LSHSS

Clinical Forum

Grammatical Morphology in Children Learning English as a Second Language: Implications of Similarities With Specific Language Impairment

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In both Canada and the United States, preschool programs and schools welcome children from a variety of language backgrounds: Some are monolingual English-speaking, others have some proficiency in English as well as another language, and still others are virtually monolingual speakers of a language other than English. Conducting assessments of language and learning disabilities in such a multilingual setting is challenging. For the most part, assessment protocols and tools like language tests are designed for monolingual populations, and so educators, psychologists, and speech-language pathologists (SLPs) are often left with few resources with which to determine whether a bilingual child is progressing adequately in his or her language development or whether he or she may be in need of special services. For example, a child who is learning English as a second language (ESL) who seems to be below expectations in her abilities in English could be a typically

ABSTRACT: **Purpose:** This study was conducted to examine whether the expressive language characteristics of typically developing (TD) children learning English as a second language (ESL) have similarities to the characteristics of the English that is spoken by monolingual children with specific language impairment (SLI), and whether this could result in the erroneous assessment of TD English-language learners (ELLs) as language impaired.
Method: Twenty-four TD language-minority children who had been learning ESL for an average of 9.5 months participated in the study. The children's accuracy and error types in production of the following grammatical morphemes were examined in spontaneous and elicited speech: third person singular [–s], past tense [–ed], irregular past tense, BE as a copula and auxiliary verb, DO as an auxiliary verb, progressive [–ing], prepositions *in* and *on,* plural [–s], and determiners *a* and *the.* The elicitation probes were part of a recently developed standardized test for identifying language impairment, the Test of Early Grammatical Impairment (TEGI; M. Rice & K. Wexler, 2001).
Results: The ELLs' accuracy rates and error patterns with the grammatical morphemes were similar to those that have been reported for same-age monolingual children with SLI, in both spontaneous and elicited speech. In addition, the ELL's elicitation probe scores were compared to the criterion scores and group means from the sample of monolingual children used to develop the TEGI and their performance on the TEGI was in the range of the clinical population even though there is no reason to suspect that any of these children is language impaired. Both analyses point to the possibility that TD ELLs could be mistaken as language impaired.
Clinical Implications: The results provide information that can be used to set appropriate expectations of error patterns and rate of grammatical development in the early stages of ESL learning. The results also emphasize how the use of English standardized tests with nonnative English-speakers is not a good practice, and suggestions are given for points to consider when assessing ELLs.

KEY WORDS: English-language learners, bilingual children, second-language acquisition, grammatical morphology, specific language impairment

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developing (TD) second-language (L2) learner and could eventually catch up with her peers, or she might have a language-learning disability and would greatly benefit from clinical or special education services in order to achieve success in learning English. How can we tell the difference?

The difficulty teasing apart nonfluent and errorful language that is part of the normal process of L2 learning from the nonfluent and errorful language exhibited in impaired acquisition is not straightforward. Research comparing monolingual children with specific language impairment (SLI) and their L2 age mates in Swedish and in French has shown striking similarities in the kinds of errors they make in their expressive language (Crago & Paradis, 2003; Gruter, 2003; Håkansson & Nettelbladt, 1993; Paradis, 2004; Paradis & Crago, 2000, 2004). Such overlap complicates the search for markers in children's speech that effectively circumscribe the clinical from the nonclinical population in a multilingual context. For children and practitioners in multilingual settings, the problem of "mistaken identity" is a well-known hazard (e.g., Cummins, 1984, 2000; Genesee, Paradis, & Crago, 2004; Ortiz, 2001). Mistaken identity occurs when a TD L2 learner is inappropriately diagnosed as language or learning disabled and receives unnecessary services and/or is inappropriately placed in special education classes. Equally important, and possibly on the rise, is the problem of what can be called "missed identity" (Crutchley, Conti-Ramsden, & Botting, 1997; Genesee et al., 2004; Roseberry-McKibbin, 1995). Missed identity occurs when an L2 learner has a language impairment but it goes unnoticed or undiagnosed because educators and SLPs assume that the child's poor performance in oral English and in language-related academic activities is the result of his or her not being a native speaker, or because educators and SLPs adopt a "wait and see" approach in diagnosing bilingual children that may extend for years.

With respect to contexts where English is the societal language that L2 children are learning, several researchers and clinicians have advised caution in making decisions about assessment with these children, noting the risks of mistaken and missed identity and offering guidelines for dealing with assessment in multilingual settings (Genesee et al., 2004; Goldstein, 2001; Juárez, 1983; Langdon & Irvine Saenz, 1996; Roseberry-McKibbin, 1995; Schiff-Myers, 1992; Westernoff, 1991, among others). However, there has been little research that has been conducted specifically to examine the oral English of children learning ESL in terms of how it compares with the oral language of English-speaking children with SLI, in order to determine the overlap in expressive language characteristics these two groups exhibit (except see Damico, Oller, & Storey, 1983, and Restrepo & Kruth, 2000). In addition, there has been little research examining ESL children's performance in their L2 on diagnostic oral-language tests that are norm-referenced for monolingual speakers of English, in order to illustrate directly what the potential for erroneous assessment of TD ESL children as language disordered could be. Accordingly, this study examined the expressive language of TD ESL learners in order to address the following questions:

- Is the English of L2 learners similar to the English of same-age monolingual children with SLI?
- If there are similarities, could these be a cause of real cases of mistaken identity in an assessment context?

The ESL children's use of grammatical morphology in particular was examined because prior research has shown that this is an area of noted difficulty for both monolingual children with SLI and children who are English-language learners (ELLs). Grammatical morphological abilities were examined in the children's spontaneous and elicited speech as well as with respect to their performance on a recently developed standardized test for SLI in English that focuses on this aspect of language.

The population of ELLs that this study is concerned with are those who are sequential bilinguals, that is to say, those who began to learn their L2 after the foundations of their first language (L1) had been established (e.g., after $3^1/_2$ to 4 years of age). In addition, the ELLs that this study is concerned with are those from minority entholinguistic backgrounds, meaning that their L1s were not high-status and widely spoken languages in the community in which they were living at the time of study. The term "ESL children" is used throughout this article to denote children in this population who are still in the process of learning English and so have not yet achieved native speaker attainment in English. Thus, the term ESL used in this study denotes a similar population as other terms like ELL or LEP (limited English proficiency). This study is concerned with children with SLI as a comparison group for the ESL children. Because SLI is a form of language disorder where certain etiologies, such as neurological damage or hearing loss, social–emotional difficulties in the autism spectrum, or nonverbal intelligence below the normal range, have been ruled out, children with SLI are a likely candidate group for potential mistaken identity with ESL children. In other words, both groups have intact nervous and sensory systems, appear TD for their age in all respects outside of language, and have incomplete linguistic skills in the target language.

GRAMMATICAL MORPHOLOGY IN ENGLISH SLI AND AN L2

Grammatical morphology has long been noted as an area of difficulty for all child learners of English: TD L1, L1 with SLI, and L2 (Brown, 1973; Dulay & Burt, 1973, 1974; Leonard, 1998). Grammatical morphology in English includes both bound and free morphemes. Thus, verbal and nominal suffixes like past tense [-ed] in "Brendan jumped" and the plural [-s] in "Dogs are running" are grammatical morphemes, as are the verb BE in constructions like "Brendan is running," DO in "Do you want a cookie?" and the articles in "the dog" and "a dog." In traditional linguistic classification, grammatical morphemes are closed-class items that stand in opposition to open-class, content morphemes like the nouns "dog" and "cookie" and the verbs "jump," "run," and "want."

The development of verbal grammatical morphology tends to be more affected in English-speaking children with SLI than grammatical morphology in the nominal domain (Bedore & Leonard, 1998; Clahsen, Bartke, & Göllner, 1997; Leonard, Eyer, Bedore, & Grela, 1997; Oetting & Rice, 1993; Rice, 2003a, b; Rice & Wexler, 1996; Rice, Wexler, & Cleave, 1995). Rice et al. (1995) examined the following set of morphemes in English that mark tense/agreement (henceforth "tense"): third person singular [-s], "Brigitte runs past here every day"; past regular [-ed], "Brigitte jumped"; BE as an auxiliary for the progressive, "Brigitte is running"; BE as a copula, "Brigitte is fast"; and DO as an auxiliary, "Do you like to run? No, I don't." In a subsequent study, Rice and Wexler examined these tense morphemes in comparison with grammatical morphemes that do not mark tense (henceforth "nontense"): progressive verbal suffix [-ing], "Brigitte and Brendan are running"; prepositions *in* and *on*; nominal plural suffix [-s], "Rabbits run fast"; and the articles *a* and *the*. The combined results of these two studies yield the following general patterns:

- Children with SLI are significantly less accurate in production with tense than with nontense morphemes.
- Children with SLI tend to make errors of omission (dropping them) with grammatical morphemes much more often than errors of commission (applying morphemes in the wrong places, i.e., "you eats," or using the wrong morpheme, i.e. "they is" instead of "they are").
- These overall patterns are the same for spontaneous and elicited production.

The children with SLI were less accurate in producing tense-bearing morphemes not only when compared to TD children their own age, but also when compared with younger TD children matched on language level as measured by mean length of utterance (MLU) (Rice & Wexler, 1996; Rice et al., 1995; Rice, Wexler, & Hershberger, 1998). This last observation in particular prompted the claim that tense morphology could be a clinical marker of SLI in English because it is an extremely delayed or "disrupted" aspect within what is already delayed language development (Rice, 2003a, b). Rice and Wexler have developed a standardized test for identifying children with SLI that is focused on testing expressive abilities with tense morphology, the Test of Early Grammatical Impairment (TEGI; Rice & Wexler, 2001). The sample of children used for the standardization development of this test was monolingual speakers of Standard American English, and according to the examiner's manual, a panel of reviewers found that the test may be biased for L2-influenced English, with particular comments on how TD L2 children whose L1 is either Spanish or certain East Asian languages may omit these morphemes in their speech (Rice & Wexler, 2001, pp. 55–57). However, no systematic study was conducted administering the TEGI to TD L2 children in order to determine the extent of this bias or how it may be dependent on how much English exposure a child has had, and whether the child's L1 makes a difference.

Grammatical morphology in ESL children has not been examined in a way that is parallel to the research of Rice and colleagues (Rice & Wexler, 1996; Rice et al., 1995; Rice, Wexler, & Hershberger, 1998) for SLI, but the current knowledge of this aspect of ESL development points to the strong possibility of similarities with SLI, and in turn, to the possibility of the TEGI being highly biased if used with this population of children. In two seminal studies, Dulay and Burt (1973, 1974) examined accuracy in the use of 14 grammatical morphemes by more than two hundred 6- to 8-year-olds who spoke either Spanish or a Chinese language as their L1. These 14 morphemes included many of the tense and nontense morphemes that were examined in Rice and colleagues' work. Dulay and Burt found that certain nontense morphemes, like progressive [–ing] and the prepositions *in* and *on*, were used more accurately than certain tense morphemes, like third person singular [-s], suggesting parallels between ESL and SLI. However, there were some differences between Dulay and Burt's two studies in terms of accuracy rates for the morphemes, and incomplete information is given about the children's language backgrounds so it is not known how much exposure to English they received, how variable it was between individuals, and whether this might have affected the results.

Other research on grammatical morphology in ESL children consists mainly of longitudinal case studies (Gavruseva & Lardiere, 1996; Hakuta, 1978; Haznedar, 2001; Lakshmanan, 1993/1994, 1994). Taken together, these case studies reveal that ESL children make errors both of omission and commission with tense-bearing grammatical morphology such as past [-ed], third person singular [-s], and BE, and that mastery of this aspect of language varies immensely between individuals: Some children supply certain tense morphemes more than 80% of the time after just a few months of exposure to English, like the Spanish L1 child, Marta, in Lakshmanan (1993/1994, 1994); others, such as Hakuta's Japanese L1 subject, Uguisu, hardly spoke spontaneously for several months, and even after she became more voluble in English, she still made errors with third person singular [-s] and past [-ed] over the 15-month study (Hakuta, 1978). There are also individual differences in terms of which tense morphemes are acquired earlier than others. For example, the Turkish L1 boy who Haznedar studied, Erdem, was still omitting BE auxiliary after 17 months of exposure to English but had mastered the use of BE copula in less than 1 year of exposure (Haznedar, 2001). Uguisu, on the other hand, showed no difference in her acquisition of BE copula and BE auxiliary (Hakuta, 1978). One generalization that seems to hold across these children, and the groups of children in Dulay and Burt's studies, is that ESL children take a long time to be accurate with third person singular [-s] and past [-ed].

What is the role of the L1 in the L2 acquisition of grammatical morphemes? Grammatical morphemes are difficult to acquire regardless of L1, as children from diverse L1 backgrounds make errors with them in L2 English. Dulay and Burt (1973, 1974) found that the acquisition sequence of these morphemes, as inferred from relative levels of accuracy, was independent of L1 because

it was similar for both the Spanish and Chinese L1 children. Also, Dulay and Burt (1973) found little evidence of predicted transfer of specific grammatical properties, such as morpheme order, from L1 Spanish to L2 English. Thus, very little L1 influence has been found in the acquisition of this aspect of English; however, there are other forms of L1 influence that this prior research did not consider: phonology and typological characteristics. Expressing certain grammatical morphemes in English requires the ability to pronounce word-final consonants, sometimes in clusters, such as [ts] in "hats" or [kt] in [beikt] "baked." Languages like Japanese do not have word-final obstruents, singly or in clusters; thus, phonological constraints imposed by a Japanese-speaking child's L1 might interfere with his or her ability to produce obligatory morphology in English. In addition, if a child's L1 is an inflectionally rich language, like Spanish, Japanese, or Arabic, this might influence acquisition of L2 morphology in that the child may be more attentive to bound morphemes in the input than a child whose L1 has sparse bound morphology (e.g., Cantonese, Mandarin, or Vietnamese). The possible impact of these two L1 factors on children's production of grammatical morphology in ESL is examined in this study.

Erroneous Assessment of TD L2 Children as Language Impaired

Prior research on English ESL and SLI suggests the possibility of overlap in expressive language characteristics between these two groups, and as mentioned above, unlike French and Swedish, systematic comparisons of L2 and SLI language characteristics in English have not been carried out. The absence of research on ESL and SLI similarities notwithstanding, it is relevant to ask whether the presence of any similarities would have an impact in an assessment context. In this section, factors in the referral and assessment process that could lead to mistaken identity are examined, and reasons are given why a better understanding of typical ESL development and ESL–SLI overlap are relevant to preventing it from happening.

Referral in many cases is likely to be on the basis of observation of an ESL child's English abilities in the classroom by a teacher. If the teacher is not familiar with how quickly one can expect a child to acquire native-like proficiency in his or her L2, he or she may mistake protracted LEP for a language or learning disorder. Although much research has shown that it takes ELLs 5–7 years to achieve at the same level as their native-speaker peers in academic language skills (see Cummins, 2000, for review), much less research has focused on establishing when oral-English abilities reach native-speaker levels; however, available studies indicate that it could be anywhere from 2 to 5 years (Cummins, 1984, 2000; Hakuta, Goto Butler, & Witt, 2000). Therefore, if L2 children's English proficiency is not native-like within a minimum expected timeframe, say 2 years, then TD ESL children could be mistaken for language impaired. Setting realistic expectations for when ESL children achieve native-speaker proficiency could reduce the incidence of unnecessary referrals.

Unnecessary referrals can result in erroneous assessment. For example, the assessment of nonnative speakers using diagnostic tests that have been standardized with monolingual English speakers has been criticized as invalid and possibly prejudicial to ESL children, but nevertheless, is still a prevalent practice (Anderson, 1996; Klingner & Artiles, 2003). More information about the extent of prejudicial bias present when English standardized tests are used to interpret the performance of nonnative speakers might reduce the prevalence of this practice. A related factor in erroneous assessment is the use of translated English tests. When an SLP can speak the L1 of an L2 child, he or she may choose to give an informally translated version of an English language test, with the good intention of trying to obtain a more full and accurate assessment of the child's language ability. However, using translated versions of standardized tests is not a good practice because target structures indicating level of development may be different in the other language; norm-referenced criteria for score interpretation is completely invalid; and even if tests are adapted linguistically to another language, they may not be adapted in terms of culturally appropriate procedures (Anderson, 1996; Eng & O'Connor, 2000; Restrepo & Silverman, 2001). In sum, it is reasonable to believe that TD L2 children could be erroneously referred and assessed as language disordered when their L2 abilities alone are considered.

The potential for erroneous assessment could be reduced by assessing L2 children in their L1 using appropriate protocols, not translated tests. This is frequently recommended as the best practice, and research indicates that it is reliable (Eng & O'Connor, 2000; Gutiérrez-Clellen & Kreiter, 2003; Juárez, 1983; Restrepo, 1998). For example, Restrepo found that errors-per-turn-unit in spontaneous speech was a highly discriminating measure for SLI in the Spanish L1 of Spanish–English bilingual children. Even though testing in the L1 is a recommended procedure, it may not be possible in all cases. For children whose non-English language is widely spoken, like Spanish in the United States or French in Canada, the availability of bilingual SLPs and testing materials is often no difficulty. For children whose L1 is a more minority language, however, L1 assessment by a professional who speaks that language with testing tools designed for that language is often impossible. Also, tests in the L1 that are available may have been normed on a standard variety of L1, and the child may speak a different variety (Schiff-Myers, 1992). Finally, the assumption that the L1 is the child's most proficient language may not be true for some children. Some L1-minority children are in the process of losing their L1 proficiency gradually as they make more use of English in their lives at home and school. This process happens at varying rates for individuals, and various components of linguistic competence can be affected differentially (Kohnert & Bates, 2002; Restrepo & Kruth, 2000; Wong Fillmore, 1991). Thus, the phenomenon of L1 attrition might make an L2 child appear to have deficits in his or her L1 that are not due to language disorder (Schiff-Myers, 1992).

To summarize, erroneous assessment of ESL children as language impaired could occur due to factors like unrealistic expectations of rate of English development and uncritical use of English standardized tests with ESL children. Consequently, examining the L1 of an L2 child who is suspected of SLI, either through appropriate tests or parent report, is recommended to avoid problems like erroneous assessment. However, there are situations where a child's L2 abilities will form most of the basis of judgment for both referral and assessment. Given this reality, it is important for educators and SLPs to know about the language characteristics of typical ESL development in terms of how they may overlap with SLI and how they may affect performance on diagnostic language tests in English.

METHOD

Participants

The participants in this study were 24 minority-language children between the ages of 4;4 (years;months) and 7;10 (mean = 5;7) who were within their first year and a half of consistent exposure to English (*M* = 9.5 months) in either a preschool or school setting in Edmonton, a large, English-majority language city in Western Canada. Nineteen of the children were recently arrived immigrants and 5 were born in Canada. The children who were born in Canada had been exposed nearly exclusively to the minority language at home and in their family's social circle before school entry, and thus had not received any consistent exposure to English until that time. The families were recruited for the study through agencies that provide assistance to immigrants and through government-sponsored English-language training classes for adult immigrants. These 24 children are taking part in an ongoing longitudinal study, but only the results from the first round of data collection are presented in this article.

Table 1 provides the following information on each of the participants: L1 background, months of exposure to English at the time of testing (MOE), age, grade, nonverbal IQ score (as determined by the Columbia Mental Maturity Scale [CMMS; Burgemeister, Hollander Blum, & Lorge, 1972]), number of utterances in the spontaneous language sample, and MLUs in morphemes (MLU_m). Regarding language use in the home, parents were asked to indicate where their home language use fit on a five-point continuum from only the native language (*1*) to only English (*5*). All of the families indicated either *1* or *2* on this scale, so all of the children in the study had little or no exposure to English in the home. Also according to parent report, all of the children had proficiency in their L1 at the first round of data collection and had normal language development in their L1.

Table 1. Participants' first languages, months of exposure to English at the time of testing (MOE), ages (in months), level of school or preschool, nonverbal IQ (as measured by the Columbia Mental Maturity Scale [CMMS; Burgemeister, Hollander Blum, & Lorge, 1972]), number of utterances in the spontaneous language sample, and mean length of utterance in morphemes (MLU_m).

Child	*First language*	*MOE*	*Age*	*Grade*	*CMMS*	*Utterances*	*MLU_m*
GSYN	Korean	2	62	Kindergarten	113	535	3.980
MRSS	Mandarin	4	60	Kindergarten	110	399	3.474
RNDL	Spanish	5	94	1	95	294	3.043
CHRS	Romanian	5	74	1	113	509	5.220
SMNS	Spanish	6	66	Kindergarten	104	500	3.282
TNYN	Mandarin	7	77	1	131	732	4.333
DNNS	Mandarin/ Cantonese	7	54	Prekindergarten	124	463	4.881
TRRK	Arabic	8	50	Prekindergarten	97	762	2.217
CNDX	Mandarin	8	81	2	123	554	3.930
DVDC	Spanish	8	75	Kindergarten	106	522	4.288
RMLM	Japanese	9	51	Prekindergarten	133	605	4.934
DNNC	Mandarin	9	64	Kindergarten	128	829	3.248
YSSF	Arabic	9	59	Kindergarten	105	195	4.146
BNFS	Dari	10	73	Kindergarten	101	871	3.497
BRND	Spanish	10	66	Kindergarten	105	568	2.853
FLPP	Spanish	10	68	Kindergarten	118	754	4.704
THRJ	Farsi	11	50	Kindergarten	111	430	2.987
LLKC	Arabic	11	58	Prekindergarten	94	495	3.224
SHHN	Farsi	12	78	1	115	557	3.861
LGKR	Ukrainian	13	79	1	108	597	5.414
DNLN	Cantonese	14	62	Kindergarten	113	558	3.233
SBST	Spanish	15	61	Kindergarten	97	322	4.334
RNLL	Cantonese	16	56	Prekindergarten	96	290	2.681
JNNH	Mandarin	18	71	1	103	260	3.059
Mean		9.5	66.21		110.13		3.784
SD		3.9	11.14		11.47		0.853
Range		2–18	50–94		94–133	195–871	2.217–5.414

Each child had a nonverbal IQ in the normal range, as determined by the CMMS (Burgemeister, Hollander Blum, & Lorge, 1972), which was administered along with the language tasks.

Children whose first language is not English are not rare in Edmonton, as the city has approximately 165,000 immigrants out of a total population of 968,000 (Citizenship and Immigration Canada, 2002). In 2003, the two main school boards reported having approximately 4,800 children identified as "ESL," which means that 4,800 children were within the first 3 years of English schooling in Edmonton, because the identification is no longer applied after that time. In spite of the size of the ESL population, the Edmonton Public School Board provides very little in the way of specialized programs for ESL children. There are no special ESL classes, and only a few schools have a "pull-out" system where numbers warrant, which means that ESL children receive a few hours of individualized instruction each week, although this is often provided by a teacher's aide who has no training in teaching ESL. The Edmonton Catholic School Board has more specialized programs and trained instructors for ESL children, but still the most common form of instruction is the pull-out system. Thus, generally speaking, ESL children in Edmonton are simply mainstreamed in elementary school. There is a possibility that the results reported in this study might be different for ESL children attending schools with more support for their language-learning needs.

Procedures

As mentioned above, the children are participating in an ongoing study where data collection takes place every 6 months. The children are visited in their homes two to three times within the space of 2 weeks at each 6-month interval and they participate in several tasks, only some of which will be reported here. The first round of visits to the homes included an interview with the parents, often with an interpreter present, part of which contained questions about the child's and parents' language background as well as language use in the home. Relevant information from this interview is reported in the Participants section and in Table 1. The CMMS (Burgemeister, Hollander Blum, & Lorge, 1972) was administered on the first visit as well, and scores are also provided in Table 1. As noted above, the phonological influence of an L1 may constrain an L2 learner's ability to pronounce some of the target grammatical morphemes that were investigated in this study because they consist of word-final consonants. In order to control for L1 phonological influence, all children were administered a phonological probe from the TEGI (Rice & Wexler, 2001). The probe requires children to either name or repeat words with /s/, /t/, /z/, and /d/ in final position. Children pass the probe if they produce these sounds or make systematic and recognizable substitutions for them. All 24 children passed the phonological probe.

Spontaneous speech. The children were given a semi-structured interview within the context of a 45-min free-play session with an English-native-speaker research assistant that was videotaped for later transcription. The interview was designed to elicit some discussion of present habitual, past, and future events by the child, and thus provide identifiable discourse contexts for the use of the target grammatical morphemes marking tense (see Appendix). The interview questions took approximately half or two thirds of the 45-min session. The videotapes of the play sessions were transcribed according to the conventions of the CHAT system (MacWhinney, 2000). MLU_m was determined for each of the children from the first 100 utterances of the transcripts, using the *mor* and *mlu* programs in CLAN (MacWhinney, 2000). The transcripts were then coded for the use in obligatory context of the following target morphemes: (a) tense group: TPS (third person singular –s), PASTREG (past tense –ed), PASTIRREG (irregular past tense forms like *run/ran*), BE (BE as an auxiliary or BE as the copula), and DO (DO as an auxiliary verb); (b) nontense group: PROG (–ing for progressive aspect), PREP (prepositions *in* and *on*), PLU (plural –s), and DET (articles *the* and *a*). The copula and auxiliary BE were combined to facilitate comparison with the TEGI probes. Obligatory context was determined either structurally, within the sentence itself, or by expectations based on discourse context, or both. In brief, obligatory context for each morpheme was operationalized as follows:

- TPS = A verb in a present habitual context with a third person subject should have an [–s].
- PASTREG = A regular verb denoting a past temporal context should have [-ed].
- PASTIRREG = An irregular verb denoting a past temporal context should be in the irregular past form.
- BE = A context for the copula (predicate following) or a context for the auxiliary (main verb in progressive following) should have a BE form.
- DO = A negative or interrogative sentence with a simple main verb should have a DO form.
- PROG = A nonstative verb denoting progressive aspect (e.g., durative activity) should have [-ing].
- PREP = A locative phrase describing the spatial locations of *on* or *in* for an object should have the appropriate preposition of location.
- PLU = A count noun referring to more than one exemplar should have an [-s].
- DET = A noun in a context where bare nouns cannot be used or where posessive determiners would be infelicitous should have an article determiner.

Failure to use a target morpheme in each obligatory context was coded as an error of either omission or commission. As mentioned above, omission errors are simply cases where no morpheme is used; for example, an absent auxiliary verb BE or a bare noun with no article, as illustrated in the sample excerpts (1a) to (1c). In contrast, commission errors occur when an incorrect or misplaced form of a morpheme is used, and some examples are given in excerpts (2a) to (2c). Ten percent of the corpus was independently transcribed and coded by a different research assistant and interrater agreement rates were calculated by comparing this assistant's versions with the originals and

determining the percentage of discrepant words and codes overall. Agreement rates for words in the transcription were 91% to 98%, and for coding they were 91% to 93%. Disagreements were discussed and a final version was arrived at through consensus; if necessary, some adjustments were made to the transcription and coding for the rest of the corpus. All research assistants were either senior undergraduate honors students or master's-level students in the Department of Linguistics at the University of Alberta.

1. Errors of omission[1]
   a. CNDX (age: 81 months; exposure to English: 8 months)
      EXP: Who's your best friend at school?
      CHI: I don't have **Ø** best friend. (Ø should be "a"; DET context)
   b. RMLM (age: 51 months; exposure to English: 9 months)
      EXP: What are you guys doing?
      CHI: We **Ø** playing hide and seek. (Ø should be "are"; BE context)
   c. CNDX (age: 81 months; exposure to English: 8 months)
      EXP: What did you do this morning before you went to school?
      CHI: I open-**Ø** my eyes and take-**Ø** off my sleeping clothes. (Ø should be "ed" in PASTREG context; Ø should be "took" in PASTIRREG context)
2. Errors of commission
   a. DNNS (age: 54 months; exposure to English: 7 months)
      EXP: What does Una like to do?
      CHI: Una **is** want to say bad words with me [=! laughing]! (copula instead of 3rd person -s in TPS context)
   b. FLPP (age: 68 months; exposure to English: 10 months)
      EXP: Tell me about your party.
      CHI: Lots of people **camed**. (overregularization in PASTIRREG context)
   c. LGKR (age: 79 months; exposure to English: 13 months)
      EXP: Do you like math?
      CHI: There **'s are** not maths. (double form of BE in BE context)

[1]In these excerpts, EXP = experimenter and CHI = child.

Transcripts were analyzed using the CLAN program *kwal* for the use of each morpheme in obligatory context as either correct, omission error, or commission error. Each child was assigned a percentage correct, percentage omission, and percentage commission score for each morpheme, calculated from the total number of contexts, so the sum of correct, omission, and commission scores is 100%. If there were fewer than four contexts for the use of a target morpheme in a child's transcript, a score was not assigned for that morpheme on the grounds that fewer than four contexts would not yield reliable information about the child's ability with that morpheme. This occurred mainly for the regular past tense because the children used verbs that take the irregular past tense more often. Consequently, for the analysis of PASTREG, 9 children did not contribute scores. For some morphemes, there is a category overlap; for instance, "was" and "did" are both PASTIRREG and BE or DO, and "does" is both TPS and DO. All forms of BE and DO were placed as BE and DO, so no BE and DO (auxiliary) appear in the other categories. However, main verb DO is in TPS and PASTIRREG.[2]

Finally, in addition to percentage correct scores for the individual morphemes, composite scores for each child were calculated for the tense and nontense morpheme groups as an average of the means of the morphemes in each group. The rationale for calculating composite scores is as follows: First, the overarching finding from the research of Rice and colleagues (Rice & Wexler, 1996; Rice et al., 1995; Rice, Wexler, & Hershberger, 1998) was that tense as a grammatical category is specially affected in children with SLI, and this grammatical category is realized across the set of tense morphemes and not by any one of these morphemes in particular. Second, some variation in scores among the individual morphemes would be expected, and such variation may complicate the investigation of whether tense *as a grammatical category* poses more difficulties for learners than morphemes marking other grammatical categories (see Rice, Wexler, & Hershberger, 1998, and Rice & Wexler, 2001, for further elaboration on the subject of composite tense scores).

Elicited speech. In order to examine the children's use of tense morphemes in an elicitation task, the grammatical probes from the TEGI (Rice & Wexler, 2001) were used. The TEGI includes separate probes for third person singular (TPS), regular and irregular past tense (PASTREG and PASTIRREG), and BE (copula and auxiliary) and DO auxiliary. The scores on these individual probes are percentage correct, where responses from the child that are off topic or do not attempt the target form are considered "unscorable" and are excluded from the denominator for the score. If all of the child's responses are unscorable, no score is assigned for that probe. The TEGI also yields an elicited grammar composite (EGC) score, which is an

[2]Many of children's omissions of TPS in spontaneous speech were with main verb DO; however, there are no DO verbs in the TPS probe, and the children's percentage correct scores for the spontaneous and probe data were not significantly different for TPS. Thus, the "overrepresentation" of errors with DO in the spontaneous speech does not skew children's overall performance with TPS.

overall percentage correct score calculated as an average from the individual probe scores. The probe scores on the TEGI are raw scores and can be used independently from norm-referenced interpretations.

The TPS and PAST probes consist of asking the child questions regarding pictures in a book. For TPS, the child is shown pictures of people engaged in activities related to their professions, and the experimenter says to the child, for example, "Here is a teacher. Tell me what a teacher does," with the expected response from the child being something like, "She/A teacher teaches" or "She/A teacher writes on the board." For the PAST probe, the child is presented with two pictures, one showing an activity in progress and the other showing the completed activity. The experimenter then says to the child, for example, "Here the girl is skating. Now she is done. Tell me what she did," with the expected response from the child being, "She skated." The BE/DO probe has a different format. This probe is designed to elicit both statement and interrogative uses of these morphemes, in third person singular and plural forms. In order to set up the referential context for eliciting these forms, a puppet and a set of toys is used and the child is invited to ask the puppet about one or more of the toys. For example, if the experimenter asks, "I wonder if the kitty's resting. You ask the puppet about the kitty," the child is expected to say to the puppet, "Is the kitty resting?" If the experimenter asks, "I wonder if the bears like milk. You find out," the child is expected to ask the puppet, "Do the bears like milk?"

For all of the probes, the research assistant wrote down answers while administering the probes, and the entire session was videotaped. Later, the same assistant finalized her answers reviewing the videotape. As with the spontaneous data, all research assistants for the probe tasks were either senior undergraduate honors students or master's-level students in the linguistics department at the University of Alberta. All research assistants viewed the training video that comes with the TEGI and practiced administering the probes on monolingual English-speaking children before using them with the ESL children.

Analyses and Predictions

The first research question asked in this study was whether the English of L2 learners is similar to the English of same-age monolingual children with SLI. To answer this question, the ESL children's percentage correct, omission error, and commission error scores from the spontaneous and elicited data were analyzed to ascertain whether their use of grammatical morphology followed patterns that are commonly found in the speech of monolingual English-speaking children with SLI. The particular patterns examined were those found by Rice and colleagues: (a) Production of tense morphology is less accurate than production of nontense morphology, (b) errors of omission with grammatical morphemes are more frequent than errors of commission, and (c) these patterns are the same for spontaneous and elicited production. On the basis of prior L2–SLI comparative research on French and Swedish, it was predicted that the ESL children's data would show the same patterns as those found for monolingual English-speaking children with SLI.

The second research question asked in this study was if there are ESL–SLI similarities, could these be a cause of real cases of mistaken identity in an assessment context? To answer this question, the results of the above analyses were used together with analyses comparing individual ESL children's percentage correct scores to the norm-referenced criterion scores and standardizing sample group means from the TEGI. The above analyses on grammatical morpheme use yielded information about the extent of similarities that could trigger mistaken referrals and complicate informal assessment methods. The criterion score and group means analyses yielded information about the potential for mistaken identity through the use of formal assessment methods. On the basis of the note in the examiner's manual about possible bias in the TEGI for ELLs (Rice & Wexler, 2001, pp. 55–57), and the expected outcome of the analyses aimed at the first research question, it was predicted that most, if not all, of the ESL children's performance on the TEGI would fall within the range of the clinical rather than the TD population.

RESULTS

Patterns in the Production of Grammatical Morphology

The percentage correct, omission error, and commission error scores for the tense and nontense morphemes from the spontaneous data, and the percentage correct scores from the TEGI probes, are presented in Table 2 along with the composite scores. An analysis of covariance (ANCOVA) was performed with the composite scores (untransformed) as a within-subjects factor (3 levels = tense-spontaneous [TC], nontense-spontaneous [NTC], and tense-probe [EGC]) and MOE as a covariate in order to see whether the children were more accurate with nontense than tense morphology, and whether the variation in exposure to English had an effect on the scores. There was a significant main effect for composite scores, $F(2, 2) = 8.567$, $p = .005$, $\eta^2 = .197$, but no significant interaction between morpheme scores and MOE, $F(2, 66) = 0.744$, $p = .4791$, $\eta^2 = .017$. Post hoc paired two-tailed t test comparisons revealed that the spontaneous nontense composite scores were higher than the spontaneous tense composite scores (NTC: 70.58% vs. TC: 48.81%, $t(23) = -7.624$, $p < .0001$) as well as the probe tense composite scores (NTC: 70.58% vs. EGC: 31.39%, $t(23) = 9.537$, $p < .0001$). The spontaneous tense composite scores were also higher than the probe tense composite scores (TC: 48.81% vs. EGC: 31.39%, $t(23) = 5.330$, $p < .0001$). Looking at comparisons of individual scores, 23 out of 24 children showed the TC < NTC score pattern, 23 out of 24 showed the EGC < NTC pattern, and 20 out of 22 showed the TC > EGC pattern (2 children had equivalent scores for TC and EGC). Thus, the group patterns were seen in more than 90% of individual cases. Looking at the means for the individual morphemes

Table 2. Mean percentage correct, error of omission, and error of commission scores for tense (TC) and nontense (NTC) morphemes from spontaneous speech and elicited speech (EGC; probes).

	% Correct spontaneous		*% Omission spontaneous*		*% Commission spontaneous*		*% Correct Probe*	
	M	SD	M	SD	M	SD	M	SD
Tense								
TPS	18.81	23.45	64.10	14.38	17.09	4.33	16.57	25.21
PASTREG	22.76	22.73	67.62	24.59	9.62	13.68	22.60	31.81
PASTIRREG	36.48	19.81	49.98	22.51	13.54	12.58	12.73	13.11
BE	70.21	13.97	22.18	12.74	7.60	5.21	60.16	23.04
DO	65.25	25.14	15.40	24.07	19.35	18.56	29.07	36.47
Mean	48.81	13.70	38.71	13.33	12.48	7.03	31.39	21.00
	TC						EGC[a]	
Nontense								
PROG	73.79	28.20	26.21	28.20	0.00			
PREP	72.01	16.08	16.98	11.97	11.01	10.58		
PLUR	71.74	17.33	25.46	15.22	2.80	4.02		
DET	65.52	22.38	28.06	19.37	6.42	7.59		
Mean	70.58	15.42	24.29	13.75	5.13	3.32		
	NTC							

Note. TPS = third person singular [-s], PASTREG = regular past tense [-ed], PASTIRREG = irregular past tense, BE = auxiliary and copula BE, DO = do-support DO, TC = tense composite score, PROG = progressive [-ing], PREP = prepositions *in* and *on*, PLUR = plural [-s], DET = determiners *the* and *a*, NTC = nontense composite score, and EGC = elicited grammar composite score.
[a]EGC is the mean of TPS, PAST (total score not divided into PASTREG and PASTIRREG), BE, and DO.

in Table 2, the TPS, PASTREG, and PASTIRREG means from the spontaneous data and all the means from the probe data were lower than the nontense morpheme means. In contrast, BE and DO from the spontaneous data were similar to the nontense morpheme means.

To further examine whether the spontaneous and probe scores were similar, paired two-tailed *t* tests showed no difference between the children's scores for TPS, PASTREG, and BE for the spontaneous and probe data, respectively (TPS: 18.81% vs. 16.57%, $t(21) = 1.032$, $p = .3138$; PASTREG: 22.76% vs. 22.60%, $t(12) = –0.660$, $p = .5217$; BE: 70.21 vs. 60.16%, $t(22) = –1.874$, $p = .0743$), but PASTIRREG and DO were significantly lower in the elicitation task (PASTIRREG: 36.48% vs. 12.73%, $t(19) = 4.985$, $p < .0001$; DO: 65.25% vs. 29.07%, $t(13) = 3.818$, $p = .0021$). Although it would be unrealistic to expect each individual child's score to be identical for the spontaneous and probe tasks, it is possible that individual scores for PASTIRREG and DO would be lower for the probe task, following the group pattern. Looking at the individual scores, 17 out of 19 children had lower scores for PASTIRREG on the probe than in their spontaneous speech (4 of the children did not contribute data to either the probe or the spontaneous task for this morpheme; 1 child's scores were equivalent between the spontaneous task and probe), and 11 of 13 children had lower scores on the DO probe (10 of the children did not contribute data to either the probe or the spontaneous task for this morpheme; 1 child's scores were equivalent between the spontaneous and probe task). Thus, individual children's performance parallels the group performance for differences between the probe and spontaneous language tasks on PASTIRREG and DO.

In order to test the prediction that omission errors should be more frequent than commission errors, the mean percentage omission and commission errors for TC and NTC were compared using paired one-tailed *t* tests. These percentages were calculated as an average across all morphemes in the tense and nontense categories. For tense morphemes, there was a significantly greater proportion of errors of omission than commission (TC-OM: 67.75% vs. TC-COM: 12.48%, $t(23) = –7.864$, $p < .0001$), and the same pattern was found for the nontense morphemes (NTC-OM: 24.29% vs. NTC-COM: 5.13%, $t(23) = –7.369$, $p < .0001$). Looking at comparisons of individual scores, 24 of 24 children showed the omission > commission pattern for nontense morphemes, and 22 of 24 showed omission > commission for tense. Thus, as with the percentage correct scores, the group patterns for error type were duplicated in more than 90% of the individual cases. Looking at the individual morphemes in the tense group, the mean percentage omission score was greater than the commission score for all morphemes except DO. All individual morphemes in the nontense group showed higher proportions of omission than commission errors.

Relationships Between Morphological and Other Variables

A series of Pearson product–moment correlations was performed to examine how the grammatical morpheme variables related to each other and to other variables, and a correlation matrix is provided in Table 3. Results are reported for comparisons significant at $p < .05$ and for comparisons significant with a Bonferroni correction

Table 3. Correlations between nonverbal IQ (CMMS), tense composite score (TC), nontense composite score (NTC), elicited grammar composite score (EGC), months of exposure to English (MOE), age, and mean length of utterance in morphemes (MLU_m).

	CMMS	*TC*	*NTC*	*EGC*	*MOE*	*Age*	*MLU_m*
CMMS	—	–.185	–.288	.187	–.268	–.023	.501*
TC		—	.544*	.647**	.236	–.072	.217
NTC			—	.422*	.002	.123	.341
EGC				—	.290	–.179	.280
MOE					—	–.121	–.176
AGE						—	.200
MLU_m							—

*p < .05; **p < .002 (Bonferroni correction applied to alpha level of .05).

applied at p < .002. Age, MOE, nonverbal IQ (CMMS), and MLU_m were not correlated with TC, NTC, or EGC; however, MLU_m was significantly correlated with CMMS at p < .05. TC and NTC, and NTC and EGC, were significantly correlated at p < .05, but only TC and EGC were significantly correlated at p < .002. Therefore, as expected from the ANCOVA results, amount of exposure to English is not related to children's morphological abilities, nor is it related to their overall level of language development as measured by MLU_m. It is also noteworthy that the children's overall level of language development, in turn, is not related to their accuracy in producing grammatical morphology. Finally, this analysis indicates that the variation in the children's ages and nonverbal IQ is not exerting a significant effect on the variation in their performance with grammatical morphology. The co-relations between all of the morphological variables, TC, NTC, and EGC, are pertinent to the predictions concerning tense being specially affected and performance being similar on spontaneous and elicited tasks.

Recall that it was hypothesized that L1 typology might exert an effect on children's morphological production in their L2. In order to determine if L1 typology was influencing the children's performance, the children were divided into two groups based on their L1s: richly inflected (RI) L1 and non-richly inflected (NRI) L1. Languages that were classified as RI were those that have richer inflectional systems than English; languages that were classified as NRI were those languages that have inflectional systems that are similar to or less rich than English. The NRI group consisted solely of those children whose L1 is Mandarin or Cantonese; all of the other L1s were RI languages. Mann-Whitney *U* comparisons were performed between the means for TC, NTC, and EGC for the two groups, and results are provided in Table 4. Nonparametric tests were chosen for this comparison because the sample sizes are uneven and there are just 8 children in the NRI group. Although there was no difference based on L1 typology for the tense composite scores, either spontaneous or probe, the mean for the nontense composite score was significantly higher for the RI L1 group.

ESL Children's Scores Compared to Criterion Scores and Means From the TEGI

Table 5 presents the ESL children's individual EGC scores along with comparison scores from the validation tests conducted for the TEGI. The TEGI was validated through testing on 393 TD children and 444 children known to have SLI, from the ages of 4 to 9. The criterion scores represent the lowest cutoff point between the distribution of the TD children and the children with SLI, according to age. The mean EGC scores are based on the two validation groups' scores, also divided by age. Only 3 of the ESL children reached the criterion cutoff for the nonclinical population for their age. Only 1 of the ESL children's EGC was equal to or higher than the TD mean for his age. Nineteen of the 24 ESL children's EGC scores were lower than the SLI group mean. In sum, the majority of scores for the ESL children fell within the SLI range of

Table 4. Means comparisons for TC, NTC, and EGC between children with richly inflected (RI) L1s and non-richly inflected (NRI) L1s.

	N	*TC*	*NTC*	*EGC*
RI	16	52.27 (14.93)	75.28 (15.10)	30.11 (22.57)
NRI	8	41.90 (7.51)	61.19 (11.89)	33.95 (18.63)
Mann-Whitney *U*		z = –1.531 p = .1258	z = –2.266* p = .0235	z = –0.337 p = .7363

Note. Standard deviations are in parentheses.

Table 5. Children's EGC for the TEGI compared with the criterion and mean EGC scores for age-matched monolingual peers with and without SLI.

	Child	*EGC*	*Criterion score*	*TD mean*	*SLI mean*
1	GSYN	27	66	90	41
2	MRSS	21	66	90	41
3	RNDL	7	93	(94)[a]	(55)[a]
4	CHRS	28	77	94	53
5	SMNS	26	71	92	47
6	TNYN	25	77	94	53
7	DNNS	45	59	89	41
8	TRRK	18	54	83	36
9	CNDX	19	81	94	55
10	DVDC	10	77	94	53
11	RMLM	26	54	83	36
12	DNNC	27	66	90	41
13	YSSF	63	59	90	41
14	BNFS	15	77	94	53
15	BRND	0	66	92	47
16	FLPP	94	71	92	47
17	THRJ	27	54	83	36
18	LLKC	38	59	89	41
19	SHHN	40	81	94	55
20	LGKR	27	81	94	55
21	DNLN	67	66	90	41
22	SBST	36	66	90	41
23	RNLL	15	59	89	41
24	JNNH	52	71	92	47

Note. EGC = ESL children's individual elicited grammar composite score from the TEGI; criterion score = cutoff EGC score between the TD and impaired population for ESL child's age; TD mean = mean ECG score for same-age TD monolingual children; SLI mean = mean EGC for same-age monolingual children with SLI.
[a]Means not available for 94 months, so means for 73 months are provided.

performance, in terms of both criterion cutoff and group mean scores, even though there is no reason to suspect that any of these children has a language-learning disorder. Because the criterion scores increase with age, one could hypothesize that the younger ESL children with longer exposure to English might be more likely to reach the criterion scores than the other children. The data in Table 5 do not support this hypothesis. The participants DNLN, LLKC, RNLL, SBST, and THRJ all have ages lower than the mean age of the group (66 months) and exposure to English higher than the mean for the group (9.5 months). Only DNLN's EGC met the criterion score for his age, and the other children's EGC scores were lower than the SLI group mean scores for their ages.

DISCUSSION

Difficulties with the production of grammatical morphology, tense morphology in particular, is a noted hallmark of English-speaking children with SLI and has also been reported in the L2 learning of English. Thus, errors in the use of grammatical morphology are a likely area of overlap in expressive language between these two populations, and such overlaps make differential diagnosis between the clinical and nonclinical population among L2 learners problematic. This study consisted of an examination of grammatical morpheme production in ESL children designed to address the following questions:

- Is the English of L2 learners similar to the English of same-age monolingual children with SLI?
- If there are similarities, could these be a cause of real cases of mistaken identity in an assessment context?

ESL Children's Use of Grammatical Morphology

The ESL children's use of grammatical morphology was examined to see if the following three predicted patterns were apparent. These patterns have been found in the speech of English-speaking children with SLI.

Tense < nontense. In support of this prediction, the ESL children's composite tense means from both the spontaneous and probe task were significantly lower than the composite nontense means, and this pattern also held in more than 90% of the individual children's scores, so that morphemes marking tense are especially vulnerable to error. A comparison between plural [-s] and third person singular [-s] underscores this general finding. These morphemes are homophonous suffixes, and yet, third person singular [-s] was substantially more difficult for the children, as the accuracy scores for this morpheme were 18.81% in spontaneous speech and 16.57% in the probe, whereas the accuracy score for plural [-s] was 71.74% in spontaneous speech. However, there were some equivocal findings with respect to the prediction of tense being specially affected. The effect size from the ANCOVA comparing the tense and nontense scores was moderate rather than large. Also, both spontaneous and probe tense scores had similar standard deviations to, and were correlated with, the nontense scores (at the alpha level without the Bonferroni correction). Thus, some shared underlying mechanism could be operating for both tense and nontense morphology, and abilities with tense morphology may not be as specially affected in TD ESL children as has been reported for monolingual children with SLI. It was also found that the spontaneous morpheme scores for BE and DO were within the range of the nontense morphemes, although in the SLI data these predictions were based on, higher scores for BE and DO than the other tense morphemes were also found.

Omission > commission errors. This prediction was upheld in the data. The ESL children made significantly more omission errors than commission errors for both tense and nontense morphemes, and more than 90% of the individual children's scores show this pattern. Also, omission errors were greater than commission errors for all of the morphemes except DO. Commission errors with DO mainly consisted of "do" in a context requiring "does." For example, in DO contexts requiring the "do" form, when children supplied a morpheme at all, they supplied "do" 85.58% of the time; in DO contexts requiring the "does" form, when children supplied a

morpheme, they supplied "does" just 25% of the time. Therefore, if these DO errors of commission were reconsidered as instances of omission of third person singular, then the omission > commission patterns would hold for all of the morphemes.

Spontaneous and elicited data are similar. The results showed weak support for this prediction. The ESL children's scores were the same for both tasks for third person singular [-s], past [-ed], and BE, and the tense composite scores for the spontaneous and probe tasks were significantly correlated. However, the children's scores for irregular past tense verbs and DO were lower on the TEGI than in spontaneous speech. Consequently, the tense composite score for the probes was lower than for spontaneous speech. The difference between the two tasks in scores for DO could have arisen because the BE/DO probe forced the children to use this form in interrogatives, whereas most of the DO forms in the spontaneous speech were negatives (i.e., "don't"). In addition, some of the children appear to have found the DO probe questions confusing because 13 out of 24 children had more than half of the DO items in the BE/DO probe as "unscorable," whereas only 6 out of 24 had more than half of the BE items as "unscorable." Because unscorables are not counted in the percentage correct, the children's percentage correct scores for this probe are based on substantially fewer items responded to than the other probes. Thus, the spontaneous/probe difference for this morpheme suggests that there is some extra difficulty involved in forming interrogative sentences with DO for ESL children. Regarding the lower score for irregular past tense forms on the probe, this is most likely because in spontaneous speech, the child can choose what verb he or she wants to use, and the children tended to use a small set of high-frequency irregular past forms like "went." It seems that the children simply did not know the correct past irregular forms for some of the verbs used in the TEGI. This discrepancy between the probe and spontaneous tasks for irregular forms indicates that an elicited context can provide more thorough information about an ESL child's lexical knowledge. Viewed differently, the discrepancy between accuracy with irregular past and regular past highlights a particular way in which a test can be biased against ELLs—knowing irregular forms requires more memorization and thus more experience and practice with a language.

In sum, the predictions concerning ESL children's patterns of use with grammatical morphology were mainly upheld and are in line with the prior research on the L2 acquisition of grammatical morphology in English. Therefore, TD ESL children's error patterns with grammatical morphology parallel what has been reported for monolingual English-speaking children with SLI at similar ages, and these parallels emerge not only in spontaneous speech but also in the context of an elicitation task. Although it may be the case that tense is not as specially affected in unimpaired L2 as it is in monolingual SLI, this is a difference of degree rather than kind. Finally, the patterns based on the grouped data were also displayed in the individual children's scores most of the time.

Individual Differences Among the ESL Children

The ESL children in this study seemed to be learning English at variable individual rates. This is evident from the sizable standard deviations and ranges in the accuracy scores with grammatical morphology. In spontaneous speech, the range in individual accuracy with tense morphemes was 28.25% to 82.08%; with nontense morphemes it was 47.07% to 93.56%. Moreover, these individual differences were not the outcome of the range in exposure to English (2–18 months) in this sample, nor were they the result of the range in ages of the children (50–94 months), as neither variable correlated significantly with the composite scores for grammatical morphology use. Such heterogeneous performance in the early stages of learning English has also been found by other researchers. The ESL children in the longitudinal case studies cited earlier showed a great degree of variation in their rate of morphological acquisition. In addition, researchers looking at other aspects of early L2 development in preschool to first grade also reported substantial individual differences between children, even those who began and continued their English learning in the same class (Strong, 1983; Tabors & Snow, 1994; Wong Fillmore, 1979, 1983).

The extent of individual differences in rate of learning English makes the similarities between typical L2 development and SLI even more problematic from the standpoint of trying to differentially diagnose the clinical population among L2 learners. For example, with such a high degree of individual variation in the TD population, it would be difficult to distinguish between a TD ESL child and an ESL child with SLI based merely on observations of oral-language characteristics in the L2. Although ESL children will eventually achieve native-speaker levels of accuracy with grammatical morphology, it is unknown how long it takes, and large individual differences in rates of development may persist past the early stages.

Several factors were examined to see whether they were related to the children's rates of development of English, as measured by accuracy scores with grammatical morphemes and MLU_m, and thus could perhaps explain some of the individual differences. As mentioned previously, MOE did not correlate significantly with the morpheme scores or with MLU_m, but it appears counterintuitive for amount of exposure to a language not to have an impact on development. One reason for the absence of correlation could be that the range of MOE was not wide enough, or that amount of experience with the L2 only begins to correlate with accuracy after a certain threshold, perhaps higher than 18 months. Another reason for the absence of a correlation might be that exposure as measured in months in a classroom may be too simplistic to account for the quality of input and actual practice with the language. Wong Fillmore (1979, 1983) argued that individual cognitive-style and social-personality attributes contribute to determining how effective exposure to English can be, and in turn, how quickly ESL children achieve fluency in the language. Furthermore, nonverbal IQ was moderately related to MLU_m (at the alpha level without the Bonferroni

correction) but not to morphological accuracy scores. Inherent cognitive skill in the form of language aptitude has been found to be related to rate of L2 development in children (Ranta, 2002), but language aptitude is a more specific set of skills than what is measured in nonverbal IQ, and this may explain why CMMS did not correlate with all of the language variables. Finally, the role of the ESL children's L1 was examined as an explanatory factor for individual differences. It was hypothesized that the children whose L1 was not an RI language would acquire grammatical morphology more slowly because this aspect of English may be less salient to them. This hypothesis was borne out in the case of the nontense morphemes, but not for tense morphemes. However, the absolute score for tense use in spontaneous speech was lower for the children with NRI L1s and it is possible that with larger numbers in the groups, the hypothesis would be borne out for tense morphemes as well. Interestingly, no differences emerged in the absolute scores for the TEGI.

It is important to point out that even though individual differences in rates of English development varied among the children, the overall error patterns with grammatical morphemes did not. As mentioned above, the group patterns of tense being less accurate than nontense and omission errors being more frequent than commission errors were also found at the individual level for more than 90% of the children. In other words, these error patterns with grammatical morphology are consistent across children even though their individual rates of development varied. Thus, the patterns hold regardless of English-language proficiency levels; they hold for learners who are relatively quick in English development and those who are relatively slow.

Potential for Erroneous Assessment of TD ESL Children as SLI

The second research question asked in this study was whether any existing similarities between ESL and SLI could result in the misdiagnosis of ESL children as children with SLI. In the introduction, factors in the referral and assessment process that might lead to such an outcome were discussed, and they are reviewed here in light of these findings.

With respect to the referral process, the overlap in linguistic characteristics between ESL and SLI together with the large individual differences in rate of development could make ESL children appear to be language impaired and thus be a cause of unnecessary referrals. Regarding assessment, if informal techniques are used, such as error counts in language sampling in the L2, this could also lead to misdiagnosis because the kinds of errors may be similar for grammatical morphology, and very possibly for other aspects of language, in samples from TD L2 children and monolingual children with SLI. It is also not certain whether an ESL child with SLI should be expected to simply make more errors than unaffected ESL children, given the variation in the TD population. For example, Restrepo and Kruth (2000) examined errors in spontaneous speech in the English of 2 ESL children, 1 with and 1 without SLI, and found that the child with SLI had more errors per T-unit than the TD child; however, the TD child was chosen for the study because she was a highly successful ELL. The data in this study suggest that a non-impaired but less successful ELL might not have looked as different from the ESL child with SLI on this measure, although further research comparing more ESL children with and without SLI is necessary to know for certain.

Turning to formal assessment methods, the ESL children's performance on the TEGI as compared to the criterion scores and monolingual group means suggests that the bias potential noted in the examiner's manual of the TEGI is actually quite strong. As predicted, the vast majority of the ESL children performed within the clinical range on this test, even though they are not language impaired. It is also important to point out that the differences in amount of exposure to English and the children's ages did not significantly affect their performance on this task, as these variables were not correlated with the probe composite score. Note also that children whose L1 was an RI language did not score higher on the TEGI than the children whose L1 was NRI. Because the TEGI is focused on exactly a domain of language where there is an overlap between L2 and SLI language characteristics, the danger of mistaken identity if this test is used with nonnative speakers in the early stage of L2 development appears to be very high, and these findings fully support the cautions given by the test developers that use of the TEGI with nonnative speakers is not recommended.

CLINICAL IMPLICATIONS

The results of this study have two kinds of clinical implications: They provide information to set appropriate expectations of typical English as an L2 development, and they provide information relevant to assessment procedures. In this section, the term "early ESL children" will be used to denote children who have been learning English for less than 2 years, like the children in this study. This term does not refer to children's individual levels of proficiency in English, only to their exposure to English.

Early ESL children can be expected to make errors with grammatical morphology, and these errors can extend into their second year of experience speaking the language. Difficulties in producing grammatical morphology will be evident regardless of L1 background, although there is some indication that difficulties may be more pronounced in children whose L1 is not an RI language, such as Mandarin or Cantonese. Difficulties in producing grammatical morphology will be more pronounced for morphemes that mark the grammatical category tense, like auxiliary verb and verb inflections with the exception of [-ing], and when children make errors they usually omit them more often than substitute the wrong morpheme. ESL children will alternate between correct use and omission of a morpheme in their speech until they gradually achieve native-speaker accuracy levels with them. These characteristics describe typical English-language learning, but because they largely overlap with the characteristics of monolingual

impaired language, it becomes difficult to determine whether an early ESL child's errorful language is due to the process of L2 learning or to impaired language learning. Therefore, it is advisable to be cautious when considering the presence of errors with grammatical morphology as a sign of SLI in early ESL children.

In addition, there is an immense amount of individual variation in how quickly early ESL children become accurate in their use of tense morphemes, and a broad measure like MOE does not predict how quickly they acquire these morphemes. It would be wise not to set firm expectations for English-language attainment with grammatical morphology in early ESL children, and to be very cautious setting expectations when one's experience with ESL children is based on a small number. For example, what if, by chance, one's experiences have been with children like FLPP in this study? This child's development of English proceeded so rapidly that his proficiency with tense morphology reached the level of an age-matched, TD native speaker after just 10 months of exposure. In contrast, what if one's experiences have been with children like BRND? This child has the same Spanish L1 as FLPP and is just 2 months older, but his development of English in a 10-month period was much slower because his MLU_m was half as long as FLPP's, and his proficiency with tense was lower than the mean for age-matched monolingual children with SLI. Again, there is no reason to suspect that BRND is not a TD child. In sum, because individual differences in rate of development are so pronounced in early ESL children, expectations based on experience with small numbers of these children could be set too high or too low.

Setting appropriate expectations based on understanding typical early ESL development is vital to reducing unnecessary referrals for assessment. However, some early ESL children will need to undergo assessment. The findings of this study reinforce key points from the introduction regarding assessment of L2 children. First, the use of tests that have been standardized on monolingual English native speakers with early ESL children is not a good practice and could easily result in cases of misdiagnosis. Although the findings in this study with the TEGI were particularly pernicious in this regard, there is no reason to believe that early ESL children would fare much better on other English standardized tests. Because of the potential pitfalls of testing ESL children in their L2, the findings of this study reinforce the recommendation that examining the L1 of ESL children, through appropriate tests or parent report, should be a component in determining if an ESL child has SLI.

However, as discussed in the introduction, for a variety of reasons, educators and SLPs may not be able to assess an ESL child through his or her L1, and thus, that child's L2 abilities would form the basis for assessment. Because the use of standardized tests is ruled out, what might appropriate assessment measures be? If using interpretations of a child's language abilities based on raw scores from tests, or error counts from a language sample, there are a couple of things to be aware of: First, it is important not to rely too much on raw scores or error counts that focus primarily on the use of grammatical morphology or any other aspect of language that L2 children typically and frequently make errors with. Second, it may be more informative to compare language measures of an ESL child who is suspected to have SLI with the English of his or her ESL peers rather than to the English of monolingual peers, either with or without SLI. Comparative information could come from the group and individual data in a study like this (although the sample size is not large, it might provide some frame of reference for comparison), or it could also be obtained from a consultant with extensive experience with ESL children, for example, a kindergarten teacher.

In conclusion, the overlap between ESL and SLI in grammatical morphology is probably not the only area of overlap in language characteristics between these two populations. An important focus for future research would be to compare the English of ESL children with and without SLI in order to detect errors that characterize the affected children only. Such findings would greatly facilitate the process of assessment with this population of children.

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APPENDIX. INTERVIEW QUESTIONS FOR SPONTANEOUS SPEECH SAMPLE

1. How old are you? When is your birthday?
2. Do you go to school? (What grade are you in? Who is your teacher?)
3. What do you like about your new school? What don't you like about your new school?
4. What subject do you like best in school? Why?
5. Tell me about the other kids in your class.
6. What country do you come from? What is different about your school/life in your country and your school/life here?
7. What is your favorite food? Can you tell me how to make it? (If no: What food do you know how to make?)
8. Do you have friends and brothers and sisters? Tell me about them (e.g., names, ages, what games they like to play).
9. What would you like to be when you grow up? Why? Tell me what you're going to do when you're a _____.
10. What games and toys do you like the best? Why? Tell me how to play _____.
11. What was the last movie/video/TV program that you saw? Tell me what happened.
12. If you could ask your fairy godmother for three wishes, what would they be? Pretend I am your fairy godmother and ask me for them. Why do you want those things?
13. What did you do on the weekend/yesterday after school?
14. What are you going to do tonight? What are you going to do tomorrow after school?
15. What season of the year do you like the best? Why?
16. What did you do at home this morning before going to school/before I came here to visit?
17. Do you know what Halloween (or closest holiday) is? What are you going to be/were you for Halloween? What are you going to/did you do?