also has a composite future tense, the *periphrastic future* (*futur proche*), which is used earlier by children than the futur simple. <sup>3</sup>See footnote 2.

as proposed by Leonard's (1989) surface account. In a study mentioned above in relation to verb inflection, Hamann et al. (2003) reported that children with SLI below and above age 5 tended to avoid the use of object clitics, and the authors concluded that this might be a significant characteristic of SLI in French. Hamann (2004) reported, on the basis of an analysis of 2 preschool children each with SLI and NL, as well as a larger group of NL control children roughly 3–8 years old, that the determiner and object clitic develop in parallel in French NL but not in SLI and proposed that this result lends further support to the notion that French-speaking children experience extraordinary difficulty with object clitics.

Several studies have approached SLI in French by appealing to processing accounts. Le Normand, Leonard, and McGregor (1993) showed that French-speaking children used the definite article in a higher proportion of obligatory contexts than did children with SLI speaking Italian or English. This was attributed to surface properties of the definite article in French and interpreted as consistent with Leonard's (1989) surface account. More recently, Maillart and Schelstraete (2003) examined the sentence processing strategies of French-speaking children roughly 7-12 years old from the standpoint of Bates and MacWhinney's (1989) competition model, concluding that the children with SLI were less proficient than NL control participants in considering multiple cues in sentence interpretation, consistent with processing limitations. Particular difficulty was reported for the object clitic cue.

Although SLI in French has been investigated from different points of view, the above review demonstrates that morphosyntax is frequently cited as an area of particular difficulty. It is also apparent that each of the studies reviewed above tends to focus on an in-depth analysis of a select number of morphosyntactic structures, providing limited insight into other areas of language. Furthermore, most of the studies have focused on school-age children, with age groups spanning up to 8 years. Younger children have been included in several studies; however, although some discussions of age effects are found in this literature, systematic conclusions on the typical manifestation of SLI in French across language areas and age groups are hard to glean from it, and in some studies. potential effects of age and language level may not have been fully explored.

Focusing on morphosyntax in the absence of information on children's overall language level is consistent with a view of morphosyntax as developing independently of other linguistic and more general domains. An alternative view is that domains of language, such as lexical and syntactic development, are interrelated in development (Bates & Goodman, 1997). Whichever view is adopted in this respect, one should consider, at a minimum, whether forms being elicited from children are ones that they should have mastered given their overall level of linguistic development or their conceptual development. For example, in Jakubowicz's (2003) study, some passé composé forms were successfully elicited from children with SLI. but it was concluded that the pluperfect was "unavailable" to these children. Given the lack of detailed information on these children's morphosyntactic repertoire or on their typical spontaneous use of language, it cannot be ascertained whether they exhibited a specific difficulty with this aspect of tense, this form therefore being especially unavailable to them in spite of other linguistic developments, or whether they had not reached a linguistic stage that supported or called for the use of this particular form. Normative studies on the development of French do indicate that the passé composé is the earliest developing past tense in French, with the pluperfect appearing considerably later (e.g., Elin Thordardottir, 2005). Although the complexity of syntactic computations may very well be among the factors that determine this order of acquisition, another important factor is conceptual complexity. Similarly, in Jakubowicz et al.'s (1998) study, considerable variability was noted among the children with SLI in the extent to which they correctly produced different types of pronouns, leading to the suggestion of subgroups. However, the large age range (5–13 years) of children in this group is another probable factor contributing to this variability. In a later study by Jakubowicz and Nash (2001), children with SLI age 5-13 years were grouped according to language performance, with the result of three groups differing considerably in mean age, with the lowest performing children being youngest and the oldest performing at ceiling. The authors speculated that severity rather than age differences was responsible for the variability in the SLI group, although neither effect was formally verified. In contrast, other studies have suggested clear age effects in the manifestation of SLI in French (Franck et al., 2004; Hamann et al., 2003). Further research clarifying the effect of age and language level on the manifestation of SLI might suggest alternative interpretations of many of the previous findings. For example, Hamann (2004) reported a different pattern of acquisition of nominal and verbal morphology in children with NL and SLI, and among children with SLI, possibly reflecting qualitative differences. This interpretation does not, however, take into effect the fact that the 2 participating children with SLI differed markedly in MLU (3;10 vs. 4;7 at the start of the longitudinal sampling). Also, Maillart and Schelstraete (2003) documented an age progression in NL in the use of object clitic cues in comprehension from age 6 to adulthood, indicating that object clitics are a late-developing linguistic structure in French, which should be considered in relation to the finding that they remain relatively difficult for school-age children with SLI.

Studies focusing on verb inflection errors in French vary considerably in how they define verb inflection

errors-notably, in what constitutes "root" or "optional" infinitives. Hamann et al. (2003) pointed out that there has been disagreement as to whether, as well as when, an optional infinitive stage occurs in the normal development of French, concluding that such a stage may be shorter and less pronounced than in many other languages, such as English. Hamann, Rizzi, and Frauenfelder (1996) included in their count of root infinitives noun + infinitive constructions as well as infinitives with no subject in contexts where omission of the subject was considered pragmatically acceptable, but ambiguous cases of bare infinitives or past participles were excluded (these are homophonous for most verbs). Hamann (2004), however, did not include infinitives with pragmatically acceptable subject omissions in the root infinitive count but did group together bare infinitives and past participles, excluding ambiguous cases. Hamann et al. (2003) reported a decrease in the occurrence of non-finite forms with age. The exact error form was not reported. Paradis and Crago (2001) included in the root infinitive category verb forms homophonous with the bare verb stem, also when these forms correspond to the correct inflected form required by the context (such as "Je mange" ["I eat FINITE or BARE STEM?"] for first-person present). Such forms are counted as inflected in other studies. There is also variation in the types of errors reported. The error type considered by most authors as an unambiguous case of root infinite involves a subject + infinitive (examples from Paradis and Crago include "Je jouer au baseball" ["I plavINF baseball"] and "Oui, dedans trois semaines, je avoir ma fête" ["Yes, in three weeks, I haveINF my birthday"]). Reports of such clear-cut errors are, in fact, extremely rare. Paradis and Crago reported examples of them but did not specify what percentage of inflection omissions in their study are of this kind. Jakubowicz and her colleagues reported non-finite forms only in subjectless sentences in the studies reviewed above. Similarly, Hamann et al. (1996) reported that, of 278 subject clitics encountered, 273 occurred in tensed clauses, leaving only 5 instances of subject + infinitive constructions. Another error type was reported by Jakubowicz et al. (1998) to be produced only by children with SLI in response to an elicitation task. This error involved sentences with bare verb forms, finite or non-finite, but with no subject (e.g., gratte [scratch-finite], cache [hide-finite], or gratter/gratté [scratch-infinitive/scratched-past participle]). Depending on how errors are coded and defined, differences should be expected in the time at which they are most prevalent. Non-finite forms used in declarative main clauses can occur once children are producing such clauses. If, however, root infinitives involve the use of the present tense in past and future contexts, then their occurrence should not be expected until children are attempting the past and future tense and/or have an understanding of temporal relationships. In a normative study

by Elin Thordardottir (2005), the youngest children (age 20 months, MLU barely exceeding 1.0) used only the present tense. The passé composé was used productively by age 32 months, or an MLU level of 4.0. Other tenses appeared only later, with productive use of the periphrastic future<sup>4</sup> and imparfait<sup>5</sup> at MLUs of 5.0 and 6.0, respectively. At 43 months (an MLU of 6.0), no children were using other tenses such as the pluperfect. A later study on the normal development of 4- to 6-year-olds shows pluperfect use by over half of children with MLUs of 7+, with sporadic use at lower levels (Elin Thordardottir et al., 2005).

In a set of diagnostic guidelines published recently for speech-language pathologists (SLPs) in Quebec (Ordre des orthophonistes et audiologistes du Québec, 2004), a set of markers of severity for SLI (termed dysphasie in French) at various ages is suggested. These guidelines are primarily based not on research but on clinical impressions of experienced SLPs, but as such, they have some value. Grammatical morphology is one of many markers proposed but is not highlighted as a main area of concern. Optional infinitives (OIs) figure in the list of markers for 4-year-old children (±6 months). For older children, morphosyntactic markers include, for verbs, tense and agreement errors as well as a limited repertoire of tenses; grammatical aspects, such as the use of pronouns, determiners, and conjunctions and a limited range of syntactic constructions, are mentioned as well. Other key areas detailed for each age group include semantic and pragmatic skills.

Normal development should play a central role in hypotheses on SLI given that language patterns in SLI tend to mirror normal development, a finding reported across languages and for French specifically (Hamann, 2004; Leonard, 1998). In a cross-sectional study of normal language development in French, based on spontaneous language samples from 19 monolingual children with normal development, ranging in age from 20 to 47 months, little evidence was found of an OI stage (Elin Thordardottir, 2005). A French adaptation of Systematic Analysis of Language Transcripts (SALT) analysis (Miller & Chapman, 1984-2002), a procedure widely used for English and Spanish, was developed for this study. This analysis targets grammatical morphology, including verb inflection (tense, person, mood) and nominal inflections (noun plural and gender and number marking of adjectives and pronouns). This coding allows computation of MLU in words as well as in morphemes in addition to documenting the morphological diversity corresponding to age and MLU levels. Inflectional errors are coded, including omission in obligatory context, as well as instances of inappropriate use. Additional codes are entered as deemed necessary by coders, including word errors and omissions.

<sup>&</sup>lt;sup>4</sup>See footnote 2.

<sup>&</sup>lt;sup>5</sup>See footnote 2.

A striking finding of this study was a lack of inflectional errors among young French-speaking children, in stark contrast to a comparison group of monolingual speakers of English, who produced the expected omissions of verb finiteness. In this study, unambiguous omissions of verb inflection were virtually nonexistent (involving sentences with an overt subject followed by a non-finite form). However, utterances consisting of bare verb forms, such as tombé [fallen] and mettre là [putINF here], occurred. In that study, these forms were interpreted as primitive utterances involving the labeling of actions, with high levels of interrater agreement among coders. Because no subject was included, these were not considered instances of inappropriate use of non-finite forms. The findings of this study were generally in line with previous studies of normal development in French, demonstrating a comparable sequence of morphosyntactic development, although it should be noted that previous longitudinal studies focusing on smaller numbers of children over time (e.g., Bassano, Maillochon, Klampfer, & Dressler, 2001; Clark, 1985) have revealed the use of certain correct forms and error types that were not evident in the relatively short language samples of the cross-sectional study. This difference is not unexpected, given that longitudinal studies have a greater chance of documenting the use of low-frequency forms.

In light of the issues surveyed here, the present study was undertaken to examine the characteristics of a group of French-speaking children with SLI, including their level of development in the morphosyntactic and lexical domains in terms of repertoire of correct use as well as error patterns. The goal of the study was to provide a more holistic picture of these children's language development than has been available to date and to relate their areas of weakness to other aspects of their language development with a comparison to children with normal language development. Given normative data on French-speaking preschool children, SLI in French in this young age range was predicted not to be characterized by a prominence of morphosyntactic errors.

# Method Participants

Participants included 36 children, in three groups: 12 children identified as having SLI (10 boys and 2 girls, mean age = 3;11, SD = 5 months, range = 3;1–4;6), 12 NL children matched to the first group on chronological age (NL-A; 7 boys and 5 girls, mean age = 3;11, SD = 4 months, range = 3;2–4;6), and 12 children with NL matched to the first group on mean length of utterance in words (NL-MLU; 6 boys and 6 girls, mean age = 2;6, SD = 7 months, range = 1;8–3;6). MLU in words was used as a matching variable rather than MLU in morphemes because grammatical morphology is among the dependent measures. The first two groups were recruited and tested for this study; children in the third group were selected on the basis of their MLU from a database of normally developing French-speaking children (Elin Thordardottir, 2005). All of the children were monolingual speakers of French and were residents of Montreal, Quebec, Canada. Children identified as having SLI were recruited through a major local hospital where they either had received a language evaluation or were on the waiting list for one because of serious concerns about their language development, as well as from a pediatrician's office, similarly because of serious and persistent concerns about their language development. Parents of children identified as candidates for the SLI group were sent a background information form detailing their developmental history as well as the Quebec French version of the MacArthur Communicative Development Inventory (Frank, Poulin-Dubois, & Trudeau, 1997; Trudeau, Frank, & Poulin-Dubois, 1999). Children with histories and MacArthur scores commensurate with language impairment were invited to be tested. At that time-in most cases, several months later-parents filled out the MacArthur again. The MacArthur scores reported in Table 1 are from the time of testing. Of the 12 children with SLI, 6 had a previous diagnosis by an SLP, and 5 had received therapy. Two additional children had been

Table 1. Participant characteristics, means, and SDs.

	NL-A	SLI	NL-MLU
Characteristic	M (SD)	M (SD)	M (SD)
Age (months)	45.3 (4.4)	45.4 (5.1)	30.1 (7.5)
MLUw	3.52 (0.61)	2.02 (0.37)	2.12 (0.49)
MLUm	4.52 (0.83)	2.41 (0.52)	2.58 (0.60)
EVIP	103.7 (11.9)	81.4 (32.3)	_
MacArthur vocab.	574 (82)	319 (161.0)	356 (154.0)
MacArthur sent. compl.	31.1 (8.8)	7.3 (8.9)	13.9 (13.3)
Leiter-R	119.6 (14.2)	101.1 (17.4)	
Maternal education	16.3 (3.8)	15.2 (2.7)	15.8 (2.6)

Note. Mean length of utterance in words (MLUw) and mean length of utterance in morphemes (MLUm) are based on samples of 150 utterances used in this study. For diagnostic purposes, MLU from 100 utterances was also computed to compare with normative data. Échelle de vocabulaire en images Peabody (EVIP) scores are standard scores. Leiter International Performance Scale-Revised (Leiter-R) scores are standard scores for Brief IQ. Maternal education is reported in years of school completed, including elementary school and all subsequent levels. Em dashes indicate that data for this variable are unavailable because these tests were not administered to this group. NL-A = control children with normal language development matched to SLI group on chronological age; SLI = specific language impairment group; NL-MLU = control children with normal language development matched to SLI group on mean length of utterance; MacArthur vocab. = MacArthur Communicative Development Inventory, vocabulary size; MacArthur sent. compl. = MacArthur Communicative Development Inventory, sentence complexity.

evaluated by an SLP at a younger age but had not been given a formal diagnosis, although significant difficulties were noted (these children were labeled as having a language delay). It should be noted that in Quebec, the diagnostic criteria in effect are stricter than those used in many other parts of North America, including those used in most studies on SLI (the diagnostic label being called dysphasie sévère and less severe forms being labeled delays and considered to indicate at-risk status). The diagnostic criterion used in this study was adopted from the North American research literature on SLI. The diagnostic status of children in both the SLI and NL groups was verified by a certified SLP. In addition to background history commensurate with language impairment, children with SLI were required to score at least -1 SD in MLU in morphemes in a standard 100 utterance sample compared with preliminary norms for Quebec French-speaking children (Elin Thordardottir, 2005; Elin Thordardottir et al., 2005). Eight of the 12 children obtained MLUs below -2 SDs of the mean, and 1 additional child scored below -1.25 SDs. The remaining 3 children scored between -1 SD and -1.25 SDs. A MacArthur total vocabulary score of -1 SD or lower at the time of initial contact was required to be invited for testing, compared to preliminary norms for this test (Elin Thordardottir, 2005). The oldest age group in the available normative database for the MacArthur has a mean age of 43 months. Six of the children in this study are within this age range; the remaining 6 children were from 2 to 10 months older but were compared to the oldest age group in the normative database. At the time of testing, 7 of the children with SLI obtained scores lower than -2SDs below the mean on the MacArthur, with 2 additional children scoring at -1.5 SDs and -1 SD. The remaining 3 children scored in the low normal range. Two of these children were significantly older than the oldest comparison age group (47 months and 51 months). The 3 children who scored higher than -2 SDs in MLU scored at -1, -1.5, and -2 SDs on the MacArthur. Receptive vocabulary was assessed using the Échelle de vocabulaire en images Peabody (EVIP; Dunn, Thériault-Whalen, & Dunn, 1993), standardized on Canadian French-speaking children. EVIP scores were not used to confirm diagnostic status, because some children with SLI have normal range scores on this test. Nonverbal cognition was assessed by the Leiter International Performance Scale—Revised (Roid & Miller, 1997). A hearing screening at 10 dB HL at octave frequencies from 500 to 4000 Hz was conducted under earphones on the day of testing for children in the SLI and NL-A groups. Because the test was not conducted in a soundproof booth, reliable results could not be obtained at 500 Hz for many children. Fifteen children completed the entire hearing test, 5 children completed it partially, and 4 children refused to wear the earphones. All the children had normal hearing as per parent report.

Children in the NL groups were recruited through day-care centers. They were all developing normally according to their parents and were reported to have had no major illnesses or hospitalizations or other complications that would signal a concern for developmental delays. Children in the NL-A group were administered the same tests as the children with SLI. Children in the NL-MLU group participated in another study, in which the EVIP and Leiter were not administered. Results for the standardized tests as well as other background variables are presented in Table 1. Statistical tests revealed that the SLI and NL-A groups did not differ in age (p = .966) but differed significantly in MLU in words (MLUw) and MLU (p = .000), as well as in EVIP scores (p = .038) and MacArthur scores of vocabulary (p = .000) and sentence complexity (p = .000). EVIP scores had a much higher variability in the SLI group, with standard scores ranging from 66 to 120, with 7 of the children regarded as having a primarily expressive deficit. It should be noted, however, that the EVIP was standardized on a Canada-wide sample of children, including monolingual and bilingual children. The EVIP norms have been shown not to be representative of the monolingual French-speaking population of Quebec, with Quebec children scoring substantially higher (Godard & Labelle, 1995). Therefore, normal range standard scores for the children in this study may overestimate their standing relative to the monolingual population. The SLI and NL-A groups also differed significantly on nonverbal cognition (p = .021), although the mean score for each group was well within the normal range. The SLI and NL-MLU groups differed significantly in age (p = .000) but did not differ significantly in MLUw (p = .570)or MLU in morphemes (MLUm; p = .471), or in MacArthur scores of vocabulary (p = .539) or sentence complexity (p = .146). As stated previously, EVIP scores and nonverbal scores are not available for the NL-MLU children. These children were, however, reported to exhibit normal development in all areas by parents.

In addition to the 12 children with SLI included in the study, 5 children referred for this group were not included. One of these children was outside of the target age range. The other 4 children obtained language scores in the normal range, including 1 child who had been previously diagnosed as having a severe receptive and expressive language impairment and 2 children previously labeled clinically as having significant language delays. Inspection of the history for the remaining child revealed that concerns had been mainly in the area of articulation rather than language development.

### Procedure

Children in the SLI and NL-A groups were tested in the laboratory by a trained graduate research assistant who was a native speaker of Quebec French and who had previous experience with testing. During a 2-hr session, standardized tests (EVIP and Leiter–R) and experimental tasks not reported here (see Royle & Elin Thordardottir, 2005) were administered, a language sample was collected, and the children's hearing was screened. The parents filled out a background information form. Children in the NL-MLU group had been tested previously in the same laboratory, using the same protocol for those measures that were used in both studies. A snack break was scheduled in the middle of the test session, and other breaks were taken as needed.

Language samples were collected in a conversational context in an interaction with the examiner using a standard set of toys (house with furniture and people, farm with animals, and toy food items). The samples were transcribed orthographically and analyzed using the SALT computer program (Miller & Chapman, 1984-2002), following an adaptation of SALT conventions for French (Elin Thordardottir, 2005). In this analysis system, the correct and incorrect use of grammatical morphology is coded according to set conventions. In the French adaptation, coding focuses on verb inflection, including tense and person agreement as well as mood; plural marking of nouns (which is marked primarily by the article); and gender and plural marking of adjectives and pronouns. This marking of correct use allows the computation of MLUm and provides data on the children's repertoire of grammatical morphology. Morphological errors are marked in two ways. Omissions are coded where an uninflected form is used in contexts where an inflected form is obligatory. Error codes are entered for other errors, such as those involving an inflected form that is inappropriate to the context (e.g., an incorrect choice of tense or person agreement) or an inflected form that is not appropriately formed (e.g., overgeneralization errors). No credit is given for these in the computation of MLUm. Word omissions (e.g., omission of a verb, subject, or grammatical word) and word errors (e.g., use of the wrong pronoun or use of a word with an incorrect meaning) are coded as well.

The following measures were derived from the language samples: MLUw and MLUm; diversity of use of grammatical morphology; errors in the use of grammatical morphology; word omissions (mainly auxiliary and copula omissions, which are counted as verb inflection errors); and semantic analysis, including lexical diversity and lexical composition. The analysis of MLU and morphosyntax involved 150 utterances for each child, excluding imitations. This length was based on the shortest samples available, allowing standardization of sample length across participants (however, 2 children in the NL-MLU group had samples shorter than 150 utterances). Partially unintelligible utterances were included because these are fairly common in samples of young children. In many cases, partially unintelligible utterances are sufficiently complete that they can be coded for grammatical

morphology. Eliminating unintelligible utterances would have risked eliminating some long and complex utterances, because trade-offs tend to be seen between linguistic complexity and intelligibility (examples are provided in the Appendix). Utterances with unintelligible content constituted 25% of the utterances in the SLI group, 23% of the utterances of the NL-MLU group, and 8% of those of the NL-A group. The mean number of fully intelligible utterances was thus well in excess of 100 utterances for all groups. Analysis of lexical diversity and composition was based on a fixed number of words, because lexical diversity counts have been found to be highly dependent on MLU when they are based on a fixed number of utterances (Elin Thordardottir & Ellis Weismer, 2001; Richards & Malvern, 1997). Lexical measures were based on the middle 200 words of each sample (the 2 children in the NL-MLU group who had samples shorter than 150 utterances did not have a sufficient number of words and were excluded from the lexical analyses).

To verify the reliability of transcription and coding of the language samples collected for this study, a second independent trained transcriber relistened to all the samples, making modifications to the original transcripts (Heilmann, Miller, Nockerts, & Andriacchi, 2004). This yielded an agreement rate of over 90% for transcription of words as well as for coding. Disagreements were settled by consensus. The reliability of the samples of the NL-MLU group was verified as part of the study for which they were collected. This involved retranscription and coding of a randomly selected subset of samples, yielding interjudge reliabilities of 81.2% for transcription and of 92.7% for coding of grammatical morphemes (Elin Thordardottir, 2005).

# Results MLUm and Morphological Diversity

MLU was among the measures used to confirm the diagnostic status of the children; therefore, a group difference between the SLI and NL-A groups and group equivalence between the SLI and NL-MLU groups were established at the outset. MLU scores in words and morphemes are reported in Table 1. Further analysis of the samples aimed to determine ways in which the groups were similar or different in their use of various aspects of language that contributed to their MLU score. Group differences were analyzed by means of one-way analysis of variance (ANOVA) with Fisher's Least Significant Difference post hoc tests. Comparison of MLUm and MLUw provides an indication of the extent to which children use grammatical inflections in their utterances. This difference was .39 for the SLI group, .46 for the NL-MLU group, and .99 for the NL-A group. The groups differed significantly in this respect, F(2, 33) = 30.867, p = .000,  $\eta^2 = .65$ , with post hoc tests revealing that the NL-A group had a larger difference between MLUm and MLUw than each of the other two groups but that the other two groups did not differ significantly from each other. This indicates that the children with SLI used fewer grammatical inflections than their age-matched peers but a similar number compared to their MLU-matched peers. The effect size measure  $\eta^2$ , or correlation ratio, provides an estimate of the proportion of variance accounted for by the variable under test (Marascuilo & Serlin, 1988). An  $\eta^2$  of .65 is, therefore, a moderate to large effect.

In terms of the diversity of grammatical morphology used, the mean number of different grammatical morphemes as coded in the French SALT adaptation was 13.9

Table 2. Diversity of use of grammatical morphology.

	Ν	IL-A	1	SLI	NL	-MLU
Morpheme	Use	Min 3	Use	Min 3	Use	Min 3
Tense						
Passé composé	12	9	7	3	6	2
Imparfait	7	2	0	0	0	0
Futur périphrastique	11	11	6	1	3	1
Futur simple	2	0	0	0	0	0
Verb person						
1st singular	12	12	10	6	8	6
2nd singular	12	12	12	10	12	10
3rd singular	12	12	12	12	12	12
"On" 3rd singular	8	5	3	0	2	0
1st plural	0	0	1	0	0	0
2nd plural	2	0	2	0	0	0
3rd plural	11	11	2	0	2	0
Mood						
Past participle <sup>a</sup>	3	0	0	0	2	0
Conditional mood	3	0	1	0	0	0
Subjunctive	4	0	0	0	1	0
Imperative	12	11	12	10	12	10
Noun phrase morphology						
Pronoun gender	12	9	8	3	10	4
Adjective gender	12	12	11	10	11	10
Pronoun plural	5	1	0	0	0	0
Noun plural	12	11	10	2	6	1
Adjective plural	10	5	4	0	3	0

Note. This table reports the number of children in each group who used each type of morpheme (left column: Use) and the number of children who used the morpheme at least 3 times (right column: Min 3). Boldface type denotes those morphemes used by 50% of children in a group. NL-A = children with normal language development matched on age; SLI = children with a specific language impairment; NL-MLU = children with normal language development matched on mean length of utterance; Min = minimum.

<sup>a</sup>When not part of a composite tense (passé composé). This number also does not include those forms marked as ambiguous (i.e., bare verb forms that could be interpreted as a past participle or infinitives). (SD = 2.2) for the NL-A group, 8.5 (SD = 2.2) for the SLI group, and 8.08 (SD = 2.5) for the NL-MLU group. The group difference was significant, F(2, 33) = 24.265, p = .000,  $\eta^2$  = .59, with post hoc tests again indicating that the NL-A group differed from each of the two other groups. The repertoire of inflectional morphology encountered in the samples of each group is displayed in Table 2, which shows the number of children in each group who used each morpheme at least once, as well as the number of children who used the morpheme at least three times, a criterion commonly used as a minimum for inclusion of particular morphemes in analyses (e.g., Paradis & Crago, 2000), and considered by Lahey (1988) as weak evidence of productive use of the form. Inspection of Table 2 reveals that children with SLI used a markedly lower diversity of grammatical morphology than NL age-matched peers. Whereas 13 different morphemes were used by half of the children in the NL-A group, and 10 were used at least three times by half the group, the corresponding numbers for the SLI group were 9 and 5. Similar to the SLI group, the corresponding numbers for the NL-MLU group were 8 and 5. Table 2 further suggests a similar sequence of acquisition for the children with SLI and NL, with a similar distribution of high- and low-frequency morphemes across the SLI and NL-MLU groups and with these two groups showing signs of emergence of morphemes already mastered to a higher level by the NL-A group. Thus, the SLI and NL-MLU groups have a lesser diversity of verb tenses, lacking any occurrences of the imparfait or futur simple.<sup>6</sup> It should be noted that other tenses mentioned in the beginning of this article, such as the pluperfect, do not appear in Table 2 because they were not encountered in any group. The French SALT conventions allow for coding of all French tenses. All three groups used verbs most frequently in the three persons of the singular, whereas use of the first and second persons of the plural was very rare. Use of verbs in the third-person plural appeared to be more frequent in the NL-A group than in the other two groups, as was the use of the third-person singular on (literally, indefinite pronoun one, often used in French to mean "we") instead of the first person plural nous [we]. As for noun-related morphology, all three groups used gender marking for pronouns and adjectives. Plural marking of nouns and adjectives occurred as well in all three groups, but only NL-A children used plural forms of pronouns (this coding excludes personal pronouns, which are treated as different words in this analysis).

## Morphosyntactic Errors

Errors in inflectional morphology were divided into errors involving verbs and those involving inflections pertaining to the noun phrase. Verb errors involved errors

<sup>&</sup>lt;sup>6</sup>See footnote 2.

in finiteness, as discussed below, including verb-person agreement and choice of verb tense. Failure to inflect verbs in obligatory contexts (referred to variously in previous studies as *finiteness errors* or *root infinitives*) involved errors of three kinds: (1) bare infinitives, involving an infinitive verb form appearing without a subject; (2) bare past participles, involving a past participle form appearing without a subject or auxiliary; and (3) omission of copula or auxiliary in an utterance where the subject was included. Examples of these error types are provided in the Appendix. Omission errors involving an uninflected verb form following a subject were not encountered. Errors of Types 1 and 2 are reported in these two categories because this was how they were coded; however, this was done with the understanding that the distinction between these error types is in most cases not clear and reflects the coder's interpretation. In SALT analysis, coders add missing words and missing inflections (marked by an asterisk) to reflect their best guess as to what the child was attempting. As mentioned above, and as noted by many investigators, the infinitive and past participle forms are homophonous for most French verbs. In a few cases, the error involved verbs for which these forms are distinct (e.g., finir/fini [finish/finished], partir/parti [go/gone]. However, in the majority of cases the decision involves the coder's impression based on context as to whether the child seemed to be using a primitive attempt at a passé composé (Error 2) or an ambiguous form seemingly involving an infinitive used for a labeling purpose. In either case, there was no overt subject. It may be, therefore, that these errors are of the same kind despite the coder's impression. At any rate, both contributed to the overall frequency of finiteness errors. Noun phrase inflections include gender and plural marking of pronouns and adjectives as well as plural marking of nouns. Not all of these inflections involve audible distinctions. Inflections were coded as correct if their form fit the context even if it could not be distinguished from other homophonous forms (see Elin Thordardottir, 2005). Homophonous forms were included in the analysis because the goal was to establish the overall accuracy rate of verb and noun phrase inflection. An alternative procedure, adopted in a number of studies, is to focus only on those words for which the inflectional distinction is audible (e.g., *finir/fini*). This procedure has the effect of reducing the analysis set to a relatively small number of low-frequency inflectional forms, with results shedding light on those particular forms only.

The accuracy of verb and noun inflection was very high in all groups. For nouns, all three groups scored at ceiling (NL-A: 99.9, SD = 0.02; SLI: 100, SD = 0; NL-MLU = 100, SD = 0). For verbs, the children with SLI achieved the lowest percentage-correct score, which was still high, at 94.3% (SD = 0.09), leaving little room for group differences Table 3. Breakdown of types of verb inflections.

	NL-A	SLI	NL-MLU	
Verb inflection type	M (SD)	M (SD)	M (SD)	
Bare infinitives	0.08 (0.28)	1.92 (3.2)	0.17 (0.39)	
Bare past participles	0.17 (0.39)	1.50 (4.0)	0 (0)	
Aux-copula omission	0.25 (0.45)	0.33 (0.65)	1.7 (3.2)	
Wrong verb person	0.58 (0.09)	0.17 (0.56)	0 (0)	
Wrong verb tense	0.17 (0.39)	0 (0)	0 (0)	
Finite verbs	78.0 (15.5)	34.6 (18.9)	36.9 (16.0)	
Tenses other than present	16.7 (9.8)	3.3 (4.0)	2.1 (2.8)	

*Note.* This table shows the mean number of each type of inflection per sample for each group, as well as the number of opportunities for such errors in terms of the number of finite verbs per sample and the number of times verbs were used in a tense other than the present. Aux = auxiliary.

(NL-A: 98.8, SD = 0.01; NL-MLU: 95.7, SD = 0.07). An ANOVA analysis comparing the three groups revealed no significant group difference, F(2, 33) = 1.559, p = .225. Table 3 provides descriptive frequency data on the breakdown of verb error types in terms of the mean number of each type of verb error per sample for each group. The number of opportunities for such errors helps put these data into perspective: The mean number of finite verbs per sample was 78.0 for the NL-A group, 34.6 for the SLI group, and 36.9 for the NL-MLU group. The mean number of use of tenses other than the present was 16.7 per sample for the NL-A group, 3.3 for the SLI group, and 2.1 for the NL-MLU group. These data indicate that the lack of finiteness errors is not attributable to lack of opportunity in any of the three groups. In contrast, children in the SLI and NL-MLU groups made few attempts at tenses other than the present. This may be a reflection of their overall low language level. As well, the conversational context may have called for fairly little use of tense marking. However, it should be noted that this same context elicited far more tense use from children in the NL-A group, thus making the explanation of language level more plausible. As Table 3 reveals, errors of verb tense and person agreement were overall very rare and nonexistent in many samples, including samples of children in the SLI and NL-MLU groups. Both of these error types involve the use of an inappropriate inflection rather than omission. Comparison of the three inflection error types (infinitive, past participle, and omission of auxiliary or copula) is not really meaningful given the very low error rate for each of these, as well as the similar nature of two of these error types (infinitives and past participles). The numbers for these separate errors are provided only to show that there is not a consistent trend toward verb error types being most frequent in the SLI group. Omission of copulas and auxiliaries was most common in samples of the NL-MLU group, whereas the use of bare infinitives and bare past participles was encountered almost exclusively in samples from children in the SLI group. Inspection of individual data revealed that 8 of the 12 children with SLI had at least one infinitive or past participle error, compared with 3 children in the NL-A group and 2 children in the NL-MLU group. Where these errors did occur in samples of NL children, the frequency tended to be 1 per sample, whereas several individuals in the SLI group had unusually high rates for these errors, such as 4 and 5 and, in one case, 25. In contrast, omission of auxiliaries and copulas occurred in samples of 3 children with SLI, 3 children with NL-A, and 6 samples from the NL-MLU group, with 2 children with rates of 5 and 11, respectively, but most having only 1 or 2.

Various other error types were noted in the samples. Error codes were made up as these were encountered, including incorrect noun gender, incorrect choice of pronoun, and incorrect choice of auxiliary ( $\hat{e}tre$  for *avoir* [*be* for *have*] or vice versa). In each case, the rate of occurrence of errors was extremely low, or less than 1 per sample. However, it was noted that these errors were most likely to appear in samples of children in the NL-A group.

## **Omission of Object Clitics and Subjects**

Object clitics are not among the items coded in a standard SALT analysis and thus had not been included in our previous study of normal development in French (Elin Thordardottir, 2005). For comparison with previous studies on French SLI, we coded both correct use and omission of object clitics as well as omission of subjects. The proportion of verbs with which an object clitic was used was 6.4% for the NL-A group, 5.2% for the SLI group, and 1.6% for the NL-MLU group. The number of omissions of the object clitic in obligatory contexts was negligible in the NL-A group and nonexistent in the other two groups (for the NL group, the mean number of object clitics used per sample was 5.08 [SD = 4.08], and the mean number of object clitic omissions was 0.083 [SD = 0.28]), with omissions thus occurring in 0.02% of object clitic opportunities). Overall, the NL-A and SLI groups appear similar in their frequency of use of object clitics, with less use in the NL-MLU group. However, group differences did not reach significance, F(2, 33) 3.065, p = .060. Subject omissions occurred with 10.0% of verbs in the NL-A group, 10.5% of verbs in the SLI group, and 4.5% of verbs in the NL-MLU group. In all cases, these omissions occurred with finite verbs. Cases of bare infinitive or past participle forms were not coded as missing a subject in this analysis. Again, the NL-A and SLI groups appeared to omit subjects to a similar degree and more than children in the NL-MLU group. However, group differences were not statistically significant, F(2, 33) = 1.913, p = .164.

# Lexical Diversity and Vocabulary Composition

Computation of number of different words (NDW) was based on the middle 200 words from each language sample. Because children in the SLI and NL-MLU groups had lower rates of intelligibility than the NL-A group, NDW is expressed as the proportion of different words out of intelligible words, to ensure that a higher NDW score in the NL-A group does not stem from their higher intelligibility. Group means for NDW were .45 (SD = 0.05) for the NL-A group, .38(SD = 0.07) for the SLI group, and .34(SD = 0.07) for the NL-MLU group. A one-way ANOVA analysis revealed a significant group difference for NDW,  $F(2, 31) = 9.038, p = .001, \eta^2 = .37$ . Fisher's Least Significant Difference post hoc tests showed that only the NL-A group was significantly different from each of the other two groups. For the vocabulary composition analysis, all intelligible words in the 200-word segment were coded as belonging to one of these categories (following previous studies of lexical composition; e.g., Caselli, Casadio, & Bates, 1999; Kauschke & Hofmeister, 2002): lexical verbs, grammatical verbs (auxiliary and copula forms of être [be] and avoir [have]), nouns, other open-class words (adjectives and adverbs), closed-class words (pronouns, determiners, conjunctions, particles), and social words (oui, non, OK, bonjour, bye [yes, no, OK, hello, bye]). This category also included interjections and onomatopeias. The results for the three groups expressing each of the six word categories as a proportion of the total of intelligible words are summarized in Figure 1. These results were analyzed by means of a 3 × 6 mixed-model ANOVA with group as the between-subjects factor and word category as a repeated measure, revealing a significant main effect of word category that was subsumed by a significant Group × Word Category interaction, F(10, 155) = 5.465,  $p = .000, \eta^2 = .35$ ). Pairwise post hoc tests using the Tukey-Hayter procedure revealed the source of the interaction to be that, for the NL-A and NL-MLU groups, closed-class words made up a higher proportion of their vocabulary than each one of the other word classes, whereas for the SLI group closed-class words made up a significantly higher proportion than lexical verbs, grammatical verbs, and other open-class words (adjectives and adverbs) but did not differ significantly from nouns or social words. Indeed, Figure 1 reveals that closed-class words were used more frequently than any other word class for all three groups of children, a finding that approached but did not reach significance in pairwise comparisons with other word classes collapsed across groups. In terms of comparisons across groups for each word class, it was revealed that the NL-A children had a significantly higher proportion of closed-class words and a significantly lower proportion of social words than the SLI group, but the

**Figure 1.** Vocabulary composition across six word categories showing the proportion of intelligible words in each category. NL-A = children with normal language development matched on age; SLI = children with a specific language impairment; NL-MLU = children with normal language development matched on mean length of utterance.



NL-MLU group did not differ significantly in this respect from the NL-A or SLI group for either of these word classes. No other pairwise comparisons were statistically significant.

## Discussion

The main motivation of this study was to evaluate the language skills of French-speaking preschool-age children with SLI, including not only a focus on their use of morphosyntax for comparison with previous studies but also taking a broader look at their lexical and syntactic skills. On the basis of previous normative data, it was anticipated that errors in grammatical morphology would not be a prominent characteristic of the spontaneous language of young French-speaking children with SLI as they have been found to be in English.

Overall, the results of this study are suggestive of a general language delay as a prominent characteristic of SLI in the participating children in the sense that their language skills were significantly lower than those of their age-matched peers but similar to those of their peers matched on language level. This general pattern was found for all aspects of language investigated, including length of utterance, diversity of use of grammatical morphology, morphological errors, lexical diversity, and lexical composition. Some minor differences were noted as well between the SLI and NL-MLU groups, as discussed below. In general, however, it can be concluded that the MLU of children with SLI appears to reflect a similar constellation of linguistic skills as it does in younger children with typical language development. In terms of morphological diversity, children with SLI used fewer instances of inflections in their samples than age-matched peers, and they evidenced a smaller repertoire of different types of inflections. Their performance was, however, comparable to that of NL children matched on MLU, indicating a similar developmental sequence in NL and SLI. The more advanced NL-A children evidenced a greater variety of verb tenses, including the imparfait and futur simple as well as verb moods, showing some use of the subjunctive and conditional. Lexical diversity was significantly lower as well in samples of children with SLI compared with age-matched children, but again, comparable to that of children matched on MLU. Lexical composition was similar across all three groups in many respects. Of the six word classes used in the analysis, closed-class words accounted for a high proportion for all three groups, as would be expected in a language sample where children are called on to use many of the closed-class words that they know. Vocabulary composition in a language sample thus differs from counts obtained from parent report checklists, which reflect accumulated knowledge rather than frequency of use in a particular setting. However, although closed-class words were significantly more frequent than any other single word group for both groups of typically developing children, children with SLI had a somewhat different pattern, with the proportion of closed-class words not significantly different from that of either nouns or social words. Indeed, children with SLI had a significantly smaller proportion of closed-class words and a significantly higher proportion of social words than age-matched children with typical development. The social words category includes not only words such as greetings but also words such as yes and no and various interjections. The low proportion of closed-class words by children with SLI compared with the other groups may stem from a weakness in syntax. Similarly, the high proportion of social words may also result from low linguistic abilities, leading to a strategy of overreliance on simple, familiar structures. However, another potential source may be a generally greater reluctance to engage in interaction and a greater need for prompting from the interlocutor. This would result in language samples that tend to underestimate these children's linguistic knowledge to some extent. Alternatively, such behavior may be viewed as an aspect of communicative ability, one that contributes to these children's performance in various contexts and, in the long run, to difficulty in their continued linguistic development.

Morphosyntactic markers of various kinds, including verb tense and finiteness as well as object clitics, have been reported to be especially vulnerable in SLI in French (Hamann et al., 2003; Jakubowicz, 2003; Jakubowicz & Nash, 2001; Paradis & Crago, 2000). In the present study, in contrast, error rates were extremely low, consistent with previous normative data collected with comparable methods. All groups achieved perfect levels of accuracy in noun-related morphology. The data on morphological diversity (see Table 2) reveal that all groups did use such morphology to some extent, although the NL-A children did so to a higher degree. Although verb inflection errors were somewhat more frequent than noun-related morphology, accuracy rates were still very high, close to 95% for the SLI and NL-MLU groups, compared with 99% for the NL-A group, and there was no significant difference between groups. Object clitic errors were close to nonexistent as well in all groups. Subject omissions did occur with a higher frequency than any other error type coded. This error type, however, was of comparable frequency in the NL-A and SLI samples and thus did not appear to be especially associated with difficulty related to language impairment. The low rates for some of the error types must be considered in the context of a low number of occurrences of correct forms. Whereas opportunities for finiteness errors were numerous in all samples, there were few instances of the use of tenses other than the present in samples of SLI and NL-MLU children, thus limiting the interpretability of the lack of tense errors. Object clitics were rather infrequent as well across groups; however, their frequency was similar in samples of the NL-A and

SLI groups, occurring with around 5% to 6% of verbs, with neither group omitting them in obligatory contexts.

These results differ markedly from many previous reports on SLI in French, which have noted particular difficulty in morphosyntax. As well, these results reveal important cross-linguistic differences. The accuracy scores reported here are much higher than those reported for English-speaking children in this age range. Rice et al. (1995), for example, reported accuracy rates for verb finiteness in spontaneous language samples of 5-year-old children with SLI of 34% for third person -s and 18% for the regular past tense (with corresponding numbers for elicitation probes of 26% and 27%, respectively). The rates reported here are also much higher than previous rates reported for French-speaking children in elicitation probes, as detailed in the beginning of this article. There may be several reasons for these discrepancies. One of them may lie in the tasks used. With the exception of the studies by Le Normand et al. (1993) and Hamann et al. (2003), the French studies surveyed used elicitation tasks rather than language samples, or language samples with an elicitation component (Paradis & Crago, 2000, 2001). In contrast, the present study used conversational play samples that provide for a very relaxed interchange and did not involve any attempts to elicit particular structures. Language samples and elicitation tasks each have their advantages and limitations. Elicitation allows the examiner more control over the frequency of occurrence of specific structures. By the same token, elicitation tasks are more artificial and involve a lesser degree of true communicative intent than spontaneous language samples. Thus, even though elicitation may lead to production of more instances of a form than a language sample of similar length (Eisenberg, 1997), the two forms of data should not be interpreted in the same way. It is conceivable that elicitation tasks can lead to higher error rates, for at least two reasons. First, the context is more demanding and may thus tax the children more, in particular those with SLI (Masterson, 1997). Ratner (2000) noted that elicitation may over- or underestimate spontaneous language level. She also discussed the need to adjust the elicitation stimuli appropriately according to the developmental sequence of the language and the children's developmental level. In some previous studies, analyses may have targeted skills that were too developmentally advanced for the children given their overall language level, thus leading to a high failure level. In Jakubowicz et al.'s (1998) and Hamann et al.'s (2003) studies, for example, a large age range of children with SLI is included, but unimpaired control participants are of a much more restricted age range. It may be that the younger children with SLI in these studies may have had an overall language level too low for the target forms to be expected to have been acquired, in particular the pluperfect tense and the object clitic, which are relatively late-developing forms (Elin Thordardottir, 2005; Elin Thordardottir et al., 2005; Maillart & Schelstraete, 2003). Thus, the low scores of these children may reflect a low language level rather than specific difficulty with the forms targeted in elicitation. Further study comparing spontaneous and elicited tasks for the same children will be of interest to clarify these issues. A past-tense elicitation task used with the children with SLI who participated in this study (Royle & Elin Thordardottir, 2005) revealed that several children with SLI produced no passé composé forms in the elicitation task, although they had some instances of it in their language samples.

Another factor that may have contributed to discrepant results relates to the age range of children tested. Most previous studies of SLI have focused on school-age children. The higher error rates reported for verb inflection errors in these studies lead us to ask whether it is possible that such errors have a tendency to increase in frequency after preschool age to peak at some time in the school years. The findings of Franck et al. (2004), who documented an increase in error rate for subject-verb agreement errors in children with NL from 5 to 7, are consistent with this. Certainly, the low error rate reported in this study mirrors patterns documented for normally developing French-speaking children of a similar language level. Reports of the normal development of highly inflected languages have suggested that error rates may be very low early in development but may subsequently increase as the child starts to use a greater variety of words and syntactic contexts requiring greater overall complexity. Such a pattern has, for example, been noted in the development of grammatical inflections in Icelandic (Elin Thordardottir, 2001, 2004; Elin Thordardottir & Ellis Weismer, 1998; Ragnarsdottir, Simonsen, & Plunkett, 1999). To some extent, the available evidence on Frenchspeaking children suggests that this may be a factor. For example, in Paradis and Crago's (2000) study of 7-yearold children, error types on which group differences were found occurred in past and present contexts and thus involved errors in the choice of tense. In the present study of 4-year-olds, tense errors were rare, but so were occurrences of correct use. Although the less frequent use of tense in our study may partly relate to context, because Paradis and Crago (2000) included questions specifically designed to elicit different tenses, a difference across the studies in the developmental level of the children is also a likely factor. As children advance in world knowledge and linguistic development, they increasingly need to use a greater variety of verb tenses, which also leads to increased opportunity for error. It seems reasonable to conclude, then, that if French-speaking children with SLI do experience a disproportionate difficulty with morphosyntactic aspects, such as verb inflection and object clitics, compared with other aspects of language, it may be that

this difficulty is more prominent in children older than the ones who participated in this study. This would imply a cross-linguistic difference compared with Englishspeaking children, for whom verb inflection errors are the most salient in the preschool years, subsequently decreasing to levels similar to those of typically developing children by approximately fourth grade (Rice, Tomblin, Hoffman, Richman, & Marquis, 2004). Whereas Franck et al. (2004) reported verb inflection error types whose frequency increased with age, such a pattern is contradicted by one of the few previous studies on French SLI to include preschool children: that of Hamann et al. (2003), who reported non-finite forms in 15% of the clauses of children with SLI age 5 years, with much lower error rates in older children, with a total sample size of 11 children spanning an age range from 3 to 8 years. These findings also are at odds with the present study, although both used spontaneous language. Hamann et al. (2003) provided little detail on the language sampling context or coding procedure, making further comparison difficult. Further studies will, therefore, be required to investigate this discrepancy.

Another methodological issue in the analysis of error patterns is how errors are coded. As discussed in the beginning of this article, definitions of what constitutes an inflectional error and how these are classified have varied extensively between studies of SLI in French, making comparisons of studies extremely difficult. In this study, the focus was on the overall accuracy of verb inflection and noun phrase inflection. This focus does not allow us to consider only those words for which differences between inflectional forms are audible. Instead, we adopted the strategy that where the form produced was the one required by the context, it was coded as being that form, even though other inflections of the word might take the same form. When the form produced corresponds with the required form, we indeed have no compelling reason to suspect that the form is incorrect. It should be noted that in the vast majority of cases it was clear from the context which form was required, and the interrater reliability of coding was high. A number of previous studies have targeted only those forms that are not homophonous with other forms in an attempt to ensure that the child's actual production matched their intention. Results from such studies yield data that must be interpreted accordingly. By their exclusive focus on a subset of words that happen to be inflected in a certain way (which could also make them more vulnerable to error, because such verbs are less common), they provide information only on the accuracy of those words and cannot be viewed as reflecting the overall accuracy of the inflectional system.

Yet another factor that warrants consideration is a potential difference between studies in diagnostic criteria and severity levels. In this study, we deliberately applied diagnostic criteria in line with those typically used in studies of SLI in English-speaking children. Criteria used for research are often somewhat different from those that are in effect clinically, and the latter vary between geographical areas and settings. Diagnostic criteria that are in effect in Quebec and that are recognized by the health care system as qualifying children for intervention services are stricter than the criteria used in this study but, because of a general lack of appropriate normed tests, diagnoses are often based on qualitative differences whose diagnostic significance has not been verified by research with specific criteria varying among clinics. Given our criteria, it is possible that the children in this study may have tended to have a less severe form of SLI than children in some previous studies where clinical criteria were used, depending on regional differences in such criteria. Comparison with another study that used a Quebec sample in which children were identified on the basis of clinical criteria (Paradis & Crago, 2000) indeed suggests the possibility of a difference in severity levels. In that study, 7-year-old children with SLI were matched on MLU with 3-year-old NL children, indicating a high degree of severity. As well, given the young age of the participating children, the possibility must be considered that our sample may include late talkers who may yet move into the normal range. Although only longitudinal follow-up could answer this question, the possibility of normalization is not considered likely for most of the children, given that the majority obtained language scores at -2 SDs or below.

The results of this study indicate that future investigation of SLI in French needs to focus increasingly on various areas of language to facilitate evaluation of what children with SLI cannot do well in the context of what they can do. Reports on error patterns and rates in Frenchspeaking children with SLI would be more informative if more data were available on the children's language performance in various areas, and conclusions on particular areas of difficulty would be more compelling if more detailed comparisons had been made with other areas presumed to be more robust. Our findings indicate that morphosyntactic errors do not stand out as an area of particular difficulty in SLI in young French-speaking children. With this finding, we are not claiming that errors in verb finiteness, tense, or object clitics are of no importance in SLI in French. However, we are cautioning that such errors do not appear characteristic of SLI in French in the preschool period and, therefore, a diagnostic focus on the presence of such errors would lead to underidentification of SLI. Furthermore, these findings stress the importance of considering error rates in the context of the child's overall language level, with appropriate comparison to normal development. Inability to produce particular forms is not indicative of an impairment specifically involving that form unless the language level of the child is such that the form should have been mastered.

Before the morphological error patterns documented in the present study are discarded entirely as uninformative regarding diagnostic status, however, it may be interesting to take a closer look at the types of errors produced by the children. It was noted (see Table 3) that although error rates were low in all groups, certain errors occurred almost exclusively in samples of children with SLI. These included errors involving bare infinitives or bare past participles, produced in sentences without a subject (see Appendix for examples). These are errors that could be termed *finiteness errors* or root infinitives and that are consistent with such errors reported in previous studies. It should be noted, however, that errors involving infinitive forms following a subject, which have been reported by Paradis and Crago (2000), such as "Non, je dessiner un jeu de pupitre" ("No I drawINF a desk game") were never encountered in this study, nor have they, to our knowledge, been reported elsewhere. The bare infinitive/past participles encountered in our samples are ambiguous in two ways: (a) in that it cannot be determined in most cases of which form they are and (b) in that it is not always clear that the context in which they are produced is truly an obligatory finite context because there is no subject, and the context in many cases suggests that this form serves a labeling function referring to an action but is not necessarily meant to pertain to a specific individual. However, in the context of a search for clinical markers, it may be of some importance that even though the rate of this error type was extremely low, it was produced almost exclusively by children with SLI, although it should also be kept in mind that the frequency of this error varied across children, and not all children with SLI had such errors. The reason why this error type was produced almost exclusively by children with SLI is not clear. One possibility is that this is an early developmental error that lingers in SLI but that the NL-MLU children have outgrown. This scenario is, however, not consistent with the occurrence of errors of this kind in samples of older children, as documented by a number of studies (Jakubowicz, 2003; Paradis & Crago, 2000, 2001). In contrast, auxiliary and copula omissions appeared more characteristic of the NL-MLU group than the other two. Again, this is not consistent with the suggestion that children with SLI have specific difficulty with thematic verbs based in zero copula errors in 7-year-old children with SLI (Paradis & Crago, 2000). The most reasonable conclusion may be that the errors encountered in this study are too few to warrant any speculation about group patterns and that any trends observed may be accidental. At any rate, in spite of the tendency of this error pattern to be associated with the presence of SLI, the observed pattern of this error in this study does not indicate that it is a useful diagnostic indicator for 4-year-old children given that they are not consistently present in samples of children with SLI and that they are observed, albeit only occasionally, in samples of NL children. The prevalence of this error in other studies may indicate that it becomes a more useful diagnostic indicator for older children.

This study has documented various aspects of the language skills of 4-year-old French-speaking children with SLI compared with children matched on age and on MLU, suggesting a pattern of generalized delay across domains of language and involving syntactic, morphosyntactic, and lexical skills. Contrary to previous reports on French-speaking children with SLI, but consistent with normative data on children of similar MLU, errors in grammatical morphology were rare and did not produce group effects, indicating that grammatical morphology is not a hallmark characteristic or an accurate diagnostic indicator of SLI in French in this young age range. The findings suggest instead that the use of carefully developed norm-referenced assessment measures addressing lexical and syntactic development are a viable approach to the identification of SLI in French in this age range. Reliance on standardized assessment tests of various aspects of language in the diagnostic process has a long tradition in clinical and research work with Englishspeaking children but is less widespread in work with children speaking other languages in large part because of the lack of available measures. In Quebec, clinical assessment of children with SLI often relies to a considerable degree on clinical impressions and qualitative evaluation of error types rather than on normative data. Research on the adequacy of different diagnostic methods in languages other than English is sparse. Several recent studies, however, have shown the diagnostic utility of standardized tests of language to non-English languages. A recent study on Cantonese-speaking children with SLI showed that MLU and lexical diversity together discriminated between children with and without SLI (Klee, Stokes, Wong, Fletcher, & Gavin, 2004). Similarly, van Daal, Verhoeven, and van Balkom (2004) administered a battery of language tests to Dutch-speaking children. Although these tests allowed the identification of subtypes within Dutchspeaking children with SLI resembling those previously identified for English (Conti-Ramsden & Botting, 1999), it is noteworthy that the entire group of children with SLI differed significantly from the normative reference in each one of the language measures used, demonstrating that all the children evidenced primarily a generalized language deficit regardless of subtype. The findings of this study call for research emphasizing a broad focus on language skills in SLI in French and investigation of characteristics of SLI in French across age groups and in different contexts and tasks.

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#### **Appendix.** Examples of error types and correct use of morphology.

Examples of verb inflection errors coded as bare infinitives, bare past participles, and auxiliary or copula omissions Bare infinitives: Peser quand même. Press anyway. Aller dedans salon. Go inside living room. Dépêcher. Hurry. Voler dans les airs. Fly in the sky. Manger. Eat. Fermer. Close. Bare past participles: \*Il \*est tombé. \*He \*is fallen (He fell) \*Il \*est arrivé. \*He \*is arrived (He's here) Regarde \*ils \*ne \*sont pas tombés. Look, \*they \*are not fallen (Look, they did not fall) \*Il \*est tombé dans l'eau. \*He \*is fallen in the water (He fell in the water) Wow \*il \*est tombé le monsieur! Wow, \*he \*is fallen, the gentleman (The gentleman fell) \*Elle \*est pas brisée. \*She \*is not broken. Auxiliary or copula omissions: (Oh) où \*est la vache? (Oh) where \*is the cow? Où \*est maman? Where \*is mom? Elle \*est sur \*la balance. She \*is on \*the swing. (balance should be balancoire) Moi \*je \*suis ici. Me, \*l \*am here. Il \*est fâché à cause \*de son tracteur. He \*is angry because \*of his tractor. Examples of utterances free of morphological errors Children with SLI: Maman regarde c'est un gâteau! Mom look it's a cake! Bien ça tu le mets içi. Good, this, you put it here! Moi je vais m'en aller là. Me, I'm gonna go there. Oui grandpapa il l'a, ça. Yes, granddad he has it, this. Il va y aller le tracteur. It will go there, the tractor. Elle est brisée l'auto. It is broken, the car Examples of partially unintelligible utterances (such utterances were included in the analyses) SLI aroup: \*Je veux avoir les deux bateaux comme XX. \*I want to have the two boats like XX. XX il peut embarquer là s'il vous plaît. XX he can embark here please. NL-A aroup: Il XX d'autres choses dans (la ça) le tracteur. He XX other things in (the this) the tractor. Je pense que l'autre bonhomme (il est) il est XX. I think that the other guy (he is) he is XX. NL-MLU group: XX c'est le camion que je veux. XX it's the truck that I want. X là il va aller le regarder manger. X there he is going to go watch him eat. Note. In Systematic Analysis of Language Transcripts, an asterisk (\*) denotes that the item to which it is attached was

Nore. In Systematic Analysis of Language Transcripts, an asterisk (\*) denotes that the item to which it is attached was omitted. NL-A = children with normal language development matched on age; NL-MLU = children with normal language development matched on mean length of utterance.

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