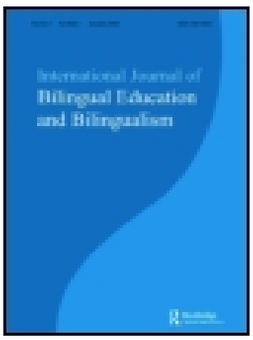

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Average change in sentence repetition by Spanish-English speaking children: kindergarten to first grade

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ABSTRACT

Purpose: This study aimed to describe change in dual language learners' (DLLs) morphosyntactic skills from kindergarten to first grade based on a sentence repetition task in English and Spanish.

Methods: The sample included Spanish-English speaking children ($n = 25$). Investigators employed a repeated measures analysis of variance with one within-subjects effect (time).

Results: Overall there was a significant difference in sentence repetition accuracy between time points showing growth in English ($p < .001$, $d = 1.24$), and no significant change in Spanish. Results highlight malleable English grammatical forms (e.g. conditional (if-then); question inversion of auxiliaries; and subordinating conjunctions) and forms that remained challenging for DLLs in first grade (e.g. irregular past).

Conclusion: Findings support the use of a sentence repetition task as a progress monitoring tool for young DLLs. Highlighted grammatical errors may be informative for planning intensified instructional support in kindergarten and first grade.

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English learner; bilinguals; Spanish-English speakers; cultural/linguistic diversity; syntax; morphology; sentence repetition; English acquisition; progress monitoring; language loss

The changing landscape of schools in the United States includes an increasing number of children who speak a language other than English at home. In fact, these bilingual or multilingual children generally referred to as English language learners (ELLs or ELs) by the U.S. Department of Education make-up 9.3% of school-age children (Kena et al. 2016). Furthermore, the large majority of those school-age ELs (76.5%) speak Spanish at home, amounting to 7.7% of all publicly enrolled K-12 students (Kena et al. 2016). Given that they are one of the fastest growing yet lowest performing student populations, ELs are an educational priority in the United States (Capps et al. 2010). The number of school-age children from immigrant family backgrounds is projected to grow by 5 million by 2020, creating increasing demands for effective progress monitoring and appropriate language and literacy support (Passel, Cohn, & Lopez, 2011).

ELs from low socioeconomic backgrounds are at particular risk for low performance on literacy measures and poor academic achievement compared to their monolingual-English speaking peers (Snyder & Dillow, 2012). The risk for low achievement is exacerbated by a disproportionately high number of ELs living in poverty. Over 60% of school-age ELs report being from low-socioeconomic status (SES) backgrounds (Capps et al. 2010). Among those at risk, 32% of Hispanic children live in poverty (Kena et al. 2015). Poverty is a well-documented risk factor for diminished literacy and academic achievement (e.g. Duncan and Brooks-Gunn 1997; Bradley and Corwyn 2002). Given the disproportionate percentage from low SES backgrounds, it may not be surprising that foreign-born Hispanics demonstrate the highest high school drop-out rate (24%) (Kena et al. 2015). Considering

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the high risk for low academic achievement in ELs from low SES backgrounds, it is important to measure growth in language development through progress monitoring instead of simply assessing language performance at a given time point (Davison, Hammer, and Lawrence 2011).

In the United States, 'bilingual' children identified as ELs in public schools have varying degrees and types of experiences with both of their languages. For example, many ELs in the United States may only hear or speak their first language (L1) in the home and/or within specific social/cultural contexts. Their second language (L2), in this case English, may only be heard in limited community contexts with a sharp increase in exposure and use after starting school. ELs in that category are often called 'sequential bilinguals.' It is also common among children identified as ELs to be exposed to both languages in the home from birth, such that these students would be considered 'simultaneous bilinguals.'

However, even among 'simultaneous bilinguals,' the quantity and sources of exposure in each language can vary greatly from birth. For instance, a child whose language has been influenced by both Spanish and English from birth may have bilingual speakers in their home and/or monolingual speakers of each language in the home such that some simultaneous bilinguals may have linguistic abilities that are somewhat balanced across their two languages, whereas others may be more dominant in Spanish or English. Unfortunately, inconsistent use and interpretation of terminology can make group comparisons and generalization of findings more difficult. For example, there is discord among experts and researchers regarding how to distinguish the difference between 'simultaneous' and 'sequential' bilinguals, with the cut-off being reported at as young as one month to as old as four years of age (Genesee and Nicoladis 2009).

There is a general consensus among relevant research fields that the history of a bilingual child's linguistic environment, including age of exposure to each language is undeniably important information to obtain as part of the process of assessing language development. The variance in language history experienced by children who are described as bilingual or ELs creates additional challenges in determining typical patterns and expectations for language development using traditional approaches. For example, measuring performance in only one of a child's languages or in both languages but using standardized tests with norms based on monolingual or homogenous bilingual populations (e.g. a monolingual or bilingual test where Spanish normed children all have Mexican heritage or live in a Spanish-majority speaking society) may not be meaningful or generalizable to many children influenced by both Spanish and English in the United States.

To avoid confusion, the broad term dual language learner (DLL) is used in the current study to include any individual learning two languages without concern for classifying bilingual subtype (i.e. simultaneous or sequential) or identifying the order of acquisition (i.e. first or second). DLL is the preferred term because it is more inclusive of individuals with varied Spanish-English proficiency and backgrounds, which is common within any one region, school district, and even a single classroom. The use of the term DLL recognizes that bilingual children's language profiles in both of their languages vary initially and also change over time. Thus, the term DLL is used in place of EL for the remainder of this article as it more accurately describes the widely diverse language profiles of the participants in the current study. The complex range of unique language experiences of school-age students learning two languages in the United States further supports the high demand for quality progress monitoring tools for use with this typical yet heterogeneous population.

Morphosyntactic skill

Skills in morphosyntax are thought to be important predictors of language proficiency and academic achievement. Morphosyntax, also referred to as grammar, has been identified as a useful predictor in differential diagnosis of delays versus language learning disorders in young children. Two studies examined the discriminant accuracy of a grammatical measure with monolingual and bilingual Latino children, with one including a Spanish-only speaking group (Gutiérrez-Clellen, Restrepo, and Simón-Cereijido 2006) and the other including an English-only speaking group

(Gutiérrez-Clellen and Simon-Cereijido 2007). To be considered 'bilingual', the children had to be exposed to both Spanish and English at least 20% of the time per parent and teacher report (Gutiérrez-Clellen, Restrepo, and Simón-Cereijido 2006; Gutiérrez-Clellen and Simon-Cereijido 2007). English morphological skills were determined to be clinically useful markers of maturity with fair classification accuracy in identifying language impairment (LI) in bilingual Spanish-English speaking children (Gutiérrez-Clellen and Simon-Cereijido 2007). Specifically, morphosyntactic abilities demonstrated good sensitivity in differentiating children with and without language disorders for children 5;2–5:11 who speak Spanish at home (Gutiérrez-Clellen, Restrepo, and Simón-Cereijido 2006).

DLLs may be expected to vary in their morphosyntactic development. Research conducted by Oller and Eilers (2002) showed that timing of exposure to English in relation to school entry and extent of English knowledge at school entry both play a critical role in potential differences that may occur in bilingual children's English language outcomes. This result was also apparent in a longitudinal study with preschool Spanish-English DLLs by Hammer, Scarpino, and Davison (2011). The investigators found that children who had limited exposure to English before starting preschool demonstrated consistently lower English morphosyntactic complexity than children regularly exposed to English before preschool when compared after two years in Head Start. However, English morphosyntactic complexity increased at a faster rate for the children with lower initial exposure to English (Hammer, Scarpino, and Davison 2011).

Theoretical motivation

As noted in previous cross-sectional studies such as Genesee and Nicoladis (2009), the development of English grammatical skills of young DLLs may reflect grammatical patterns influenced by the other language. At other times, shifts in performance across languages may reflect language attrition in one of the two languages (Restrepo and Kruth 2000). A few previous studies have documented decreased consistency in use or decreased accuracy of particular grammatical forms such as gender agreement and tense accuracy in young Spanish-speaking children after they are immersed in English-speaking educational settings (Anderson 2001; Restrepo and Gutiérrez-Clellen 2001; Anderson 2003). Findings support the importance of measuring the language skills of DLLs in both of their languages upon entry to school and consistently thereafter, as language exposure, experience, and interactions vary greatly in bilingual children, thus longitudinal trends in grammatical acquisition may differ.

Existing longitudinal studies generally support the view that grammatical systems develop relatively independently of each other with DLLs acquiring two grammatical systems (Castro and Gavruseva 2003; Hammer et al. 2014). A published review of the literature focusing on DLLs offers nine case studies examining their grammatical development (Hammer et al. 2014). Reports of the case studies suggest that children learning two languages (not exclusively Spanish and English) follow the same order and patterns of development for morphological and syntactic structures as their monolingual peers, but may be less accurate than monolinguals (Chilla and Bonnesen 2011; Nicoladis & Marchak, 2011; Paradis et al. 2011).

There is increasing recognition of the need for more longitudinal studies to examine DLLs' language growth over time (Davison, Hammer, and Lawrence 2011). One notable limitation in the existing literature is the relatively small number of existing longitudinal studies of grammatical skills that include young DLLs from low income backgrounds. Another limitation is the wide range of tasks that can be used to measure morphosyntactic skills, making generalizing findings across studies difficult. Recently, there has been at least one promising longitudinal study with DLLs that analyzed growth of sentence repetition skills in their second language, showing significant improvement over time (Thordadottir and Gudrun Juliusdottir 2013, though this study did not focus on Spanish-English speaking children in the United States.

Measurement of morphosyntax

Sentence repetition (SR) tasks have historically been included in screening batteries and in language evaluation tests to assess children's first language skills (Conti-Ramsden, Botting, and Faragher 2001). In fact, Conti-Ramsden, Botting, and Faragher (2001) found that the recalling sentences subtest of the Clinical Evaluation of Language Fundamentals (CELF) – Revised (Semel, Wiig, and Secord 1994) was the best discriminator (90% sensitivity and 85% specificity) between monolingual English-speaking children with and without language impairment (LI). Similarly, Everitt, Hannaford, and Conti-Ramsden (2013) found that the sentence recall score from an adapted subtest of the Clinical Evaluation of Language Fundamentals (CELF) – Preschool UK (Wiig, Secord, and Semel 2000) predicted overall expressive language skills just as well as the norm-referenced standardized Expressive Communication subscale of the Preschool Language Scale – 3 (PLS-3) (UK) (Zimmerman et al. 1997). Comparable to results of studies with English monolinguals, SR tasks have been found to be useful diagnostic tools in a variety of languages including Spanish, correctly classifying Spanish-speaking children with and without LI with more than 85% accuracy (Gutiérrez-Clellen, Restrepo, and Simón-Cereijido 2006). Despite the utility of grammatical tasks such as a SR measure in distinguishing children with LI from those who are typically developing among monolinguals, there needs to be more research that explores whether elicited imitation assesses morphosyntactic skills similarly for DLLs.

Research shows that performance on a SR task is related to performance on general measures of expressive language (Seeff-Gabriel, Chiat, and Dodd 2010; Chiat et al. 2013; Everitt, Hannaford, and Conti-Ramsden 2013). Although SR tasks are commonly used diagnostically in language evaluations as measures of expressive language, elicited imitation is rarely assessed regularly. SR tasks are increasingly used as indicators of language exposure and oral proficiency (Thordardottir and Brandeker 2013), and performance on a SR task can offer explicit information about a child's morphological and syntactic grammatical skill (Seeff-Gabriel, Chiat, and Dodd 2010). There is a need for additional research that investigates the potential utility of SR tasks for progress monitoring (Seeff-Gabriel, Chiat, and Roy 2010), particularly for DLLs.

Presently, SR tasks are being used with increased frequency in research with children learning multiple languages in order to obtain quantitative as well as qualitative information about their morphosyntactic abilities (Komeili and Marshall 2013). Investigators are starting to examine errors on different types of sentences and words in addition to just analyzing variation in overall accuracy on SR tasks (Komeili and Marshall 2013). For example, a recent descriptive study further explored the prospective uses of a SR task for measuring the morphosyntax skills of five Chinese Malaysian children between the ages of 3 and 7 (Woon et al. 2014). In multi-ethnic countries such as Malaysia, most children are exposed to two or more languages from an early age, and although Mandarin was reported to be the first language for all participants, children in Malaysia consistently demonstrate varying degrees of ability in each of their languages. The investigators suggest that qualitative analysis of SR performance in multiple languages can be particularly informative about the expressive language development and morphosyntactic knowledge of such a linguistically diverse population, potentially leading to a better understanding of language acquisition and error patterns for individual children learning more than one language (Woon et al. 2014). Due to the heterogeneity of the population, careful examination and monitoring progress in each language will likely provide more meaningful information about a child's language acquisition than comparing that individual's language skills to classmates who are DLLs with distinctive language backgrounds.

SR tasks are certainly not the only option for measuring general language ability or assessing morphosyntactic development. However, SR measures are available in a wide range of languages, and administration is simple and straightforward. SR tasks are designed to generate ample information with a limited number of items. SR tasks allow professionals to target word forms and sentence structures that are challenging to assess by other means of elicitation. Given that target forms are embedded in the stimuli, errors are easy to identify and categorize (e.g. omission, substitution,

addition, etc.) (Seeff-Gabriel, Chiat, and Roy 2010). Even so, availability, the advantage of speed, and ease of administration and scoring are not the only rationales for using SR tasks to measure morphological and syntactical development. Among the additional rationale for use, repetition is a natural skill emerging by age 3 that only requires minimal concentration and effort. It is argued that SR tasks are less reliant on language experience, thus they are more independent of SES, gender, and nonverbal IQ than other assessment options (Seeff-Gabriel, Chiat, and Roy 2010).

Purpose and aims of study

Given the value of morphosyntactic ability as a marker of language maturity, more empirical data is needed to examine present levels of performance, expected skills, and typical or expected progress of DLLs during the early school years. Additional studies are needed to inform practices for appropriate progress monitoring with subsequent support and instructional resources. In response to the need for additional understanding of the typical and expected morphological skills in the first language (L1) and second language (L2) of DLLs, particularly from low SES backgrounds, the current study aimed to assess performance on a SR task and examine the average change in morphosyntactic skills between kindergarten and first grade. Specifically, the current study asked the following research questions:

(1) How do young Spanish-English speaking DLLs from low SES backgrounds perform on a sentence repetition task in Spanish and English in kindergarten and first grade? What grammatical forms appear to be challenging?
(2) Is there a significant difference in DLLs' performance on a sentence repetition task between time points when measured in kindergarten and first grade?

Methods

Participants

Children in the current study were considered to be dual language learners (DLLs) acquiring both Spanish and English. Therefore, one eligibility criterion for participation in the study was that Spanish was spoken in the home. Although all participants had basic communication skills in Spanish and English, based on parent report, a criteria level of performance in Spanish and English was not an eligibility requirement and thus varied depending on the child. All children in the current study were participants in a larger study designed to develop a vocabulary intervention program to facilitate English vocabulary learning for DLLs. As part of a larger randomized control trial intervention study that was under development, children listened to recorded ebook readings three days a week for approximately 20 weeks during the school year. Each weekly recorded reading provided elaborations of four target words. Since children's participation in the current project was during prototype development and prior to the start of the randomized control trial, testing for an effect of vocabulary intervention was not within the aims of the current study; although we did not suspect that the developmental phase of the vocabulary intervention had an effect on syntax. For the current study, 42 children whose families elected to participate in a second year of the development project (kindergarten and first grade) were considered for inclusion in a retrospective examination of the children's SR performance. Of the 42 potential participants who participated in the first two years of the development project, 27 had completed SR data for at least one language at both time points (fall of kindergarten and fall of first grade). Of the 27 children with SR data at two time points, two children who were twins were excluded due to the fact that they were more than a year older than children in their kindergarten class largely due to their premature birth. The final pool of 25 participants with data points at fall of kindergarten and fall of first grade, included 9 boys and 16

Table 1. Family education level and occupation.

	Mothers (%)	Fathers (%)
Highest level of education		
Elementary school	16	20
Middle school	40	20
High school	44	55
Associate's degree		5
Occupation		
Homemaker	44	
Agricultural labor	25	55
Cleaning staff	13	
Seasonal worker	6	18
Landscaping		4
Construction		9
City utility company		14
Miscellaneous as available	12	

girls. The age of children at the kindergarten testing time point ranged from 61 to 77 months with an average of 67.28 months (4.7 SD).

Participants attended one of two public schools in a rural area of northern Florida with English as the language of instruction. Although they all had access to a preschool program and a summer educational program for migrant students (both taught in English) prior to starting kindergarten, the extent of each child's participation in such programs was unclear and likely varied substantially. All children met the criteria for free or reduced lunch. Participants did not have any remarkable history of sensory disorders or other physiological or neurological disorders. Participants had no identified disabilities and presented with non-verbal intelligence considered to be within normal limits based on the *Primary Test of Nonverbal Intelligence* (Ehrler and McGhee 2008) with a mean of 101 ($SD = 17.13$). Participants demonstrated below average English receptive vocabulary skills, ($M = 83.96$, $SD = 12.61$) as measured by the Peabody Picture Vocabulary Test (Dunn and Dunn 2007). Similarly, participants demonstrated below average Spanish receptive vocabulary skills, ($M = 87.75$, $SD = 15.67$) as measured by the Test of Vocabulario Imagenes (Dunn et al. 1986).

Bilingual Spanish-English speaking research assistants contacted families by phone to gather additional background information in order to describe language experiences in the children's homes. The large majority of phone interviews were administered in Spanish, although parents were given the flexibility throughout the interview to listen and respond to questions in their preferred language. When asked about the linguistic environment and language experiences in the home, families reported that Spanish was spoken by one or both parents. The largest percentage of families (63%) reported Spanish was the only language spoken at home and 37% reported Spanish and English was spoken at home equally or nearly equally. Based on phone interview data, the parents were born in Mexico (60%), El Salvador (23%), Honduras (10%), or Guatemala (7%); however all children were born in the United States. Additionally, over 80% of households indicated middle or high school was the highest education level attained and the largest percentage of occupations was the agricultural industry. Further demographic details are provided in Table 1.

Materials

Sentence repetition

The sentence repetition (SR) task from the morphosyntax subtest of the *Bilingual English and Spanish Assessment* (*BESA*) (Peña et al. 2013) was administered as a repeated measure at both time points in English and Spanish. The *BESA* (Peña et al. 2013) is an assessment measure designed for Latino children 4–7 years of age. For the SR task, the examiner asks the child to repeat the sentence verbatim. The examiner presents the sentences individually. The sentences are 7–14 words in length. Targeted words within the sentence are scored and not every word in the sentence is used in deriving a score

on the subtest. Targeted grammatical items are comprised of a variety of grammatical forms including relative clauses (e.g *who is a doctor),* irregular past tense, auxiliaries, articles, inverted copulas and auxiliaries, infinitives, subordinating conjunctions (e.g. because), subject pronouns, possessive pronouns, past tense, 'wh' question forms, and conditionals. For Spanish, the SR task also included items with subjunctive verb forms.

Receptive English vocabulary

The *Peabody Picture Vocabulary Test-4*, PPVT-4 (Dunn and Dunn 2007), was administered in September to describe the participants' understanding of English vocabulary at entry in the research project. The PPVT is an untimed, individually administered measure of receptive one-word vocabulary. The assessment takes 10–15 min to administer. Given a choice of four pictures, the student is asked to point to the picture that best fits the word produced by the administrator. The measure was normed on 3540 individuals in the United States (2–90 years old) reflecting the US population distribution with regard to sex, race/ethnicity, geographic region, socioeconomic status, and clinical diagnosis. Split-half reliability by age for Form A and Form B was M = .94 (*SD* = 3.6), and range from .90–.97 for ages 5–11.

Receptive Spanish vocabulary

The *Test de Vocabulario en Imagenes Peabody* (TVIP) (Dunn et al. 1986) was administered in September as a descriptive measure of the participants' receptive one-word Spanish vocabulary skills. Similar to the PPVT-III, for the TVIP the examiner asks the child to point to a desired picture given a choice of four. The TVIP was normed on 2707 monolingual Spanish-speaking children (2;6–17;11 years) from Mexico and Puerto Rico in 1986. Weighted scores were used to correct the uneven SES distribution. Median reliability was .93.

Nonverbal intelligence

The *Primary Test of Nonverbal Intelligence* (*PTONI*; Ehrler and McGhee 2008) was included to provide a greater understanding of participants' nonverbal, cognitive abilities. This test uses pictures to assess reasoning ability in young children without requiring a verbal response. This assessment has a mean score of 100 and a standard deviation of 15. Additionally, the authors report a coefficient alpha value of .93, test-retest reliability of .97, and inter-rater reliability of .99 in the manual, indicating that the assessment has adequate reliability.

Procedures

In the fall of each school year, examiners administered the SR task of the *BESA* in English and Spanish (Peña et al. 2013) according to instructions as described in the test manual. On average, testing was started in October and completed within two weeks. Spanish and English portions were administered on separate days in a vacant portable classroom. On average children completed the task in approximately 10 min. Tests were administered by trained research assistants who were fluent in the language of each assessment tool. The order of Spanish and English tasks was randomized across children. The English and Spanish versions of the SR task were not administered consecutively, but were interspaced with other standardized assessments that were also administered in random order. The completed SR response sheets were scored by two research assistants to ensure accuracy of scoring child responses. Any discrepancies in scoring were flagged for a third scorer to review and confirm accuracy of scoring procedures. After final confirmation of accuracy in scoring, a percentage correct raw score was derived and recorded for each participant at both time points.

Analyses

The investigators used a repeated measures within-subjects analysis of variance to test for a significant effect of time, as evidenced by a significant change in SR accuracy (i.e. percent correct) between kindergarten and first grade. Individual performance was graphed to further describe individual variability in change over time in each language.

Results

To answer the first research question, examining how young Spanish-English speaking DLLs from low SES backgrounds perform on a sentence repetition task, descriptive data is reported to depict the trends in accuracy of SR performance in Spanish and English in kindergarten and first grade. Overall, children in kindergarten demonstrated relatively low accuracy in SR in both English and Spanish, with similar mean scaled scores of 8.1 (2.7) in English and 8.0 (3.4) in Spanish. Table 2 provides descriptive statistics for both grades and languages.

Children varied in their accuracy of performance between grammatical components that were considered early developing (e.g. article + noun) and those generally thought to be later developing (e.g. subordinating conjunction). Table 3 displays children's accuracy clustered by grammatical components in kindergarten and first grade in English and Spanish, respectively.

To answer the second part of the first research question, exploring which grammatical forms appear to be challenging, we examined descriptive statistics by individual items on the English and Spanish subtests of the task. English item level accuracy by grade is provided in Table 4 and Spanish item level accuracy is provided in Table 5. There was a wide range in English accuracy in kindergarten from 39% accuracy (e.g. transitive verb + third person singular agreement + infinitive) to 96% accuracy (e.g. article + noun) on individual items. The five items that appeared to be the most difficult on the English *BESA* sentence repetition task for kindergarten participants (based on the lowest percentage of accuracy) involved: a transitive verb + agreement + infinitive (e.g. wants to know) with 39% accuracy; a secondary verb with regular past (39% accuracy); inverted copula + irregular past (44% accuracy); conditional if-then clauses (44% accuracy); and third person plural subject pronoun 'they' (48% accuracy). Similarly, accuracy on Spanish forms also varied in kindergarten with several of the items with the lowest accuracy being later developing grammatical forms or ones that did not have similar equivalents in both of the DLL's languages, such as imperfect subjunctive verbs (9% accuracy); indirect object pronouns (23% accuracy), and conditional verbs (27% accuracy). Similar to the English item level data, early developing forms (e.g. article + noun) showed the highest accuracy (87%).

The range of participants' accuracy in first grade appeared to be less than in kindergarten. In first grade, accuracy ranged from 65% accuracy on irregular past tense, and third person subject pronouns to 100% accuracy on articles. In first grade, participants demonstrated 80% accuracy or greater on 23/33 individual items on the English SR task, including the majority of morphological skills that appeared to be challenging in kindergarten. Participants in first grade also demonstrated

Table 2. Average sentence repetition performance of kindergarten and first grade children.

	Kindergarten			First grade		
	N	*M*	*SD*	*N*	*M*	*SD*
English accuracy*	23	65.7	19.7	23	83.7	12.0
English scaled score**	23	8.1	2.7	18	9.9	2.5
Spanish accuracy*	22	48.0	25.4	21	55.7	20.1
Spanish scaled score**	22	8.0	3.4	18	8.4	2.9

*Accuracy reflects percentage correct due to differences in the total number of items on Spanish and English Sentence Repetition subtest of the *Bilingual English Spanish Assessment* Peña et al. (2013).

**Number of participants reported for scaled scores differs due to five children who were beyond the age range (4–7) of the normative sample before the end of first grade.

Table 3. Accuracy of responses by grammatical category on sentence repetition.

English grammatical component	Number of items**	Kindergarten percentage accuracy mean (*SD*)*	First grade percentage accuracy mean (*SD*)*
Article + Noun	8	81.5 (18.8)	89.1 (12.7)
Pronouns	8	68.5 (24.4)	83.7 (19.0)
Verbs	12	55.4 (25.5)	78.6 (15.7)
Conjunctions	3	50.7 (37.4)	85.5 (22.7)
Prepositions	3	73.9 (34.8)	76.8 (27.4)
* $n = 23$ participants.			
Spanish grammatical component	Number of items**	Kindergarten percentage accuracy mean (*SD*)*	First grade percentage accuracy mean (*SD*)*
Article + Noun	9	62.1 (23.4)	68.3 (25.2)
Pronouns	5	45.5 (33.9)	51.4 (33.2)
Verbs	15	43.9 (24.7)	50.4 (21.2)
Conjunctions	6	49.2 (36.8)	56.3 (30.0)
Prepositions	3	28.7 (31.4)	52.4 (37.4)

*$n = 22$ participants in kindergarten; $n = 21$ participants in first grade.
**One sentence repetition item in each language of the *BESA* (Peña et al. 2013) is represented in two grammatical categories based on the combined areas tasked at the item level.

Table 4. Detailed item level accuracy on English sentence repetition task of the *BESA*.

English items on the *BESA* * by item number	Kindergarten % accurate	First grade % accurate
1. Article + noun	96	100
2. Relative pronoun	74	87
3. Auxiliary (singular agreement) + present progressive	74	96
4. Inverted Auxiliary	48	87
5. Article + noun	74	96
6. Article + noun	70	87
7. Past participle	61	87
8. Inverted auxiliary	48	91
9. Subject pronoun – feminine	91	87
10. Verb - present tense, infinitive form	70	91
11. Infinitive verb	78	91
12. Irregular past tense	61	65
13. Article + noun	83	83
14. Preposition (adverbial phrase)	83	70
15. Article + noun	83	74
16. Subordinating conjunction (causal)	57	91
17. Pronoun + irregular past tense	52	65
18. Transitive verb: 3rd person singular + infinitive	39	70
19. Relative pronoun	87	96
20. Subordinating conjunction (conditional if-clause)	44	91
21. Article + noun: irregular plural	74	87
22. 3rd person subject pronoun – plural	48	87
23. Article + noun	83	91
24. Subordinating conjunction (temporal)	52	74
25. 3rd person subject pronoun – plural	48	65
26. Regular past tense (secondary verb)	39	55
27. Auxiliary: irregular 3rd person agreement	52	61
28. Article + noun	91	96
29. Preposition (adjective phrase)	65	70
30. Possessive pronoun (3rd person singular) + noun	78	91
31. Inverted copula: irregular past tense	44	83
32. 3rd person subject pronoun – singular	70	91
33. Preposition + noun (adverbial phrase)	74	91

Note: **BESA* = Bilingual English Spanish Assessment Peña et al. (2013).

less range in accuracy on grammatical forms in Spanish but continued to show low accuracy on later developing forms or ones that did not have similar equivalents in both languages such as *was hungry/ had hunger* (e.g. tenía hambre), indirect object pronouns (e.g. le), imperfect verbs (e.g. salía humo), and irregular verb forms plus past participle (e.g. hubieran llamado).

Table 5. Detailed item level accuracy on Spanish sentence repetition task of the *BESA*.

Spanish items on the *BESA* * by item number	Kindergarten % accurate	First grade % accurate
1. Relative pronoun	55	67
2. Verb (aux): imperfect indicative 3rd person singular + progressive	55	71
3. Preposition	41	67
4. Article + noun (singular, feminine)	64	67
5. Verb: regular past tense 3rd person singular	59	62
6. Article + noun (singular, masculine)	59	81
7. Relative pronoun	50	52
8. Preposition	36	57
9. Article + noun (singular, feminine)	82	86
10. Verb: imperfect indicative 3rd person singular	64	81
11. Infinitive verb	77	81
12. Verb: imperfect indicative 3rd person singular + noun	45	52
13. Verb (auxiliary): imperfect indicative 3rd person singular + adj	64	62
14. Subordinating conjunction (causal)	64	76
15. Reflexive pronoun (third person)	41	48
16. Indirect object pronoun (3rd person singular)	23	33
17. Subordinating conjunction (conditional if-clause)	64	71
18. Verb: imperfect subjunctive 3rd person singular + noun	27	43
19. Verb: conditional 3rd person singular	27	43
20. Article + noun (singular, masculine)	68	67
21. Article + noun (singular, feminine)	59	43
22. Subordinating conjunction (temporal)	32	33
23. Verb: imperfect indicative 3rd person singular + noun	27	14
24. Subordinating conjunction (temporal)	32	43
25. Infinitive verb	36	62
26. Verb: regular past tense 3rd person singular	36	52
27. Relative pronoun + verb: imperfect indicative 3rd person singular	59	57
28. Subordinating conjunction (conditional if-clause)	50	52
29. Article + noun (plural, masculine)	55	76
30. Verb: imperfect subjunctive 3rd person plural + participle	9	14
31. Preposition + noun	14	38
32. Subordinating conjunction (temporal)	45	62
33. Article + noun (singular, feminine)	45	57
34. Verb: imperfect subjunctive 3rd person plural	45	29
35. Article + noun (plural, masculine)	77	76
36. Verb (catenative): imperfect subjunctive 3rd person plural	23	29
37. Article + noun (plural, masculine)	59	62

Note: **BESA* = Bilingual English Spanish Assessment Peña et al. (2013). **Adj = adjective; **Aux = auxiliary.

Main effect of time

To address the second research question, examining differences in DLLs' performance on a sentence repetition task between time points, performance at the kindergarten and first grade time points were compared using a repeated measures within-subjects ANOVA. A large effect of time was observed for children's English sentence repetition as evidenced by a significant difference between scores in kindergarten and first grade performance, F (1,20) = 20.48, $p < .001$, $d = 1.25$. Conversely, there was not a significant effect of time for children's Spanish SR performance from kindergarten to first grade, F (1,17) = 1.48, $p = .241$. On average, children increased in their English SR performance between October of kindergarten to first grade.

Variability across individual participants

Individual children varied in the amount of growth in each language between time points, with growth in English SR skills observed more consistently across participants than growth in Spanish SR (refer to Figures 1 and 2). Based on observed growth at the individual participant level, as seen in Figure 1, approximately 81% of the participants showed an increase in English performance between time points. Of the remaining, 9.5% demonstrated consistent performance with the same score at both time points, and 9.5% decreased in their percentage accuracy. In contrast, observed

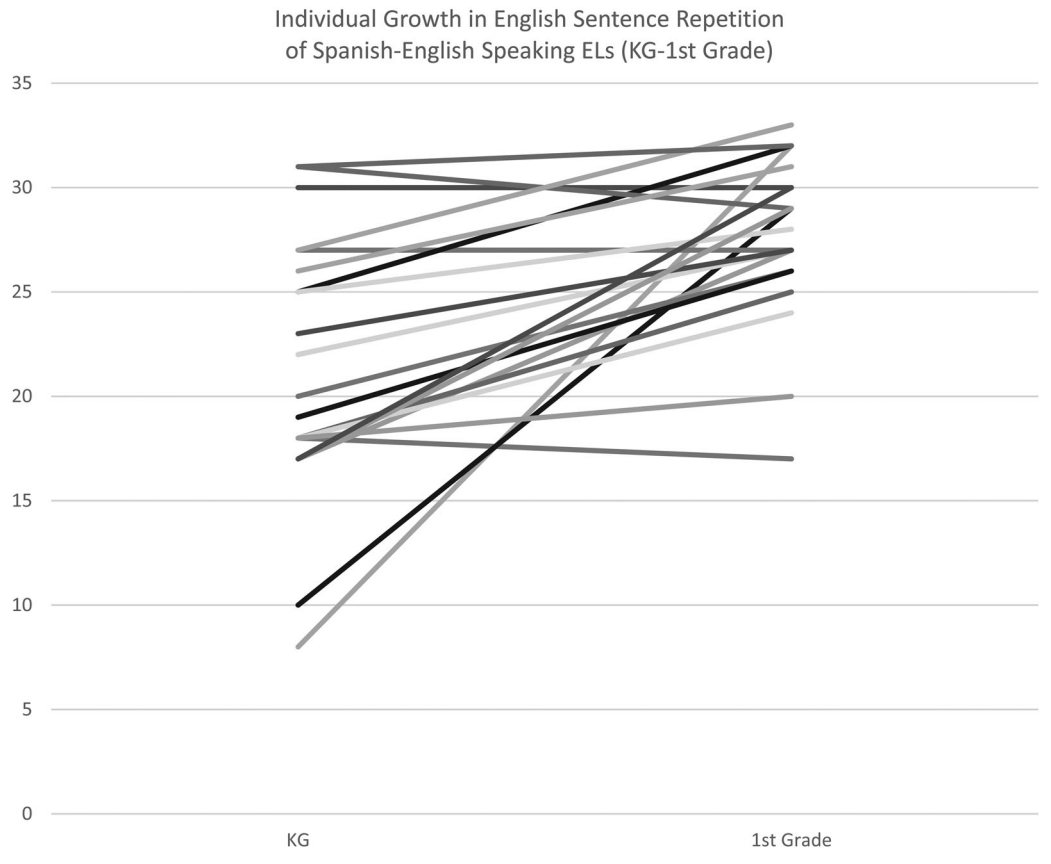

Figure 1. Change in English sentence repetition. This figure illustrates the change individual performance of Spanish-English speaking ELs, displaying the number of items correct in kindergarten (KG) and first grade on the task in English.

growth in Spanish at the individual level as seen in Figure 2, demonstrated that 61% of children showed an increase in percentage correct in Spanish SR, and 39% of children decreased in their percentage accuracy between kindergarten and first grade.

Variability across grammatical structures

Generally, accuracy on grammatical categories showed an upward trend between kindergarten and first grade in English, as demonstrated in Table 3 (i.e. article + noun; pronouns, verbs, conjunctions, prepositions). Although there was insufficient power to test for significant differences in means at the item level, visual inspection of the data at the individual item level as displayed in Table 4, indicates that 88% of grammatical forms at the individual item level showed an upward trend in average percentage of accuracy between kindergarten and first grade. Of the remaining individual items, 3% showed the same mean accuracy (article + noun) and 9% showed a decrease in average accuracy (e.g. prepositional phrase/adverbial phrase, article + noun). Specific items that demonstrated the highest percentage of difference in accuracy between kindergarten and first grade included: (a) conditional (if-then) which improved from 44% to 91% in first grade; (b) question inversion of auxiliaries which improved from 48% to 87% and 91%; question inversion of copulas 44% to 83%; and (c) subordinating conjunctions (*because)* which improved from 57% to 91% average accuracy in first grade.

Based on a comparison of accuracy on grammatical forms in Spanish over time, there was also variability in the effect of time across items. As demonstrated in Table 5, 81% of individual grammatical forms showed an upward trend in accuracy between kindergarten and first grade. Seven items or

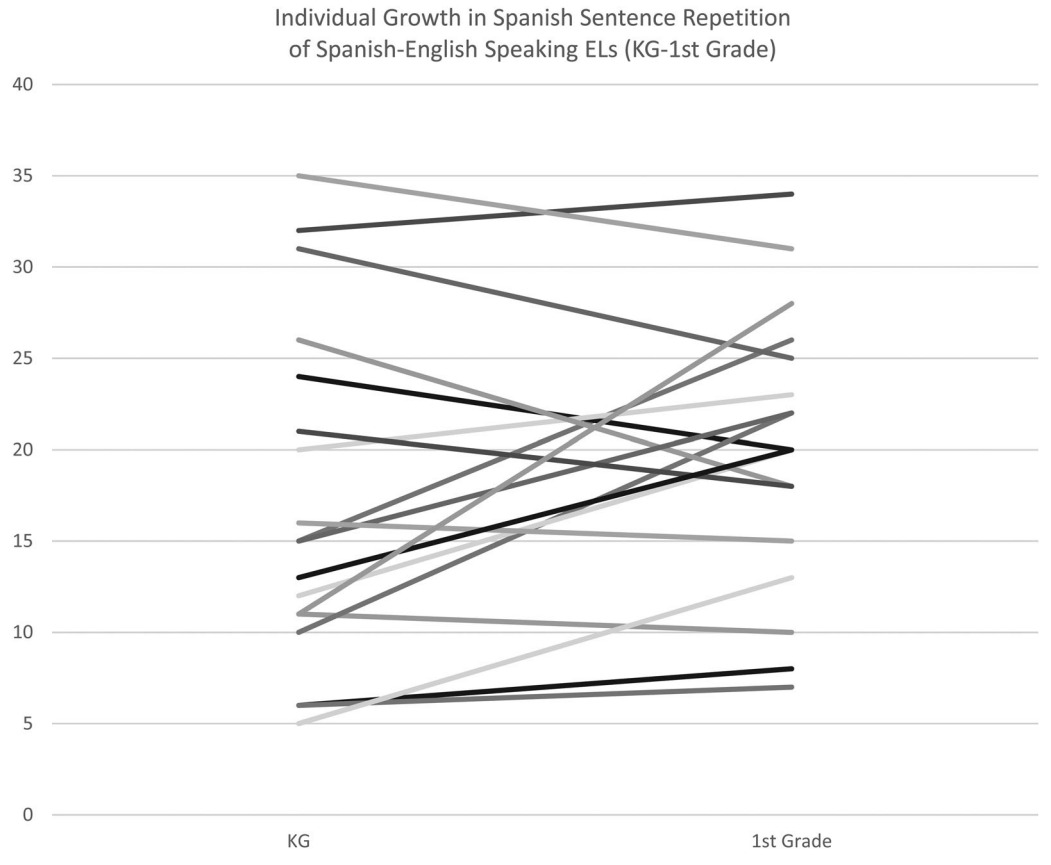

Figure 2. Change in Spanish sentence repetition. This figure illustrates the individual performance of Spanish-English speaking ELs, displaying the number of items correct in kindergarten (KG) and first grade on the task in Spanish.

19% of the forms showed a decrease in average percentage of accuracy, although four of the seven items showed only a trivial difference of 1%–2%. Imperfect verb forms showed greater than trivial decreases in accuracy over time. Grammatical forms at the item level in Spanish that showed substantial growth between kindergarten and first grade included prepositions (from 41% in kindergarten to 67% on average in first grade) and article noun agreement which increased from 55% to 76% in first grade.

Discussion

Key findings

The current study examined the change over time of performance on a SR task by Spanish-English speaking children from low socioeconomic backgrounds from kindergarten to first grade. Findings demonstrated a large growth in English SR accuracy over time and no significant change in overall Spanish SR performance over time due to high individual variability in Spanish performance. Grammatical categories demonstrated a general upward trend in accuracy for English including: article + noun; pronouns, verbs, conjunctions, and prepositions. The difference in accuracy between kindergarten and first grade substantiated the sensitivity of the measure to growth. Specific English grammatical forms that were highly sensitive to growth between kindergarten and first grade included conditional (if-then); question inversion of auxiliaries; and use of subordinating conjunctions.

The amount of growth in English morphosyntax demonstrated by Spanish-English speaking DLLs substantiated existing case studies suggesting that children learning two languages follow the same order and patterns of development for morphological and syntactic structures as their monolingual peers, but may be less accurate than monolinguals (Chilla and Bonnesen 2011; Nicoladis & Marchak, 2011; Paradis et al. 2011). The discrepancy between changes in children's grammar across time demonstrated in English versus Spanish is also consistent with the view that DLLs have two grammatical systems that develop relatively independently of each other (Castro and Gavruseva 2003; Hammer et al. 2014). Although it was beyond the scope of the current study, it would be interesting to compare children's accuracy on grammatical forms that have equivalents in each language, versus those that are distinctive of one of the child's language systems exclusively to investigate potential cross-linguistic effects.

Although on average, participants generally showed improvement on grammatical forms in Spanish over time, it was somewhat surprising that 20% of grammatical forms showed decreased accuracy and 35% of participants showed a decrease in their overall Spanish score. This finding could be viewed as consistent with previous studies that reported language attrition or decreased accuracy on gender agreement and verb tense agreement in Spanish by DLLs in English-speaking educational settings (Restrepo and Kruth 2000; Anderson 2001; Restrepo and Gutiérrez-Clellen 2001; Anderson 2003). The lack of consistent growth of DLLs' Spanish performance across time is consistent with the trends reported in previous longitudinal studies of vocabulary growth (Wood Jackson, Schatschneider, and Leacox 2014). Consistent with the current findings, Wood Jackson, Schatschneider, and Leacox (2014) reported that Spanish-English speaking children demonstrated an increase in English vocabulary between kindergarten and second grade, but a decrease in performance on a Spanish vocabulary assessment tool.

Exploring causal relationships was beyond the scope of the design of the current study. Multiple influencing factors may have contributed to the fact that an upward trend was not seen in all participants. Multiple potential factors may have interplayed in influencing outcomes including: school placement, parent home language input, and a shift in language use. It is possible that the fact that children received direct instruction exclusively in English contributed to the large effect of time in English and inconsistent change in Spanish since their exposure was more limited to home settings. Further, the language of home contexts may be expected to demand fewer complex grammatical forms compared to the academic tasks in the school which were in English only (e.g. even though; however). Additionally, a shift in Spanish performance associated with second language improvement aligns with the notion of subtractive bilingualism or language loss (Restrepo and Kruth 2000). There is no evidence in the present study to identify a trend or pattern that substantiates a true loss or shift in use but rather less consistent growth across participants.

Limitations

Findings should be interpreted cautiously due to limitations of the current convenience sample which included a relatively small sample of participants. Limited information was available on the parents' exposure and use of English since entering the United States which may have been helpful in determining to whom the results might be generalizeable. It should also be noted that 37% of families reported both Spanish and English were spoken at home equally or nearly equally; and it is considered a limitation that we were unable to quantify the use of each language with precision since the amount and use of Spanish and English spoken in the home could have an impact on the child's performance on the SR task during the period of the study. The inclusion of participants was based on DLLs who remained at the participating schools for both kindergarten and first grade. Due to participant attrition, it was not possible to ensure an equal number of girls and boys or to ensure a distribution of characteristics of the sample (e.g. socioeconomic levels). As a result, it cannot be assumed that findings are generalizable to DLLs from backgrounds unlike those in the current study. It is possible that children with stronger skills in Spanish at kindergarten entry

might demonstrate a ceiling effect in kindergarten Spanish SR. It is also possible that children may show less variability in Spanish performance from kindergarten to first grade. This may be interesting to examine for a future study.

Another notable limitation is the sole use of one grammar task in the current project. It should be recognized that the morphological skills highlighted in this study cannot be interpreted in isolation, but instead accuracy is influenced by the syntactic context and demands of the task itself. Although SR is commonly used to measure grammatical skills (Conti-Ramsden, Botting, and Faragher 2001; Gutiérrez-Clellen, Restrepo, and Simón-Cereijido 2006), the task of imitating a sentence presented orally requires the child to employ multiple skills in addition to varying syntactic complexity. Variability in related skills (such as short term memory skills, listening, and attention to information presented auditorily) may have substantially influenced children's SR, in addition to the influence of their grammatical skills in Spanish and/or English. Similarly, the Spanish vocabulary tool used for descriptive information on the participants had recognized weaknesses (e.g. age of the test and normative sample). It would be interesting for future studies to include additional descriptive measures to better describe the children's concurrent skills and allow for comparison of standardized scores between grades as well.

Additionally, it cannot be presumed that the growth observed in the current cohort of DLLs was not accelerated or influenced by their participation in the intervention development study. Although the broader vocabulary study did not directly target morphological or syntactic skills, it is possible that the exposure to shared story readings increased their overall language growth across domains of language or that heightened exposure and experience through participation in the study facilitated more growth than would typically be observed in a one year period. Given the current research design, it was not possible to splinter out causal factors, but the observance of change substantiates the sensitivity of the SR tool for progress monitoring. It would be interesting in future studies to examine the relationship between morphology and vocabulary skills of Spanish-English speaking children at different grade levels. It would also be interesting to compare average growth of DLLs to a monolingual comparison group on the SR task.

Implications

Despite limitations, the current findings support the usefulness of a SR task as a descriptive tool that is sensitive to growth which may make it useful as a progress monitoring tool for children in English instructional settings who speak Spanish at home. The identification of grammatical forms that are sensitive to growth in a SR task may give some assistance to teachers and personnel on educational support teams seeking ways to assist children with morphological development. The current findings highlight specific grammatical forms that appeared to be malleable for growth between kindergarten and first grade for Spanish-English speaking children (conditional; question inversion of auxiliaries; and subordinating conjunctions) as well as specific forms that were persistently challenging for young DLLs. These highlighted persistent grammatical errors (e.g. irregular past tense) may be useful targets for personnel on educational support teams (e.g. speech-language pathologists, ESOL teachers, general educators, paraprofessionals) in suggesting areas that may require additional or more intensive instruction.

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Disclosure statement

No potential conflict of interest was reported by the authors.

References

Anderson, R. 2001. "Lexical Morphology and Verb Use in Child First Language Loss: A Preliminary Case Study Investigation." *International Journal of Bilingualism* 5: 377–401.

Anderson, R. 2003. "*Language Loss in Spanish-speaking Children with and Without SLI*." Presentation at the annual convention of the American speech-language-hearing association, Chicago.

Bradley, R. H., and R. F. Corwyn. 2002. "Socioeconomic Status and Child Development." *Annual Review of Psychology* 53: 371–399.

Capps, R., M. Fix, J. Murray, J. Ost, J. Passel, and S. Herwantoro. 2010. *The new Demography of America's Schools: Immigration and the No Child Left Behind Act*. Washington, DC: Urban Institute.

Castro, D., and E. Gavruseva. 2003. "Finiteness and Aspect in Spanish/English Bilingual Acquisition." *First Language* 23: 171–192. doi:10.1177/01427237030232002.

Chiat, S., S. Armon-Lotem, T. Marinis, K. Polisenska, P. Roy, and B. Seeff-Gabriel. 2013. "The Potential of Sentence Imitation Tasks for Assessment of Language Abilities in Sequential Bilingual Children." http://openaccess.city.ac.uk/4797/1/Chiat%20et%20al%20in%20Gathercole%20volum%20almost%20final%202012.pdf.

Chilla, S., and M. Bonnesen. 2011. "A Crosslinguistic Perspective on Child SLA: The Acquisition of Questions in German and French." *Linguistische Berichte* 228: 411–440.

Conti-Ramsden, G., N. Botting, and B. Faragher. 2001. "Psycholinguistic Markers for Specific Language Impairment (SLI)." *Journal of Children Psychology and Psychiatry* 42: 741–748.

Davison, M. D., C. Hammer, and F. R. Lawrence. 2011. "Associations Between Preschool Language and First Grade Reading Outcomes in Bilingual Children." *Journal of Communication Disorders* 44: 444–458.

Duncan, G. J., and J. Brooks-Gunn. 1997. *Consequences of Growing Up Poor*. New York: Russell Sage Foundation.

Dunn, L. M., and L. M. Dunn. 2007. *Peabody Picture Vocabulary Test- Fourth*. Circle Pines, MN: American Guidance Service.

Dunn, L., S. Lugo, R. Padilla, and L. Dunn. 1986. *Test de Vocabulario en Imagenes Peabody* [Peabody Picture Vocabulary Test]. Circle Pines, MN: American Guidance Service.

Ehrler, D. J., and M. L. McGhee. 2008. *Primary Test of Nonverbal Intelligence (PTONI)*. Austin, TX: Clocktower Hill Research and Publishing Group, LLC.

Everitt, A., P. Hannaford, and G. Conti-Ramsden. 2013. "Markers for Persistent Specific Expressive Language Delay in 3-4-Year-olds." *International Journal of Language & Communication Disorders* 48 (5): 534–553. doi:10.1111/1460-6984.12028.

Genesee, F., and E. Nicoladis. 2009. "Bilingual First Language Acquisition." In *Handbook of Language Development*, edited by E. Hoff, and M. Shatz, 324–342. Oxford: Blackwell.

Gutiérrez-Clellen, V. F., M. A. Restrepo, and G. Simón-Cereijido. 2006. "Evaluating the Discriminant Accuracy of a Grammatical Measure with Spanish-speaking Children." *Journal of Speech Language and Hearing Research* 49: 1209–1223. doi:10924388/06/4906-1209.

Gutiérrez-Clellen, V. F., and G. Simon-Cereijido. 2007. "The Discriminant Accuracy of a Grammatical Measure with Latino English-speaking Children." *Journal of Speech Language and Hearing Research* 50: 968–981. doi:1092-4388/07/5004-0968.

Hammer, C. S., E. Hoff, Y. Uchikoshi, C. Gillanders, D. C. Castro, and L. E. Sandilos. 2014. "The Language and Literacy Development of Young Dual Language Learners: A Critical Review." *Early Childhood Research Quarterly* 29: 715–733.

Hammer, C. S., Scarpino, S., Davison, M. D. (2011). Beginning with Language: Spanish-English Bilingual Preschoolers' Early Literacy Development. In S. B. Neumann & D. K. Dickinson (Eds.), *Handbook of Early Literacy Research* (Vol. 3, pp. 119–135). New York: Guilford Press.

Kena, et al. 2015. "National Center for Education Statistics (2015)." *The Condition of Education 2015*. Accessed April 15, 2015. http://files.eric.ed.gov/fulltext/ED556901.pdf.

Kena, G., W. Hussar, J. McFarland, C. de Brey, L. Musu-Gillette, X. Wang, J. Zhang, et al. 2016. *The Condition of Education 2016* (NCES 2016-144). Washington, DC: U. S. Department of Education, National Center for Education Statistics. Accessed August 7, 2016. http://nces.ed.gov/pubsearch.

Komeili, M., and C. R. Marshall. 2013. "Sentence Repetition as a Measure of Morphosyntax in Monolingual and Bilingual Children." *Clinical Linguistics & Phonetics* 27: 152–162. doi:10.3109/02699206.2012.751625.

Oller, D. K., and R. E. Eilers. 2002. "An Integrated Approach to Evaluating Effects of Bilingualism in Miami School Children: The Study Design." In *Language and Literacy in Bilingual Children*, edited by D. K. Oller, and R. E. Eilers, 22–41. Clevedon, England: Multilingual matters.

Paradis, J., E. Nicoladis, M. Crago, and F. Genesee. 2011. "Bilingual Children's Acquisition of the Past Tense: A Usage-based Approach." *Journal of Child Language* 38: 554–578. doi:10.1017/S0305000910000218.

Passel, J. S., D. Cohn, and M. H. Lopez. 2011. "Census 2010: 50 Million Latinos Hispanics Account for More Than Half of Nation's Growth in Past Decade." Accessed August 7, 2016. www.pewhispanic.org/files/reports/140.pdf.

Peña, E. D., V. F. Gutiérrez-Clellen, A. Iglesias, B. A. Goldstein, and L. M. Bedore. 2013. *Bilingual English Spanish Assessment (BESA)*. San Diego, CA: AR-Clinical Publications.

Restrepo, M. A., and V. F. Gutiérrez-Clellen. 2001. "Article use in Spanish-speaking Children with Specific Language Impairment." *Journal of Child Language* 28: 433–452.

Restrepo, M. A., and K. Kruth. 2000. "Grammatical Characteristics of a Bilingual Student with Specific Language Impairment." *Journal of Children's Communication Development* 21: 66–76.

Seeff-Gabriel, B., S. Chiat, and B. Dodd. 2010. "Sentence imitation as a tool in identifying expressive morphosyntactic difficulties in children with severe speech difficulties." *International Journal of Language and Communication Disorders*, *45* (6): 691–702.

Seeff-Gabriel, B., S. Chiat, and P. Roy. 2010. "There's More to Repetition Than Meets the Ear." *Royal College of Speech and Language Therapists Bulletin* 697: 21–22.

Semel, E., E. Wiig, and W. Secord. 1994. *Clinical Evaluation of Language Fundamentals-revised*. San Antonio, TX: The Psychological Corporation.

Snyder, T. D., and S. A. Dillow. 2012. *Digest of Education Statistics 2011 (NCES2012-001)*. Washington, DC: National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education.

Thordadottir, E., and A. Gudrun Juliusdottir. 2013. "Icelandic as a Second Language: A Longitudinal Study of Language Knowledge and Processing by School-age Children." *International Journal of Bilingual Education and Bilingualism* 16: 411–435. doi:10.1080/13670050.2012.693062.

Thordardottir, E., and M. Brandeker. 2013. "The Effect of Bilingual Exposure Versus Language Impairment on Nonword Repetition and Sentence Imitation Scores." *Journal of Communication Disorders* 46: 1–16. doi:10.1016/j.jcomdis.2012.08.002.

Wiig, E. H., W. Secord, and E. Semel. 2000. *Clinical Evaluation of Language Fundamentals (CELF)—Preschool UK Edition*. Sidcup: Psychological Corporation.

Wood Jackson, C. W., C. Schatschneider, and L. Leacox. 2014. "Longitudinal Analysis of Receptive Vocabulary Growth in Young Spanish English–Speaking Children from Migrant Families." *Language Speech and Hearing Services in Schools* 45 (1): 40–51. doi:10.1044/2013_LSHSS-12-0104.

Woon, C. P., N. T. Yap, H. W. Lim, and B. E. Wong. 2014. "Measuring Grammatical Development in Bilingual Mandarin-English Speaking Children with a Sentence Repetition Task." *Journal of Education and Learning* 3 (3): 144–157.

Zimmerman, I. L., V. G. Steiner, R. E. Pond, J. Boucher, and V. Lewis. 1997. *Preschool Language Scale—3 (UK)*. London: Psychological Corporation.