

Bilingual children with specific language impairment: Theoretical and applied issues

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ABSTRACT

Bilingualism is often considered an inappropriate developmental choice for children with specific language impairment (SLI) because, according to a widespread belief, these children's limited capacity for language would be overtaxed by learning two linguistic systems. However, there has not been adequate empirical investigation of SLI in bilingual children to support, or refute, this belief and the professional practices that are based on it. On the theoretical side, two opposing perspectives concerning the nature of the deficit in SLI make different predictions for the outcome of children with SLI learning two languages, and one set of predictions is consistent with the popular belief stated above. This article is aimed at addressing both the applied concerns and the theoretical debate with evidence from two studies examining the morphological acquisition of French–English bilingual children with SLI as compared to French and English monolinguals with SLI.

In the first half of the 20th century it was commonly thought that bilingualism in early childhood was detrimental to children's linguistic and intellectual development, but an established body of research since that time has shown that bilingualism either has neutral or enhancing effects on children's cognitive development (see reviews in Bialystok, 2001; Genesee, Paradis, & Crago, 2004; Hakuta, 1986). Although attitudes have shifted greatly toward accepting bilingualism in childhood as healthy and perhaps advantageous, these attitudes only apply to children who are typically developing (TD). Children who present with language-learning disabilities are usually thought to be unsuitable candidates for dual-language learning in childhood. Anecdotal experiences of my own and those of my colleagues with speech–language pathologists, school psychologists, elementary school teachers, pediatricians, and parents have revealed that there is a widespread negative attitude about children with language disorder learning two languages. For example, parents of children with language-learning disabilities are often counseled out of French immersion schools by principals, teachers, and other professionals. In addition, if two languages are spoken in the home of a child with language disorder, speech–language pathologists often recommend

that the household switch to using just one language. (For further elaboration, see Genesee et al., 2004; Juarez, 1983; Kohnert, Yim, Nett, Kan, & Duran, 2005.) These practices and the beliefs that underlie them are problematic because they are based on common sense rather than evidence. The common sense notion is that a disordered language faculty could not possibly cope with learning two languages. The majority of the research literature on dual language development and disorders is oriented toward giving advice to educators and speech–language pathologists in their assessment and intervention practices in multilingual settings (Juarez, 1983; Kohnert et al., 2005; Roseberry-McKibbin, 1995; Westernoff, 1991). Studies directly examining bilingual children with language disorders are few, and are limited in terms of what they contribute to our understanding of whether bilingualism impacts negatively on affected children (see Paradis, Crago, Genesee, & Rice, 2003, for elaboration). Consequently, one goal of this article was to provide some grounding for evidence-based practices with bilingual children presenting with language disorders.

Bilingualism in children with language-learning disabilities has significant theoretical as well as applied relevance. There is an ongoing debate concerning the mechanisms causing specific language impairment (SLI), which is a developmental language disorder that has no readily identifiable etiology such as hearing loss, autism, or mental retardation. Children with SLI exhibit typical social–emotional development, hearing and motor–speech abilities, and have IQs within the normal limits, but have language abilities significantly below age expectations. (For more information on SLI, see Leonard, 1998.) The debate about the mechanisms causing SLI consists of two main perspectives: cognitive/perceptual processing accounts and linguistic representational accounts. Each of these perspectives makes different predictions for the outcome of children with SLI learning two languages. Therefore, research on bilingual children with SLI could shed light on this theoretical debate, which has hitherto been addressed primarily with data from monolinguals only. Accordingly, another goal of this article is to make a unique contribution to our understanding of the nature of SLI in all affected children through examining bilingual affected children.

PROCESSING AND REPRESENTATIONAL ACCOUNTS OF SLI

There is a group of explanatory accounts of SLI that have in common the underlying assumption that children affected with this disorder have deficits in some basic cognitive and perceptual processing mechanisms, which cause profound difficulties learning language and also have effects in nonlinguistic cognition (Ellis Weismer, Evans, & Hesketh, 1999; Kohnert & Windsor, 2004; Leonard, Bortolini, Caselli, McGregor, & Sabbadini, 1992; Miller, Kail, Leonard, & Tomblin, 2001). The generalized slowing hypothesis is such a processing-limitation account that claims children with SLI have a generalized deceleration of their ability to intake, store, and access linguistic information (e.g., Miller et al., 2001). Such limitations in processing speed are thought to underlie the very protracted linguistic development in children with SLI because even though they have been exposed to target language input for the same duration of time as their unaffected age peers, they need much more time on task to process that information and develop

linguistically. If a child with SLI were to learn two languages instead of one, the generalized slowing hypothesis would predict that this child would show delays not only compared to monolingual unaffected age peers in each language, but also compared to monolingual age peers with SLI. This is because the decelerated processing mechanisms of this child would have twice as much linguistic information to deal with in the same amount of exposure time as monolinguals. Note that the generalized slowing hypothesis predictions for bilingual development in children with SLI is highly consistent with the common-sense belief discussed above.

Another set of explanatory approaches to SLI claims that children affected with this disorder have selective deficits within the domain of linguistic representation itself (Clahsen, Bartke, & Göllner, 1997; Jakubowicz & Nash, 2001; Rice, 2003; van der Lely, 2003; Wexler, 2003). Although the hypothesized locus of the deficits varies between accounts, the central assumption they all share is that the criteria determining these deficits can be expressed in terms of domain-specific linguistic complexity alone and need not be derived from extralinguistic, domain-general cognition and perception. The disruption within delay account argues that children with SLI show overall delay in their language development compared to unaffected age peers, but also show pernicious difficulties with individual linguistic structures that go beyond what their general delay would indicate (Rice, 2003, 2004). These “disrupted” structures are those that require certain linguistic computations for which children with SLI have incomplete or faulty abilities to establish the appropriate representation (Wexler, 2003). Rice, Wexler, and colleagues have argued that morphology marking the grammatical feature tense in English (e.g., past [-ed] or BE as an auxiliary verb) is a prime example of a disrupted structure (Rice & Wexler, 1996; Rice, Wexler, & Hershberger, 1998), and disrupted structures could be construed as clinical markers because measuring children’s accuracy in using them could circumscribe the clinical from the nonclinical population (Rice & Wexler, 1996, 2001). Even if a child with SLI was learning two languages, this would not necessarily change their proficiency with respect to those aspects of language that are considered to be clinical markers for monolingual children with SLI. This is because the mechanism causing the difficulty with these particular linguistic structures is internal to linguistic representation, and therefore, the reduced input a bilingual child receives in each language compared with monolinguals would not impact on their (in)ability to represent the structure.

The processing and representational accounts contrast not only in their predictions for dual-language development in children with SLI, but also in their approach to explaining uneven linguistic profiles displayed by all children with SLI. Take the example that English-speaking children with SLI show significantly greater difficulties producing grammatical morphology that marks tense than they do with other kinds of grammatical morphology (Bedore & Leonard, 1998; Leonard, Eyer, Bedore, & Grela, 1997; Rice, 2003; Rice & Wexler, 1996). Although a representational account like disruption within delay is clearly compatible with uneven profiles, and in fact, has been conceived around them, processing accounts offer less straightforward explanations for this phenomenon. It is possible that a proponent of the generalized slowing hypothesis might argue that selective deficits on tense morphemes are nothing more than an outcome of the

generalized delay children with SLI display in their language development; after all, in the acquisition sequence of grammatical morphemes in English in TD children, the ones marking tense tend to be acquired later (Brown, 1973; de Villiers & de Villiers, 1973). However, TD children show a gap between their mastery of nontense marking morphemes and tense marking morphemes of about 12 months (Brown, 1973, de Villiers & de Villiers, 1973); whereas children with SLI show a gap of about 4 years between their mastery of plural [-s] and third person singular [-s], for example (Rice, 2003; Rice & Wexler, 2001). Thus, the magnitude of the gap for children with SLI is much greater than their overall language delay would suggest.

Another line of explanation within the processing perspective to account for uneven profiles is the surface hypothesis that claims children with SLI find less phonetically salient morphemes more difficult to acquire because these children have perceptual in addition to processing limitations (Leonard et al., 1992; Leonard & Eyer, 1996; Leonard et al., 1997). On this hypothesis, grammatical morphology would pose difficulties in many languages because these morphemes are often affixes of brief phonetic duration, for instance, English tense morphemes like [-ed] and [-s] are most often pronounced with single consonantal, nonsyllabic allomorphs. Leonard (1998) proposes that the surface hypothesis, together with the generalized slowing hypothesis, could potentially explain some uneven developmental profiles: the morphemes that show extremely protracted acquisition in affected children, like tense morphemes in English, would be those that are less phonetically salient. To test whether the processing or representational account best explains uneven linguistic profiles, morphemes that are equivalent in saliency but different in terms of clinical marker status need to be examined.

In this article, results from two studies examining the acquisition of grammatical morphemes in bilingual children with SLI and their monolingual peers are discussed in terms of their pertinence to the predictions of representational and processing accounts.¹ The validity of each account is assessed by comparisons between bilinguals and monolinguals as well as between different grammatical morpheme types.

TENSE MARKING MORPHEMES IN BILINGUALS AND MONOLINGUALS WITH SLI

Prior research has shown that tense marking morphology is acquired very late by English-speaking children with SLI, posing more severe difficulties than morphology that does not mark tense (nontense). Specifically, English-speaking children with SLI from the ages of 5 to 8 years show lower accuracy in language production with tense marking morphemes as a group than nontense marking morphemes, whereas their unaffected age peers have a small or nonexistent gap in their accuracy with tense versus nontense morphology (Rice, 2003; Rice & Wexler 2001; Rice, Wexler, & Hershberger, 1998). French-speaking monolingual children also display this uneven profile with tense marking versus nontense marking morphemes, as well as differences with unaffected age peers regarding tense marking morphemes (Jakubowicz & Nash, 2001; Paradis & Crago, 2001; 2004). Because tense and nontense marking morphemes display an uneven linguistic profile in

both French and English SLI, this makes them appropriate linguistic structures for bilingual/monolingual comparisons.

The two theoretical perspectives contrast in their predictions for this uneven linguistic profile in bilinguals with SLI. The processing account would predict bilinguals with SLI to lag behind monolinguals with SLI in their accuracy with both tense and nontense morphemes in each language because they have reduced exposure to each language, and thus, should be less advanced linguistically across the board. The processing account would also predict that any uneven profile between tense and nontense grammatical morphemes displayed by children with SLI should be explainable by differences in perceptual salience. Put differently, if a tense and a nontense grammatical morpheme are homophonous, such as third person singular [-s] and plural [-s], then there should be no difference in children's accuracy with them because they are both equally (non)salient. The representational account makes different predictions. First, there would be no reason to predict that bilinguals with SLI would be delayed compared to monolingual age peers with SLI in their accuracy with tense morphemes because the source of the problem with these morphemes is internal to the linguistic system. Second, the representational account would predict that both bilingual and monolingual children with SLI would perform worse than their age-matched TD peers for their accuracy with tense morphemes, but not necessarily for nontense morphemes because the latter are not disrupted structures/clinical markers. Third and finally, the representational account would predict that both bilingual and monolingual children with SLI would be less accurate with tense than nontense morphemes because of the formers' status as clinical markers, and that extralinguistic factors like perceptual salience would not play a role in determining this pattern.

Paradis, Crago, Genesee, and Rice (2000, 2003) sought to determine whether bilingual children with SLI were delayed compared to monolingual age peers with SLI in each language in their acquisition of grammatical morphology, and furthermore, whether they displayed the same linguistic profiles for grammatical morphology as their monolingual peers acquiring each language. As such, this research is relevant to the theoretical debate being considered here.

Paradis et al. (2000, 2003) examined five groups of 7-year-old children altogether: (a) French–English simultaneous bilinguals with SLI ($N = 8$), (b) French-speaking monolinguals with SLI ($N = 10$), (c) French-speaking TD monolinguals ($N = 10$), (d) English-speaking monolinguals with SLI ($N = 21$), and (e) English-speaking TD monolinguals ($N = 21$). Data from the children was in the form of spontaneous language samples. The language sample transcripts were coded for use in obligatory context of grammatical morphemes marking the feature tense, and grammatical morphemes that mark other, nontense features. The morphemes coded as part of the tense and nontense groups in English are given in Example 1 below, and those as part of the tense and nontense groups in French are given in Example 2. The percentage of correct use in obligatory context was calculated for each target morpheme as the number of target morphemes used out of the number of obligatory contexts for that morpheme. Composite tense and nontense scores were calculated as the average of the mean percentage of use in obligatory context for each tense and nontense morpheme.

1. a. English tense: third person singular [-s], “he walks”
b. English tense: past [-ed], “he walked”
c. English tense: past irregular, “he ran” (run)
d. English tense: BE copula, “he is happy”
e. English tense: BE auxiliary, “he is walking”
f. English nontense: progressive [-ing], “he is walking”
g. English nontense: prepositions [in/on], “he is in the house”
h. English nontense: plural [-s], “the books on the table”
2. a. French tense: present indicative [verb stem], *elle marche* “she walks/is walking”
b. French tense: past auxiliary [avoir/être], *elle a marché* “she walked”
c. French tense: future auxiliary [aller], *elle va marcher* “she is going to walk”
d. French tense: copula [être], *elle est contente*, “she is happy”
e. French nontense: prepositions [à/de], *elle va à la maison* “she is going to the house”
f. French nontense: determiners [articles, possessives], *la fille/mon papier* “the girl/my paper”

Our analyses in Paradis et al. (2000) showed first that whereas the TD monolinguals had scores at ceiling in both languages for both tense and nontense morphemes, the monolingual and bilingual children with SLI did not. In particular, the children with SLI had lower composite scores for tense. This result confirms predictions from both the processing and representational accounts of SLI that affected children would perform more poorly than their unaffected age peers with grammatical morphology. However, the processing and representational accounts contrast in their predictions regarding whether bilinguals with SLI would lag behind monolinguals with SLI. Paradis et al. (2003) found no significant differences between the bilingual and monolingual SLI groups for the production of tense and nontense morphemes in either language. Another contrasting prediction of the theoretical accounts concerns whether children with SLI would show uneven profiles with tense and nontense morphemes. The comparisons across morpheme types conducted by Paradis et al. (2003) revealed that for all groups of children with SLI, and in each language for the bilinguals, children were less accurate with tense than nontense morphemes. Therefore, these bilinguals with SLI were not lagging behind their monolingual counterparts in either language in their production of grammatical morphology in general, and displayed clear uneven linguistic profiles. Both these results are more consistent with the predictions of a representational than processing account of SLI.

The processing account under consideration could be consistent with these findings on the grounds that all the tense morphology examined is nonsalient perceptually, and therefore likely to cause extra difficulties for children with SLI. However, not all the tense morphemes studied as part of Paradis et al. (2000, 2003) are equally nonsalient. The auxiliary verbs in French for the past and future are syllabic (C)V_s, and thus are more salient phonetically than the nonsyllabic consonantal suffixes in English. However, the monolingual and bilingual children with SLI scored 83.4 and 84.9% correct with past [-ed] in English, respectively, and 82.8 and 80.2% with the past auxiliary verbs *avoir/être* in French, respectively. Thus, the more syllabic quality of the French morpheme was not conferring

advantages on the children's performance in French. Furthermore, the pattern of greater accuracy with nontense versus tense morphemes was apparent even when individual morphemes were homophonous in their allomorphy, and consequently, equally nonsalient. For example, both monolingual and bilingual children with SLI scored higher for plural [-s] in English (96.6 and 92.5%, respectively) than for third person singular [-s] in English (86.5 and 72.7%, respectively).

OBJECT PRONOUNS AND ARTICLES IN BILINGUALS AND MONOLINGUALS WITH SLI

Paradis, Crago, and Genesee (2005/2006) conducted further comparisons of morphological acquisition by monolinguals and bilinguals with SLI, and built on the findings in Paradis et al. (2000, 2003) in the following ways. First, in this study, the target structure examined, direct object pronouns, is noted to be difficult to acquire for impaired learners in French, whereas the semantic-pragmatic counterpart in English does not present difficulty for impaired learners. Thus, the data from Paradis et al. (2005/2006) offered a more stringent test of the extent to which bilingual acquisition patterns parallel those of monolinguals because uneven patterns across a bilingual's two languages would be expected for object pronominals. Second, Paradis et al. (2005/2006) included a language-matched TD bilingual comparison group. The rationale behind including this group was that if monolingual-bilingual differences were found in acquisition patterns, it would be important to know whether these were likely the result of impaired bilingual development in particular, or bilingual development in general. Younger, language-matched TD bilingual children were chosen over age-matched TD bilingual children because the former would show developmental processes, that is, they would not be at ceiling in their accuracy with the target morphemes. Third, the Paradis et al. (2005/2006) study was designed to directly compare children's use of homophonous morphemes, only one of which could be considered a clinical marker in SLI. Although such a comparison was possible post hoc for some morphemes in Paradis et al. (2003), it was not part of the main design. Like Paradis et al. (2000, 2003), Paradis et al. (2005/2006) also provides data relevant to the claims of the processing and representational accounts of SLI.

Direct object pronouns have a different morphosyntactic status in French and English (Cardinaletti & Starke, 1999; Kayne, 1975). French direct object pronouns are clitics, meaning they are akin to bound morphemes and attach to a verbal host, in contrast with English direct object pronouns, which are freestanding morphemes like lexical noun phrases. Furthermore, French direct object clitics appear preverbally, even though the canonical direct object position in French is postverbal, as shown in Examples 3a to 3c. In English, both lexical and pronominal direct objects appear in the same postverbal position, shown in Examples 3d and 3e. Although there is no consensus on the linguistic theoretic analysis of object clitics in French, all accounts put forward would support the contention that these structures are more morphosyntactically complex than English direct object pronouns (e.g., Belletti, 1999; Cardinaletti & Starke, 1999; Jakubowicz, Nash, Rigaut, & Gérard, 1998).

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| 3. a. <i>Isabelle range <u>un</u> jouet.</i> | “Isabelle is putting away a toy” |
| b. <i>Isabelle <u>le</u> range.</i> | “Isabelle is putting it away” |
| c. <i>*Isabelle range <u>le</u>.</i> | “Isabelle is putting it away” |
| d. <i>Isabelle is petting <u>the</u> cat.</i> | cf. “ <i>Isabelle caresse le chat</i> ” |
| e. <i>Isabelle is petting <u>him</u>.</i> | cf. “ <i>Isabelle le caresse</i> ” |

Definite articles in French are also clitics and are homophonous with the third person direct object clitics. The masculine singular, feminine singular, and plural forms are *le/la/les*, respectively, for both clitics and articles. Furthermore, both definite articles and direct object clitics possess similar morphophonological properties that render both sets of morphemes potentially nonsalient for learners. Because stress is assigned phrase or word finally in French, preverbal and prenominal clitics are always unstressed (Granfeldt & Schlyter, 2004; Kayne, 1975). In addition, before vowel initial verbs and nouns, the clitics *le/la* lose their vowel and resyllabify with the following verb or noun, shown in Examples 4a to 4e. The plural clitic *les*, undergoes a process of liaison, where the final orthographic “s” that is silent otherwise is pronounced as [z] and becomes a syllable onset for the following noun or verb if they are vowel-initial. The presence of liaison for verbs can be seen by comparing Examples 4f and 4g. The processes of elision, liaison, and resyllabification could render both direct object clitics and articles opaque in the input to learners, and consequently, difficult to parse. In sum, on grounds of morphosyntactic complexity, direct object clitics, but not definite articles or English object pronouns, would be considered difficult structures for learners; whereas, on the grounds of perceptual accessibility in the input, both direct object clitics and articles should be difficult structures to acquire, but not English object pronouns.

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| 4. a. <i>Alexandre <u>le</u> voit</i> [lɔ.vwa] | “Alexandre sees him/it” |
| b. <i>Alexandre <u>l</u> aime</i> [lɛm] | “Alexandre loves him/it” |
| c. <i>*Alexandre <u>le</u> aime</i> [lɔ.ɛm] | “Alexandre loves him/it” |
| d. <i><u>la</u> chambre de ma fille</i> | “my daughter’s room” |
| e. <i><u>l</u> enseignante de ma fille</i> | “my daughter’s teacher” |
| f. <i>Alexandre <u>les</u> voit</i> [lɛ.vwa] | “Alexandre sees them” |
| g. <i>Alexandre <u>les</u> aime</i> [lɛ.zɛm] | “Alexandre loves them” |

Research on the monolingual acquisition of object clitics in French suggests that they are a very difficult structure to acquire both for TD and impaired learners. French-speaking TD children begin to produce object clitics in their speech later than other pronominals, roughly between the ages of 2 years, 6 months (2;6) and 3;0, and variably omit object clitics in their speech until the age of 4;0 or older (Chillier et al., 2001; Clark, 1985; Hamann, Rizzi, & Frauenfelder, 1996; Jakubowicz & Rigaut, 2000). French-speaking children with SLI exhibit even more profound difficulties with producing direct object clitics that extend into their school years and make them quite distinct from unaffected age peers (Chillier et al., 2001; Grüter, 2005; Hamann, 2004; Jakubowicz et al., 1998; Paradis, 2004). Conversely, definite articles are not difficult for French-speaking children with SLI to acquire (Jakubowicz et al., 1998; Paradis & Crago, 2004). The morphosyntactic complexity of direct object clitics and their protracted development in

French-speaking children with SLI has prompted researchers to hypothesize that these forms are clinical markers of SLI in French, because they pose similar computational challenges as tense morphology for impaired grammars (Jakubowicz & Nash, 2001; Wexler, 2003). In contrast to tense morphology in English and French, however, difficulties with object pronominals are specific to French SLI only.

As with the acquisition of tense and nontense morphemes, the processing and representational accounts make contrasting predictions regarding bilinguals and monolinguals with SLI in their acquisition patterns and rates with object pronouns and definite articles. Although both accounts would predict French direct object clitics to be a difficult target structure to acquire for children affected with SLI, the processing account would predict bilingual French speakers with SLI to have more pronounced difficulties with these clitics than monolingual French speakers with SLI because of their decelerated information processing abilities. The representational account would not predict such bilingual–monolingual differences in the development of object clitics. In addition, the processing account would predict that children with SLI learning French should have difficulties with definite articles as well as object clitics due to their shared surface characteristics, whereas the representational account would predict more pronounced difficulties with object clitics than articles because of the formers' greater morphosyntactic complexity and consequent status as clinical marker.

The data from Paradis et al. (2005/2006) provides evidence bearing on these predictions. In this study we examined spontaneous speech samples from the following groups of children, most of whom were the same as those in Paradis et al. (2000, 2003): (a) bilingual 7-year-olds with SLI, (b) monolingual French-speaking 7-year-olds with SLI, (c) monolingual TD French-speaking 7-year-olds, and (d) bilingual TD 3-year-olds, matched on the basis of mean length of utterance to the bilinguals with SLI. The children's transcripts were coded for the use of direct object pronouns in English and direct object clitics in French in pronominalization contexts, and for the use of definite articles in French in obligatory contexts. Therefore, the percentage of use of clitic/pronoun objects was calculated as the number of clitics/pronouns out of the total of clitics/pronouns, null objects, and lexical objects used in contexts where pronominalization would be felicitous pragmatically. The percentage of use of definite articles in obligatory context was calculated as the number of definite articles used out of the total of definite articles, null articles, or inappropriate determiners used in context.

Looking at clitic use in French first, we found that TD monolinguals were at ceiling, whereas the monolinguals and bilinguals with SLI, and the TD bilingual 3-year-olds had not yet mastered this target structure, the maximum score being 77% (Paradis et al., 2005/2006). This result is consistent with the prediction of both theoretical accounts that French-speaking children with SLI would have difficulties with object clitics, and show delay in their acquisition. Furthermore, we reported that both bilingual groups produced object pronouns in English significantly more often in context than object clitics in French; in fact, their scores for English were at ceiling (Paradis et al., 2005/2006). This finding confirms that the difficulty of direct object pronominals is specific to the morpheme marking this semantic–pragmatic construct in French, and not to object pronominalization as a semantic–pragmatic construct in general.

Turning to results that differentiate the theories, we found that the bilingual children with SLI used object clitics to the same extent in context as the younger TD bilinguals, but significantly more often than the monolingual children with SLI (Paradis et al., 2005/2006). Even though the bilingual children were not equivalent to the monolingual children with SLI, crucially, they were not worse. In other words, their superior performance with these difficult target morphemes is evidence that they were not lagging behind monolinguals because of the burden of having to learn two languages at once. This result is more consistent with the predictions of the representational than processing account of SLI. In addition, our analyses comparing French clitics and articles in this study showed that the predictions of the representational account were also borne out over those of the processing account. We found that for both bilingual groups and the monolinguals with SLI, production of articles in context was significantly higher than production of their homophonous counterparts, direct object clitics, in context. Finally, both bilingual groups showed the same inter- and intralinguistic patterns with object clitics, pronouns, and articles, signaling that impaired bilingual development does not result in deviant patterns from TD bilingual development.

THEORETICAL IMPLICATIONS

Paradis et al. (2000, 2003, 2005/2006) found that bilinguals with SLI could acquire grammatical morphology with the same rates and patterns as monolinguals with SLI. For example, nontense morphemes were acquired before tense morphemes, and articles before object clitics by both groups, and levels of accuracy with each morpheme group or individual morpheme examined were similar for affected children the same age, whether they were bilingual or monolingual, or in the case of object clitics, accuracy was superior for the bilinguals. Future research is needed to understand whether these parallels extend into other linguistic domains, such as the lexicon, and whether bilingual/monolingual similarities among affected children are also apparent at younger ages.

Regarding the theoretical debate on the nature of SLI, these findings are more consistent with the predictions of the representational than the processing account regarding acquisition patterns with grammatical morphology. Affected bilinguals were not slower than monolinguals to acquire the target structures in spite of having reduced input to each language. Both bilinguals and monolinguals with SLI displayed the uneven profile or clinical marker pattern of development with tense morphology in both languages, and with object clitics in French. This uneven profile is not explainable by differential perceptual salience of the morphemes. In sum, the implacability of the clinical marker pattern in the face of diversity in acquisition context and input factors strongly suggests that what makes a morpheme difficult to acquire is internal to the linguistic domain. Thus, bilingual children, who embody such diversity, can provide valuable insights regarding theories conceived for monolingual populations.

APPLIED IMPLICATIONS

The research I have conducted with my colleagues suggests that children affected with a language-learning disability can be raised bilingual without serious detriment to their grammatical development. These results call into question the

common sense notion that bilingualism would exacerbate the linguistic difficulties already exhibited by children with SLI. Therefore, professional practices such as advising parents to give up speaking one of the two languages to a child with SLI do not find empirical support from these studies. However, it is important to keep in mind that the children in these studies resided in either the Montréal area or along the border between the provinces of Québec and Ontario. Thus, they had the benefit of growing up from birth with full bilingualism in the home, extensive bilingualism in the community and at school, in a country where French and English are official languages. As such, they had advantages in supporting their bilingualism that other bilingual children might not have.

Most bilingual children in Canada, the United States, and Western Europe are sequential bilinguals who speak their first language (L1) at home and learn their second language (L2) through schooling. Among sequential bilinguals, two types can be distinguished: those whose L1 is a minority language and who learn the majority L2 at school and in the community outside their homes, and those whose L1 is the majority language and who learn their L2 through elective, immersion programs at school (Genesee et al., 2004). A typical example of the former type would be immigrant children. For these children, bilingualism is typically a necessity, not a choice, because their parents often have limited or no fluency in the majority L2. Thus, for many immigrant children who present with symptoms of a language learning disability, advice such as switching to one language would not be applicable, regardless of whether it would be the best practice or not. However, many other questions might arise from this situation in the mind of a clinician. For example, would a sequential bilingual child show the same acquisition patterns in the L2 as monolinguals with SLI who speak that language? Would they be expected to “catch up” to their monolingual peers with SLI in the target language? Elsewhere, we examined the grammatical development of two Chinese L1–English L2 children with SLI over time, compared with that of Chinese L1 TD children learning English, as well as English monolinguals with SLI (Paradis, Golberg, & Crago, 2005; Paradis, 2007). These two case studies suggest that the nontense before tense morpheme pattern holds in English SLI, even when English is the L2. In addition, these two children achieved abilities with the use of tense marking morphemes similar to those of monolingual children with SLI the same age after just 3 years of exposure, indicating that sequential bilinguals with SLI can catch up to their monolingual peers with SLI.

The second group of sequential bilinguals raises more issues regarding educational and linguistic choices for children with language learning disabilities. Consider the case of French immersion where English-speaking children receive their instruction at school through their L2 alongside other English-speaking classmates. It would be important for parents, teachers, and educational policy makers to understand if a child with language learning disabilities would be an appropriate candidate for such a program. Bruck (1982) examined the scholastic outcomes of children with language learning disabilities in French immersion and found they did not perform well, but performed at a similar level as counterparts with the same disability in English-only schools. However, Bruck’s (1982) study did not investigate the children’s oral linguistic abilities in their French L2. Crago, Bélanger, and Paradis (2005) presented preliminary data from an ongoing study examining the oral French skills of English-speaking children with SLI in French immersion

programs in Montréal. Our results showed that the definite article before object clitic pattern obtained in French L2 with SLI, as it does in French L1 with SLI. Conversely, these children were acquiring French very slowly, possibly more slowly than the immigrant Chinese L1 children learning English we mentioned above, which invites the question of whether the amount of input in French immersion is sufficient for children with SLI to become bilingual in a reasonable amount of time. Much more research with larger sample sizes is needed to better understand the consequences of both types of sequential bilingualism for children with SLI.

CONCLUSION

The research discussed in this article reveals both vulnerable and resistant properties of language acquisition under conditions of impairment. On the one hand, impaired acquisition is vulnerable in the face of certain grammatical features, and selective deficits in affected children's performance with the morphemes marking these features can be quite pronounced. On the other hand, impaired language acquisition is resistant in the face of dual language learning from birth. The vulnerable properties of children's acquisition under conditions of impairment should not override recognition of the resistant properties their acquisition capacity also exhibits.

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NOTES

1. Even though the predictions being tested come from particular accounts within the broad categories of cognitive–perceptual processing approaches and linguistic representational approaches, namely, the generalized slowing hypothesis, surface hypothesis, and disruption within delay, the terms “processing account” and “representational account” are used for the sake of brevity.

REFERENCES

- Bedore, L., & Leonard, L. (1998). Specific language impairment and grammatical morphology: A discriminant function analysis. *Journal of Speech, Language and Hearing Research, 41*, 1185–1192.
- Belletti, A. (1999). Italian/romance clitics: Structure and derivation. In H. van Reimsdijk (Ed.), *Clitics in the languages of Europe* (pp. 543–579). Berlin: Mouton de Gruyter.

- Bialystok, E. (2001). *Bilingualism in development: Language, literacy and cognition*. Cambridge: Cambridge University Press.
- Brown, R. (1973). *A first language: The early stages*. Cambridge, MA: Harvard University Press.
- Bruck, M. (1982). Language impaired children's performance in an additive bilingual education program. *Applied Psycholinguistics*, 3, 45–60.
- Cardinaletti, A., & Starke, M. (1999). The typology of structural deficiency: A case study of the three classes of pronouns. In H. van Riemsdijk (Ed.), *Clitics in the languages of Europe*, (pp.145–290). Berlin: Mouton de Gruyter.
- Chillier, L., Arabatzi, M., Baranzini, L., Cronel-Ohayon, S., Deonna, T., Dubé, S., et al. (2001). *The acquisition of French pronouns in normal children and in children with specific language impairment*. Paper presented at the Early Lexicon Acquisition Conference, Lyon, France.
- Clark, E. (1985). The acquisition of romance, with special reference to French. In D. Slobin, (Ed.), *The crosslinguistic study of language acquisition: Vol. 1. The data*. Hillsdale, NJ: Erlbaum.
- Clahsen, H., Bartke, S., & Göllner, S. (1997). Formal features in impaired grammars: A comparison of English and German SLI children. *Journal of Neurolinguistics*, 10, 151–171.
- Crago, M., Bélanger, C., & Paradis, J. (2005). *Object clitic acquisition by second language learners of Quebec French: Comparisons of children with typical development and with SLI*. Paper presented at the European Child Language Impairment Workshop (EUCLIDES), Royamaont, France.
- de Villiers, J., & de Villiers, P. (1973). A cross-sectional study of the acquisition of grammatical morphemes in child speech. *Journal of Psycholinguistic Research*, 2, 267–278.
- Ellis Weismer, S., Evans, J., & Hesketh, L. (1999). An examination of verbal working memory capacity in children with SLI. *Journal of Speech, Language and Hearing Research*, 42, 1249–1260.
- Genesee, F., Paradis, J., & Crago, M. (2004). *Dual language development and disorders: A handbook on bilingualism and second language learning*. Baltimore, MD: Brookes.
- Granfeldt, J., & Schlyter, S. (2004). Cliticisation in the acquisition of French as L1 and L2. In P. Prévost & J. Paradis (Eds.), *The acquisition of French in different contexts: Focus on functional categories* (pp. 333–370). Amsterdam: John Benjamins.
- Grüter, T. (2005). Teasing apart L2 and SLI. *Applied Psycholinguistics*, 26, 363–391.
- Hakuta, K. (1986). *Mirror of language: The debate on bilingualism*. New York: Basic Books.
- Hamann, C. (2004). Comparing the development of the nominal and the verbal functional domain in French language impairment. In P. Prévost & J. Paradis (Eds.), *The acquisition of French in different contexts: Focus on functional categories* (pp. 109–146). Amsterdam: John Benjamins.
- Hamann, C., Rizzi, L., & Frauenfelder, U. (1996). On the acquisition of subject and object clitics in French. In H. Clahsen (Ed.), *Generative perspectives on language acquisition* (pp. 309–334). Amsterdam: John Benjamins.
- Jakubowicz, C., & Nash, L. (2001). Functional categories and syntactic operations in (Ab)normal language acquisition. *Brain and Language*, 77, 321–339.
- Jakubowicz, C., Nash, L., Rigaut, C., & Gérard, Ch.-L. (1998). Determiners and clitic pronouns in French-speaking children with SLI. *Language Acquisition*, 7, 113–160.
- Jakubowicz, C., & Rigaut, C. (2000). L'acquisition des clitiques nominatifs et des clitiques objets en français [The acquisition of nominative and object clitics in French]. *The Canadian Journal of Linguistics*, 45, 119–158.
- Juárez, M. (1983). Assessment and treatment of minority-language-handicapped children: The role of the monolingual speech-language pathologist. *Topics in Language Disorders*, 3, 57–65.
- Kayne, R. (1975). *French syntax*. Cambridge, MA: MIT Press.
- Kohnert, K., Yim, D., Nett, K., Kan, P.-F., & Duran, L. (2005). Intervention with linguistically diverse preschool children: A focus on developing home language(s). *Language, Speech and Hearing Services in Schools*, 36, 251–263.
- Kohnert, K., & Windsor, J. (2004). The search for common ground: Part II. Nonlinguistic performance by linguistically diverse learners. *Journal of Speech, Language and Hearing Research*, 47, 891–903.
- Leonard, L. (1998). *Children with specific language impairment*. Cambridge, MA: MIT Press.

- Leonard, L., Bortolini, U., Caselli, M.-C., McGregor, K., & Sabbadini, L. (1992). Morphological deficits in children with specific language impairment: The status of features in the underlying grammar. *Language Acquisition*, 2, 151–179.
- Leonard, L., & Eyer, J. (1996). Deficits of grammatical morphology in children with specific language impairment and their implications for notions of bootstrapping. In J.-L. Morgan & K. Demuth (Eds.), *Signal to syntax* (pp. 233–248). Mahwah, NJ: Erlbaum.
- Leonard, L., Eyer, J., Bedore, L., & Grela, B. (1997). Three accounts of the grammatical morpheme difficulties of English-speaking children with specific language impairment. *Journal of Speech, Language and Hearing Research*, 40, 741–753.
- Miller, C., Kail, R., Leonard, L., & Tomblin, B. (2001). Speed of processing in children with specific language impairment. *Journal of Speech, Language and Hearing Research*, 44, 416–433.
- Paradis, J. (2004). On the relevance of specific language impairment to understanding the role of transfer in second language acquisition. *Applied Psycholinguistics*, 25, 67–82.
- Paradis, J. (2007). Tense as a clinical marker in child L2 English: Comparing English language learners with and without SLI. In E. Gavrusseva & B. Haznedar (Eds.), *Current trends in child second language acquisition: A generative perspective*. Amsterdam: John Benjamins.
- Paradis, J., & Crago, M. (2001). The morphosyntax of specific language impairment in French: Evidence for an Extended Optional Default account. *Language Acquisition*, 9, 269–300.
- Paradis, J., & Crago, M. (2004). Comparing L2 and SLI grammars in French: Focus on DP. In P. Prévost & J. Paradis (Eds.), *The acquisition of French in different contexts: Focus on functional categories* (pp. 89–108). Amsterdam: John Benjamins.
- Paradis, J., Crago, M., & Genesee, F. (2005/2006). Domain-specific versus domain-general theories of the deficit in SLI: Object pronoun acquisition by French–English bilingual children. *Language Acquisition*, 13/14, 33–62.
- Paradis, J., Crago, M., Genesee, F., & Rice, M. (2000). *Dual language impairment: Evidence from French–English bilingual children with SLI*. Paper presented at the Boston University Conference on Language Development, Boston.
- Paradis, J., Crago, M., Genesee, F., & Rice, M. (2003). Bilingual children with specific language impairment: How do they compare with their monolingual peers? *Journal of Speech, Language and Hearing Research*, 46, 1–15.
- Paradis, J., Goldberg, H., & Crago, M. (2005). *Distinguishing between typically-developing L2 children and L2 children with SLI: Verb diversity and tense morphology over time*. Poster presented at the 5th International Symposium on Bilingualism, Barcelona.
- Rice, M. (2003). A unified model of specific and general language delay: Grammatical tense as a clinical marker of unexpected variation. In Y. Levy & J. Schaeffer (Eds.), *Language competence across populations: Towards a definition of specific language impairment* (pp. 63–94). Mahwah, NJ: Erlbaum.
- Rice, M. (2004). Language growth of children with SLI and unaffected children: Timing mechanisms and linguistic distinctions. In A. Brugos, L. Micciulla, & C. Smith (Eds.), *BUCLD 28 Proceedings*. Somerville, MA: Cascadilla Press.
- Rice, M., & Wexler, K. (1996). Toward tense as a clinical marker of specific language impairment in English-speaking children. *Journal of Speech, Language and Hearing Research*, 39, 1236–1257.
- Rice, M., & Wexler, K. (2001). *Test of Early Grammatical Impairment*. New York: The Psychological Corporation.
- Rice, M., Wexler, K., & Hershberger, S. (1998). Tense over time: The longitudinal course of tense acquisition in children with specific language impairment. *Journal of Speech, Language and Hearing Research*, 41, 1412–1431.
- Roseberry-McKibbin, C. (1995). Distinguishing language differences. *Multicultural Education*, 4, 12–16.
- Van Der Lely, H. (2003). Do heterogenous deficits require heterogeneous theories? SLI subgroups and the RDDR hypothesis. In Y. Levy & J. Schaeffer (Eds.), *Language competence across populations: Towards a definition of specific language impairment*. Mahwah, NJ: Erlbaum.
- Westernoff, F. (1991). The assessment of communication disorders in second language learners. *Journal of Speech–Language Pathologist Association*, 15, 73–79.
- Wexler, K. (2003). Lennenberg’s dream: Learning, normal language development, and specific language impairment. In Y. Levy & J. Schaeffer (Eds.), *Language competence across populations. Towards a definition of specific language impairment* (pp. 11–62). Mahwah, NJ: Erlbaum.