

Current Issues in Language Evaluation, Assessment and Testing:

Research and Practice

Edited by

Christina Gitsaki and Christine Coombe

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CHAPTER THREE

BILINGUAL LANGUAGE ASSESSMENT IN EARLY INTERVENTION: A COMPARISON OF SINGLE- VERSUS DUAL-LANGUAGE TESTING

CAROLINE A. LARSON, SARAH CHABAL,
AND VIORICA MARIAN

Abstract

Despite a growing number of bilingual children enrolled in Early Intervention language services, methods of administering language assessments to bilingual children are not standardized. This study reports clinically-meaningful differences in bilingual children's receptive and expressive language outcomes when their language skills are assessed in the primary language versus in both the primary and secondary languages. Eleven Spanish-English speaking children (ages 1;11 to 2;11) with language delay enrolled in Early Intervention were assessed using *The Rossetti Infant-Toddler Language Scale* (Rossetti, 1990) in their primary language only, and then in both their primary and secondary languages. When assessed in only one language, bilingual children's language skills were underestimated by 1.4 months for receptive language and 2.2 months for expressive language; language delay was overestimated by 4.7% for receptive language and by 7.8% for expressive language. Single-language assessments would lead to inappropriate Early Intervention referral for 3 of the 11 tested children. It is therefore suggested that assessing bilingual children in only one language leads to a significant underestimation of receptive and expressive language abilities and a significant overestimation of language delay. Consequently, the efficacy, reliability, and validity of the assessment are compromised and best practice as mandated by speech-language pathology certification organizations is not achieved.

Introduction

The number of bilingual children in the United States, as well as throughout the world, is rapidly growing, due, in part, to globalization, migration, and an increased prevalence of bilingual education options. For example, of school-age children in the United States, 22% speak a language other than English in the home (Lowry, 2011). Within certain areas, such as large cities, an even higher percentage of families speak more than one language in the home. For instance, a language other than English is spoken in 35.5% of Chicago residences (United States Census Bureau, 2013). Children in these homes who are developing more than one language are generally believed to have language disorders at a similar rate as children acquiring only one language (Kohnert, 2010). As a result, the caseload makeup for speech-language pathologists often includes children with language delay who are developing bilinguals.

When young monolingual and bilingual children fail speech-language screenings or are referred by pediatricians due to speech-language concerns, they undergo language assessment to determine eligibility for Early Intervention services. For example, in Illinois a child is considered eligible for speech-language services when he or she demonstrates a 30% or more delay in one or more areas of speech, language, or communication, when he or she presents with a medical diagnosis that typically results in developmental delay, or when he or she is determined to be at risk of substantial developmental delay (Illinois Department of Children and Family Services, 2003; Illinois Department of Human Services Community Health and Prevention Bureau of Early Intervention, 2009).

Eligibility for speech-language services through the Early Intervention program in the United States is often determined based on assessment outcomes of *The Rossetti Infant-Toddler Language Scale* (Rossetti, 1990). *The Rossetti* is a criterion-referenced assessment of preverbal and verbal areas of communication and interaction for children up to three years of age. The skill age at which all criteria are demonstrated and the resulting percent of receptive or expressive language delay relative to chronological age decide the children's eligibility for Early Intervention.

The Rossetti is often used in the Early Intervention program as it is familiar to Early Intervention clinicians across disciplines (e.g., occupational therapists, social workers, etc.) (Marchman & Martinez-Sussmann, 2002) and because few other assessment tools cover a similar breadth of developmental domains within the birth to three age range. Like many assessments structured for use with young children (e.g., Bzoch, League, & Brown, 2003; Hedrick, Prather, & Tobin, 1984; Marchman &

Martinez-Sussmann, 2002; Rescorla, 1989; Wetherby & Prizant, 1993), *The Rossetti* is primarily informal, follows a checklist format, and involves multiple sources reporting the presence or absence of specified skills. *The Rossetti* is often preferred over other assessments due to ease of administration in the home environment and applicability to the Early Intervention program assessment requirements (Illinois Department of Human Services Community Health and Prevention Bureau of Early Intervention, 2009).

Background

Despite its use within the Early Intervention program, methods of administering *The Rossetti* assessment to bilingual children are not standardized. When *The Rossetti* is used to assess bilingual children, accepted practices include measuring language abilities in only the child's primary language, in only the child's secondary language, or across both developing languages.

One concern with assessing bilingual children's language skills in only their primary or secondary language is that developing bilinguals with language delay often display uneven skill distribution and shifting development across languages, as well as individual variation in their developmental trajectories (Kohnert, 2010). For example, a child may have relatively even expressive vocabulary skills in Spanish and English, but demonstrate more advanced verb conjugation skills in English. Even in typically-developing bilingual children, language acquisition is characterized by variable timeframes and patterns of development, which cause difficulty in obtaining valid assessment outcomes (e.g., Kohnert & Goldstein, 2005; Marian, 2008; Marian, Faroqi-Shah, Kaushanskaya, Blumenfeld, & Sheng, 2009). Therefore, single-language assessment of developing bilinguals may not accurately reflect their language abilities and may not be best practice. Indeed, previous research with school-age bilinguals suggests that both languages should be measured and considered as a composite in order to reduce the risk of misdiagnosis and inappropriate individualized education plans (Kohnert, 2008; Kohnert, 2010; Marian et al., 2009; Roseberry-McKibbin, Brice, & O'Hanlon, 2005).

While such risks in the school-age population are well documented, there is little research examining language assessment methods with birth to three-year-old bilingual children who have language delays (Dollaghan & Horner, 2011). Within typically-developing populations, the language(s) of assessment can affect measures of young bilinguals' total vocabulary size (Core, Hoff, Rumiche, & Señor, 2013; Hoff, Core, Place,

Rumiche, Señor, & Parra, 2012; Thordartottir, Rothenberg, Rivard, & Naves, 2006), grammatical ability (Hoff et al., 2012), and syntax (Thordartottir et al., 2006). Similar metrics are likely to be impacted by the language of assessment for children with language delays. Understanding how bilingual children's assessments are impacted by the use of single- or dual-language practices is important for early and accurate detection of language disorders. Early assessment allows for the provision of Early Intervention speech-language services to the young bilingual population, which results in faster gains and possible prevention or minimization of deficits (National Joint Committee on Learning Disabilities, 2006; Paul, 2007; Woods & Wetherby, 2003).

Because the Early Intervention population often includes bilingual children with language delays, the current study aimed to determine whether young bilingual children's language assessment outcomes were different when evaluated in only one language as opposed to in both of the children's developing languages.

The Study

The study reported in this chapter looked at the differences in expressive and receptive language measures on *The Rossetti* for birth to three year old bilingual children with language delay when they were assessed in their primary language versus in both their primary and secondary languages. It was hypothesized that assessment outcomes provide a more accurate picture of the developing bilingual's language level when skills are measured across both developing languages. Therefore, it was predicted that when administering *The Rossetti* to young bilingual children with language delay in only one language, outcomes will underestimate language abilities and overestimate language delay.

Participants

Participants were 11 children (2 girls; 9 boys) of Hispanic descent ranging in age from 1;11 to 2;11 (Mean = 2;5, $SD = 0;4.8$), born in the United States to bilingual Spanish-English speaking parents. All participants included in the study were assigned to Early Intervention speech-language services and required annual or 6-monthly Early Intervention mandated reassessment. All participants passed a hearing screening within one year of the testing date. Verbal consent was obtained from the participants' parents prior to the evaluation.

Information about participants' demographic information, linguistic

backgrounds, and language skills was obtained from parent reports and Early Intervention initial evaluation reports (see Table 3-1). Five participants were reported to use English as their primary language; six participants were reported to use Spanish as their primary language. On average, participants made 78% of their expressions in their primary language ($SD = 10.8\%$) and 22% of their expressions in their secondary language ($SD = 10.8\%$).

Table 3-1: Demographic information for study participants.

Participant	Gender	Age	Primary Language	Secondary Language	% Expression in Primary Language	% Expression in Secondary Language	Type of Diagnosed Delay
1	M	1;11	English	Spanish	80	20	Language
2	M	2;6	English	Spanish	85	15	Language
3	F	2;4	Spanish	English	80	20	Language
4	M	2;11	Spanish	English	75	25	Language
5	M	2;4	English	Spanish	85	15	Language
6	M	2;6	English	Spanish	90	10	Developmental
7	M	1;11	English	Spanish	85	15	Developmental
8	M	2;11	Spanish	English	60	40	Language
9	F	2;1	Spanish	English	90	10	Language
10	M	2;11	Spanish	English	60	40	Language
11	M	2;6	Spanish	English	70	30	Language

Materials

Participants were assessed according to Early Intervention standards using *The Rossetti Infant-Toddler Language Scales* (Rossetti, 1990) at home with the presence of a parent, the treating therapist (first author), and an interpreter who had been assigned by the program to the child's case at the onset of service provision. *The Rossetti* assesses skills across developmental domains including *Interaction-Attachment* (e.g., 'Plays away from familiar people'), *Pragmatics* (e.g., 'Uses words to protest'), *Gesture* (e.g., 'Gestures to request action'), *Play* (e.g., 'Stacks and

assembles toys and objects'), *Language Comprehension* (e.g., 'Identifies four objects by function'), and *Language Expression* (e.g., 'Uses sentence-like intonational patterns'), and is used with young children ages birth-three years (1990).

Because our interest is in the assessment of children's language skills, the current study focused on the expressive and receptive language domains of *The Rossetti*. Within each domain, children's skills were assessed within three month intervals (e.g., 21-24 months of age). Receptive language measures included: total number of words understood; the ability to follow two-step directions; the ability to identify body parts; the ability to answer wh-questions; and the ability to identify objects by category. Expressive measures included: total number of words spoken; the frequency with which the child expressed two word phrases; the ability to verbalize two different needs; the ability to use words to interact with others; and the ability to imitate animal sounds. Because a child may not spontaneously produce all of these behaviors within the context of a single session with the clinician, scores on each domain were credited with equal weight based on parent report, assessor observation, and/or assessor elicitation. Behaviors not observed or elicited by the parent or assessor were considered not yet present.

The evaluator was a state licensed and Early Intervention credentialed practicing speech-language pathologist-clinical fellow. All interpreters were Early Intervention credentialed Spanish-English bilinguals who were familiar to the child and family. Interpreters were assigned to each child at the onset of Early Intervention service provision.

Procedure

The Rossetti parent questionnaire and test criterion are available in Spanish and English; however this study's administration used only the English questionnaire and test criterion, as an interpreter was present to translate the questions from English to Spanish. Parent interviews were completed in English with Spanish interpretation prior to the assessment to determine participants' demographic and linguistic backgrounds, and then with *The Rossetti* parent questionnaire during the assessment period. Follow-up questions and clarification questions were used as needed to ensure adequate and appropriate interpretation of assessment questions.

Within each assessment period, *The Rossetti* was administered twice: first only in the participant's primary language (i.e., credit was only given for skills demonstrated or reportedly observed in the primary language), and then in the child's primary and secondary languages (i.e., credit was

given for skills in either and/or both languages). During primary language administration, all activities were conducted in the child's primary language only, and the child received credit for skills demonstrated in that language only. For example, a child whose primary language was Spanish would not receive credit for a skill demonstrated in English. During dual-language administration, all activities were conducted in a ratio that matched the parent-reported ratio of Spanish to English expression. Children were awarded credit for all skills, regardless of their language of demonstration. Because the assessment accounts for skills that parents have observed but that may not have been demonstrated during the assessment period, and because it is a criterion-referenced assessment with general skill benchmarks, practice effects across single- and dual-language assessments were not problematic.

The parent interview, primary language assessment, and dual-language assessment occurred within the same contact period. Sessions lasted approximately one hour and involved child-directed and therapist-directed structured play activities, similar to a typical therapy session (e.g., shared storybook reading, symbolic play with a toy farm, and putting together puzzles).

Scoring and Data Analysis

The assessment was scored and analyzed by the treating therapist with adherence to testing procedures. Skills observed or elicited by the assessing therapist were scored online, and parent-reported skills were credited offline within one week of administration. All assessment reports were reviewed by the assessing therapist's clinical fellowship mentor.

The Rossetti assigns age levels based on the presence of all skills within a domain's three month interval. In order to be scored within an age range, the child must have demonstrated all skills within that interval (i.e., if one or more skills from a given level were not present, the child was assigned a lower age level for that domain). Skills were awarded if they were observed or elicited by the parent, evaluator, or other reporter (e.g., daycare teacher or caregiver). Children were assessed at the highest reported skill level (e.g., if parents reported that the child used two-word phrases frequently but the evaluator elicited two-word phrases only occasionally, the skill was assigned as 'uses two-word phrases frequently' (Rossetti, 1990).

Percent language delay was calculated by dividing the child's lowest assessed age by his or her chronological age, multiplying that number by 100, and then subtracting 100 (Rossetti, 1990; West Virginia Department

of Human Resources, 2009). For example, a child with a chronological age of 30 months who demonstrated a receptive language age of 21-24 months would present with a 30% delay in receptive language.

Results

All data were analyzed using paired *t*-tests to compare outcomes when assessments were conducted in only the child's primary language versus his or her primary and secondary languages. Results revealed that single-language outcomes underestimated the participants' receptive and expressive language skills.

Primary Language Testing

When assessed in the primary language only, participants' average receptive language skill age was 20.5 months ($SD = 5.8$ months), representing a mean delay of 28.4% ($SD = 16.2\%$). Average expressive language skill age was 18.8 months ($SD = 6.4$ months), representing an average delay of 34.1% ($SD = 18.3\%$). When including scattered skills (i.e., all ages at which skills were demonstrated), single-language assessment revealed a highest receptive skill-age average of 21.8 months ($SD = 5.9$ months) across participants and a highest expressive skill-age average of 22.4 months ($SD = 5.1$ months).

Dual-Language Testing

When assessed in both primary and secondary languages, participants' receptive skill age was 21.8 months ($SD = 6.2$ months), representing a delay of 23.6% ($SD = 15.8\%$). Expressive skill age was 21 months ($SD = 6.6$ months), representing an average delay of 26.3% ($SD = 19\%$). When accounting for scattered skills (i.e., skill distribution) across both languages, average highest receptive skill-age was 24.3 months ($SD = 4.9$ months) and average highest expressive skill-age was 24.3 months ($SD = 4.9$ months).

Single- Versus Dual-Language Testing

The data were compared using *t*-tests. The results of the analyses suggest that assessment in only the primary language significantly underestimated receptive skill age by an average of 1.4 months ($SD = 1.6$ months, $t(10) = 2.8868$, $p < .05$) (see Table 3-2 and Figure 3-1) and

expressive skill age by an average of 2.2 months ($SD = 1.4$ months, $t(10) = 5.1640$, $p < .05$) (see Table 3-3 and Figure 3-2). Primary language assessment also significantly overestimated the language delay by 4.7% ($SD = 5.7\%$, $t(10) = 2.7368$, $p < .05$) for receptive skills and by 7.8% ($SD = 5.4$, $t(10) = 4.8348$, $p < .05$) for expressive skills (see Figure 3-3). The findings also suggest that single-language assessment significantly underestimated scattered skills by 2.5 months ($SD = 1.8$ months, $t(10) = 4.5000$, $p < .05$) in the receptive domain and 1.9 months ($SD = 2.0$ months, $t(10) = 3.1305$, $p < .05$) in the expressive domain.

Discussion

The results of the present study confirm that assessing bilingual children in only one language leads to a significant underestimation of participants' receptive and expressive language abilities and a significant overestimation of their language delay. Scattered skill measurement, which provides treatment planning and skill distribution information, was also significantly underestimated. As a result of obtaining inaccurate assessment outcomes, eligibility determination and treatment planning are therefore compromised when assessing language skills in only one language, and implementation of best practice (ASHA, 2010) is not achieved. We conclude that clinicians working with bilingual children must measure highest skill levels across both languages to obtain accurate diagnostic and treatment planning information.

Table 3-2: Receptive language ability as indexed by *The Rossetti* (1990) *Language Comprehension* subtest.

Participant	Skill Age Assessment				Highest Skill Age Assessment		
	Primary Language Only (months; % delay)	Dual Language (months; % delay)	Skill Age Difference (months)	% Delay Difference	Primary Language Only (months)	Dual Language (months)	Skill Age Difference (months)
1	15; 35%	18; 21%	-3	-14%	15	21	-6
2	24; 20%	24; 20%	-0	-0%	24	27	-3
3	27; 4%	27; 4%	-0	-0%	27	27	-0
4	27; 25%	30; 17%	-3	-8%	27	30	-3
5	21; 25%	21; 25%	-0	-0%	24	27	-3
6	12; 60%	12; 60%	-0	-0%	15	18	-3
7	15; 35%	18; 22%	-3	-13%	15	18	-3
8	18; 49%	21; 40%	-3	-9%	21	24	-3
9	18; 14%	18; 14%	-0	-0%	21	21	-0
10	30; 14%	33; 6%	-3	-8%	33	33	-0
11	18; 31%	18; 31%	-0	-0%	18	21	-3
Mean	20.5; 28.4%	21.8; 23.6%	-1.4*	-4.7%*	21.8	24.3	-2.5*

Note: * = significant difference at $p < .05$

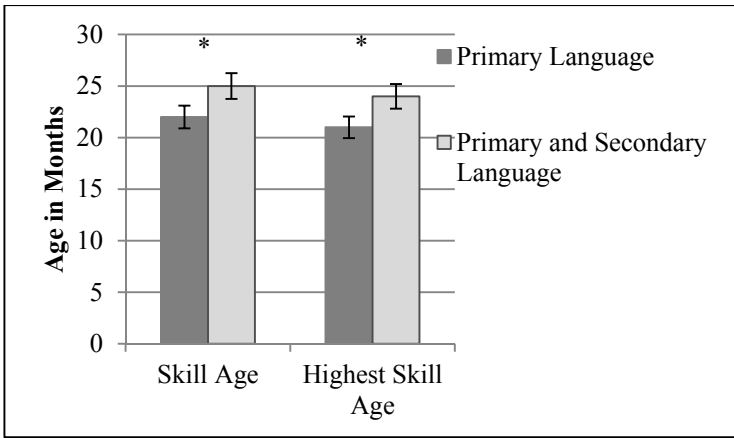


Figure 3-1: Participants’ receptive language assessment results using *The Rossetti* (1990) *Language Comprehension* subtest. Error bars represent standard errors and asterisks indicate significant differences at $p < .05$.

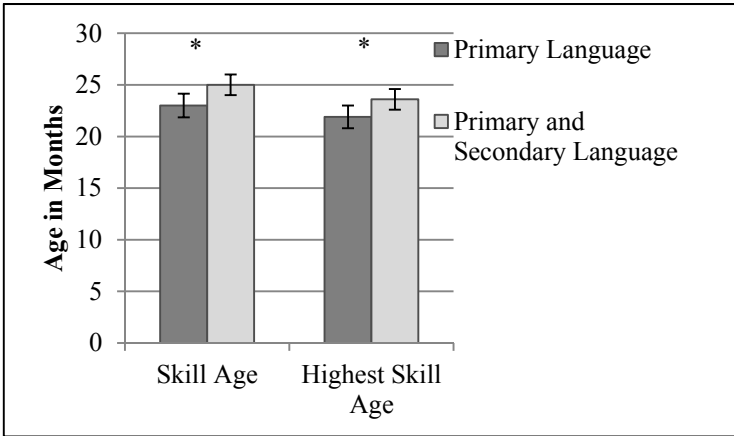


Figure 3-2: Participants’ expressive language assessment results using *The Rossetti* (1990) *Language Expression* subtest. Error bars represent standard errors and asterisks indicate significant differences at $p < .05$.

Table 3-3: Expressive language ability as indexed by *The Rossetti* (1990) *Language Expression* subtest.

Participant	Skill Age Assessment				Highest Skill Age Assessment		
	Primary Language Only (months; % delay)	Dual Language (months; % delay)	Skill Age Difference (months)	% Delay Difference	Primary Language Only (months)	Dual Language (months)	Skill Age Difference (months)
1	18; 21%	21; 9%	-3	-12%	18	21	-3
2	24; 20%	24; 20%	-0	-0%	24	27	-3
3	21; 25%	24; 14%	-3	-11%	21	27	-6
4	24; 33%	27; 25%	-3	-8%	33	33	-0
5	24; 14%	24; 14%	-0	-0%	27	27	-0
6	9; 70%	9; 70%	-0	-0%	27	27	-0
7	12; 48%	15; 35%	-3	-13%	21	24	-3
8	18; 49%	21; 40%	-3	-9%	21	24	-3
9	15; 28%	18; 14%	-3	-14%	18	18	-0
10	30; 14%	33; 6%	-3	-8%	21	24	-3
11	12; 53%	15; 42%	-3	-11%	15	15	-0
Mean	18.8; 34.1%	21; 26.3%	-2.2*	-7.8%*	22.4	24.3	-1.9*

Note: * = significant difference at $p < .05$

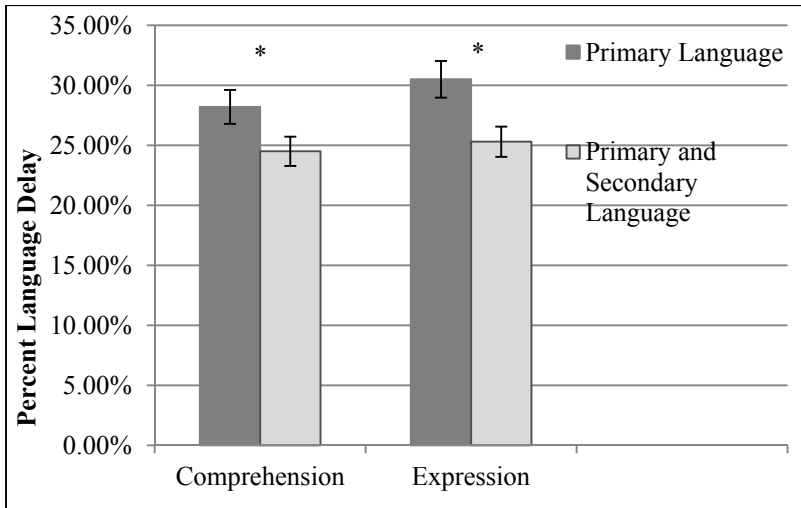


Figure 3-3: Percent language delay in primary-language-only assessment and in dual-language assessment using *The Rossetti* (1990) *Language Comprehension* and *Language Expression* subtests. Error bars represent standard errors and asterisks indicate significant differences at $p < .05$.

Clinical Implications

The results of the present study are relevant for Early Intervention initial evaluation and ongoing assessment methods. Frequently, initial evaluations assess developing bilinguals in the primary language or secondary language only, or the evaluation report does not discuss the language of assessment. Consequently, questions may be drawn as to the accuracy of children's eligibility determination, as well as their speech-language treatment planning. For example, if dual-language assessment protocols are not followed, three of the eleven tested participants would receive inappropriate referral for Early Intervention services. Although these three participants would meet the 30% delay criterion when assessed in only one language and could therefore be eligible for Early Intervention services, when assessed across both of their languages, these participants' language skills would fall within the average range for bilingual children.

Assessing children in only one language and inappropriately referring them for services may cause these children's families to direct limited familial resources to the children's treatment, as well as cause undue stress on the family. Additionally, occupying a finite number of clinicians and

limited funding is not warranted for these children. Children who are significantly delayed and who actually meet the eligibility requirements may linger on a waitlist or receive no services as children whose development is age-appropriate receive treatment. Furthermore, not accounting for a child's second language perpetuates negative bias against bilingual language learners and the differences in their course of language development as compared to monolingual language development.

Appropriate treatment planning may also be impacted by single-language assessment as treating therapists develop therapeutic goals and establish the language of treatment based on the children's initial evaluation reports. Developing a treatment plan based on inaccurate assessment outcomes and skill distribution information is not best practice, and may hinder the child in reaching his or her full communicative potential. Also, due to a lack of continuity and infrequent contact between assessing and treating therapists in Early Intervention, the treating therapist may not be able to determine how and in what language the child's skills were measured based on unreported or inaccurately-reported language of assessment in the initial evaluation reports. Consequently, the Early Intervention language assessment process must accurately and thoroughly account for developing bilinguals' composite language skills.

The research presented here has direct implications for how language assessments should be structured. Prior to initiating the assessment process for children who are developing more than one language, the assessor must complete a thorough case history with the child's parent or caregiver, utilizing interpretation services as necessary. The case history should include information related to medical history and current health status (e.g., birth weight, hospitalizations, familial medical history), developmental milestones (e.g., age the child first walked, first words), linguistic environment (e.g., primary language, language input/output, community language), and concerns regarding the child's language skills (e.g., the child uses less than five true words and jargonizing to communicate). Assessments should then measure the child's highest language skill across *both* developing languages, as well as scattered skills and other qualitative information (e.g., the child produces the pronouns 'I' and 'me' in English and 'me' in Spanish independently, but is able to also produce 'yo' in Spanish given support). For example, a child with a primary language of English and secondary language of Spanish who is able to follow 2-step directions in English and 1-step directions in Spanish should receive credit for following 2-step directions. Measuring the highest reported and observed language skills across languages ensures that all of the child's skills are given credit. As a result, the assessment

yields a more appropriate eligibility determination.

Conclusion

To conclude, we have shown that assessing bilingual children in only the primary language can underestimate their language abilities, and may result in inaccurate eligibility determination and over-identification of language delays. Therefore, it is vital that language assessments in children acquiring multiple languages account for abilities across all developing languages. Measuring children's skills in all developing languages (as opposed to skills in only one language) yields a more accurate and complete assessment, which has immediate benefits for appropriate service eligibility determination and treatment planning.

While our current findings provide support for the use of dual-language assessments when determining children's eligibility for Early Intervention services, future research will need to explore the use of single- versus dual-language assessments as evaluated by independent raters. Although concerns of examiner bias in the present study were minimized because all evaluations were thoroughly reviewed and approved by a non-treating clinician not involved in the present study, more rigorous evaluation methods are prudent to ensure that the differences between single- and dual-language assessments are reproducible across a variety of contexts and populations. Assessment outcomes will also need to be evaluated across other diagnostic tools (e.g., *Communication and Symbolic Behavior Scales* by Weatherby & Prizant, (1993); *The Language Development Survey* by Rescorla (1989); etc.). Finally, future research will need to investigate the magnitude of misdiagnoses by expanding the participant selection to more diverse groups of language speakers (e.g., sequential language learners) and demographic makeups (e.g., high versus low socioeconomic status). By ensuring that all children receive accurate diagnoses and referrals for Early Intervention treatment, best practice standards will be met and increased therapeutic success will be achieved.

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CONTRIBUTORS

Zakia Ali-Chand is currently the Head of School of Communication, Language & Literature at the Fiji National University in Suva, Fiji. She has a PhD in Linguistics from the University of the South Pacific. Her two publications in 2015 include *Using SQ3R Method to Improve Reading Comprehension Abilities* and *The Significance of Intercultural Communication Studies for Second Language Teaching*. Her main research interests include language learning strategies and academic language skills of second language learners. She is also the current President of the Fiji Association of Women Graduates, an affiliate of Graduate Women International based in Geneva, Switzerland.

Kazuo Amma, PhD, Professor of applied linguistics and TEFL at Dokkyo University (Saitama, Japan), has worked in statistical analysis of language test data. His particular interest in the qualitative difference in language processing among learners of different proficiency levels resulted in a paper which obtained Best Research Paper Award at the SAS Forum 2004 (Tokyo). He also developed a computer programme for the partial scoring of sequential items (2010). His current engagements include test projects for secondary school students at the Ministry of Education and accreditation of airline pilots' English proficiency at the Ministry of Land and Transportation in Japan.

James Dean Brown (“JD”) is currently Professor of Second Language Studies at the University of Hawai‘i at Mānoa. He has spoken and taught in many places ranging from Brazil to Venezuela. He has published numerous articles and books on language testing, curriculum design, research methods, and connected speech. His most recent books are: *Mixed methods research for TESOL* (2014 from Edinburgh University Press); *Cambridge guide to research in language teaching and learning* (2015 with C. Coombe from Cambridge University Press); and *Teaching and assessing EIL in local contexts around the world* (2015 with S. L. McKay from Routledge).

Sarah Chabal (PhD from Northwestern University) is a Research Psychologist at the Naval Submarine Medical Research Lab in Groton, Connecticut. As a former member of the *Bilingualism and Psycholinguistics Research Group* at Northwestern University, she has conducted research on bilingualism, language processing, and interactions between language and perceptual systems. Her work has been published in peer reviewed scientific journals and has been presented at both national and international conferences.

Douglas Altamiro Consolo is an Associate Professor of Applied Linguistics and of English as a Foreign Language at the State University of Sao Paulo (UNESP), Brazil. He teaches undergraduate and postgraduate courses, and supervises students' projects in initial teacher education, as well as MA dissertations, PhD theses and postdoctoral studies. He is the co-ordinator of the ENAPLE-CCC research group and one of the senior researchers in the development of EPPLE, a Brazilian proficiency examination for foreign language teachers. He has published extensively in the areas of EFL and language assessment. He has co-authored and co-edited four books. He has recently joined a project on Portuguese as foreign language (PFL) at UNESP, in which he is responsible for online assessment in PFL. His main research interests include assessment, foreign language learning and teaching, language testing and teacher development.

Christine Coombe has a PhD in Foreign/Second Language Education from The Ohio State University. She is currently on the English/General Studies faculty of Dubai Men's College, UAE. Christine is co-author/editor of numerous professional volumes including *A Practical Guide to Assessing English Language Learners* (2007, University of Michigan Press); *The Cambridge Guide to Research in Language Teaching and Learning* (2015, Cambridge University Press) and *Reigniting, Retooling and Retiring in English Language Teaching* (2012, University of Michigan Press). Most recently, Christine served as President of the TESOL International Association (2010-2013) and received the British Council's International Assessment Award (2013).

Selwyn C. Cruz is a full-time Lecturer at the Enderun Colleges. He finished his Master of Arts in English Language Education at the De La Salle University where he is currently taking his PhD in Applied Linguistics. He has presented papers in conferences, published articles in journals, delivered lectures, and provided trainings on language learning

related courses. His research interests are in the areas of Discourse Analysis, Sociolinguistics and Educational Technology.

Marina Dodigovic is the Director of both the MA TESOL program and the Research Centre for Language Technology at XJTLU. She is a member of the editorial boards of two refereed academic journals, *TESOL International* and *Voices in Asia*. In the past, she served the TESOL community as a Ruth Crymes Fellowship Academy Award reader. Marina is the author of *Artificial Intelligence in Second Language Learning*, the first English-language monograph on Intelligent CALL, and the editor of *Attitudes to Technology in ESL/EFL Pedagogy*. She has received multiple extramural and intramural research grants and has published a number of articles in refereed academic journals. Her recent research interests have gravitated toward vocabulary teaching, learning and assessment.

Carol J. Everhard was formerly a Teaching Fellow in the Department of Linguistics of the School of English, Aristotle University of Thessaloniki in Greece. She both taught and coordinated undergraduate language courses, was organizer of the School's Resource Centre and taught a specialist course in Self-access and Foreign Language Learning. Her doctoral studies investigated the relationship between learner-centred assessment and autonomy in language learning. She was Coordinator of the IATEFL Learner Autonomy Special Interest Group between 2006-2008 and she co-edited *Autonomy in Language Learning: Opening a Can of Worms (2011)* and *Assessment and Autonomy in Language Learning (2015)*.

Christina Gitsaki is an Associate Professor and Research Coordinator at the Center for Educational Innovation, Zayed University, UAE. Dr Gitsaki has previously served as the UNESCO Chair in Applied Research in Education designing professional development programs for teachers in the K-12 and higher education sectors. Dr. Gitsaki has served on the executive boards of professional associations such as the Applied Linguistics Association of Australia, the Gulf Comparative Education Society, TESOL Arabia, and she is currently the Secretary General of the International Association of Applied Linguistics. Her research interests are in second language acquisition and pedagogy, the use of educational technology in the second language classroom, teacher professional development, and the scholarship of teaching and learning.

Gerriet Janssen is currently finishing his doctorate at University of Hawai‘i, Mānoa, under the supervision of Dr. James Dean Brown. He has simultaneously maintained his position as Assistant Professor at Universidad de los Andes–Colombia, a position he has held since 2006. There, and within a team of colleagues, he headed the development of the language program *Inglés para Doctorados*, a program that he currently teaches within and coordinates. His main research interests include: language assessment, academic writing, curriculum development, and program evaluation. His research papers have been published in refereed journals and books both within the Colombian and international context.

Liudmila Kozhevnikova received her PhD from Moscow State University and is currently an Assistant Professor at Samara State University, Russia. She is Vice President of SETA and Board Member of the National Association of Teachers of English. She is on the Board of Experts for the Foreign Languages Council on Methodology and Research at the Russian Ministry of Education and Science, the Volga Region Affiliate which she chaired for seven years (1998–2005). She co-authored *Exam Success* (2013). Her main research interests include testing and assessment, TESOL and CLIL.

Caroline Larson (M.Ed. from University of Virginia) is a practicing speech-language pathologist at The Communication Clubhouse in Chicago, Illinois. She is certified by the American Speech-Language-Hearing association and Illinois Early Intervention, and state licensed in Illinois. She is a translational researcher for the *Bilingualism and Psycholinguistics Research Group* at Northwestern University, and has presented research on topics related to bilingualism and child language at state and national conferences.

Persephone Mamoukari is a PhD researcher in the field of Applied Linguistics in Democritus University of Thrace. She holds a degree in English Language and Literature from the Aristotle University of Thessaloniki and an MA in Black Sea studies from the Democritus University of Thrace. She has attended a number of congresses and has written papers in refereed proceedings. She speaks English fluently and is a proficient speaker of French. Her interests focus on language teaching, communication strategies, learning strategies, school psychology, and psycholinguistics.

Viorica Marian (Ph.D. from Cornell University) is the Ralph and Jean Sundin Professor of Communication Sciences and Disorders and Professor of Psychology and Cognitive Science at Northwestern University in the United States. Since 2000, she has directed the *Bilingualism and Psycholinguistics Research Group*, with funding from the National Institutes of Health and the National Science Foundation. Her research centers on bilingualism and its consequences for linguistic, cognitive, and neural function, with a focus on language processing, learning, and memory. Her research has been disseminated in over 100 publications, over 200 conference and invited presentations, and receives extensive press coverage (<http://www.bilingualism.northwestern.edu/>).

Jessica Midraj holds a PhD in Curriculum and Instruction (English Education) from Indiana State University, USA. Currently, she is a faculty member in the College of Arts and Sciences at the Petroleum Institute in Abu Dhabi, UAE. Dr. Midraj has over 18 years of experience in the field of English language education as a teacher, mentor, researcher, and manager. She has published in the areas of self-assessment, reading, parental involvement, educational standards, grammar teaching pedagogy, and motivation and has authored numerous language tests and assessment manuals. Her research interests include curriculum and assessment design, academic language learning instruction, and assessment management.

Sadiq Midraj is an Associate Professor of language education and the Quality Assurance Coordinator in the College of Education at Zayed University. He has provided consultations to the Ministry of Education on K-12 English standards, Bidaya Media on research, the UNESCO Office in Beirut on quality assurance standards for education units and Khalifa Award for Education as an arbitrator. Dr. Midraj also worked as the Director for the Center for Professional Development. He has published on assessing Arabic-English bilingual literacy, outcomes-based education, and language-learner variables. His research interests include English language assessment, bilingual education, and quality assurance.

Jacob Mlynarski, an EAP Lecturer at the Northern Consortium United Kingdom (NCUK), has taught Academic English in China for the past 6 years. He holds a B.A. in English Philology and M.A. in TESOL. His main interests include TESOL, more specifically plagiarism, the use of technology in writing instruction and contrastive rhetoric. He is particularly interested in differences between rhetorical styles placed

within various cultural contexts. He is currently developing a Graduate Foundation Programme in China in association with the NCUK.

Gladys Quevedo-Camargo is an Adjunct Professor in the Department of Foreign Languages and Translation, University of Brasília, Brasília/DF, Brazil. She worked for many years as an English teacher in private schools and, since 2006, she has worked with teacher education in government-funded higher education institutions. She has also been an oral examiner for the Cambridge main suite exams and the IELTS, and coordinated the testing development center in one of the universities where she worked. Her main research interests include language teaching, learning and assessment, national and international exams and teacher education.

Matilde V. R. Scaramucci, full Professor in the Department of Applied Linguistics, University of Campinas, SP, Brazil, is past Dean of the Institute of Language Studies, University of Campinas (2011-2014). She is one of the developers of the *Certificate of Proficiency in Portuguese as a Foreign Language (Celpe-Bras*, Brazilian Ministry of Education) and editor-in-chief of the refereed journal *Trabalhos em Linguística Aplicada* (2006-2014). She has published extensively in the areas of SL/FL teaching, testing and assessment. She has co-edited *Português para Falantes de Espanhol* (2008) and *Pesquisas sobre Vocabulário em Língua Estrangeira* (2008). Her main research interests include the assessment of integrated tasks, validity and washback. Her research papers have been published in numerous refereed journals and books mostly in Brazil.

Vera Lucia Teixeira da Silva is an Associate Professor of English as a Foreign Language at the State University of Rio de Janeiro where she works as an educator and researcher. She is currently a member of a group that is developing a Brazilian proficiency exam for teachers of foreign languages. She has published several articles in the area of assessment and EFL. She has co-authored *Olhares sobre competências do professor de língua estrangeira: da formação ao desempenho profissional* (2007). Her main research interests include assessment, teacher development and second language acquisition.

Renata Mendes Simões holds a PhD in Applied Linguistics from Catholic University of Sao Paulo (PUC-SP), Brazil, a Master's in Education and Arts from Mackenzie University, with specialization in Teaching in Higher Education. She is an autonomous English teacher and English-Portuguese translator-interpreter, a research member of the GEALIN

group (English for Specific Purposes, ESP, teaching and learning research group - PUC-SP), and editorial assistant in the Academic Journal 'the ESPecialist'. She is responsible for designing and teaching ESP courses mainly for language proficiency tests such as TOEFL iBT and IELTS. Her main research interests include ESP, one-to-one classes, and language proficiency assessments.

Maria Giovanna Tassinari is Director of the Centre for Independent Language Learning at the Freie Universität Berlin, Germany. She is currently committee member of LASIG, Learner Autonomy Special Interest Group of IATEFL, and in the scientific committee of *Mélanges Pédagogiques* (Université de Lorraine, France). Her PhD has been published as *Autonomes Fremdsprachenlernen: Komponenten, Kompetenzen, Strategien* (Peter Lang, 2010) and awarded with the Bremer Forschungspreis 2011. Her research papers have been published in numerous refereed journals and books in German, English and French. Her research interests are in learner autonomy, language advising, affect in language learning, and formal and informal learning.

Jonathan Trace is a PhD candidate at the University of Hawai'i at Mānoa. He has co-authored several articles and book chapters on large-scale assessment validation, rubric design, classroom assessment, and rater negotiation in performance assessment. Currently, he is working towards the completion of his doctoral dissertation on the construction of a validation argument for cloze test function for second language assessment purposes. His main research interests include second language assessment, curriculum design, program evaluation, ecological approaches to learning, multivariate quantitative methods, and listening and speaking pedagogy.

Romulo P. Villanueva Jr. finished his Master of Arts in Teaching major in English Language at De La Salle University-Manila as Commission on Higher Education (CHED) Scholar and has finished the academic requirements for his PhD in English Language Studies at the University of Santo Tomas. He also has a Diploma in Teaching English to Speakers of Other Languages (TESOL) from the London Teacher Training College-UK. Currently, he is the Assistant Program Head of the Department of English and teaches English courses. He has conducted research on language teaching techniques, grammar proficiency, language attitudes, sociolinguistics and presented papers in International Conferences.

Penelope Kambakis Vougiouklis is a Professor of Linguistics, Department of Greek, Democritus University, Greece. She holds a degree from the Aristotle University of Thessaloniki and an MA and a PhD from the University of Wales. She has attended more than 80 congresses and she is the author of more than 100 papers in journals and refereed proceedings, as well as four monographs. She is fluent in English and can read and communicate in French and Italian. Her interests focus on mathematical models in language teaching, Greek as a second/foreign language, communication strategies with emphasis on guessing as a processing and/or a learning strategy, confidence as a factor of success in communication, learning strategies, dictionary use as a communication strategy, psycholinguistics and dialectology.

Beilei Wang, Associate Professor in the School of Foreign Languages, Tongji University, is currently the Director of the China English for Academic Purposes Association. She has been hosting and participating in various ELT projects at primary, secondary and tertiary levels sponsored by Tongji University, Shanghai International Studies University, Shanghai Municipal Education Commission and the Ministry of Education. She has published extensively in such journals as *Foreign Language World*, *Journal of Foreign Languages*, contributed chapters to books on EFL theory and practice like *Teaching English the Other Way in China* and coauthored a serial textbook *Reading Faster*. Her main research interests include learner autonomy, formative assessment, ESP and classroom teaching.

Lee-Yen Wang has been as an Associate Professor for the English department of Xiamen University Tan Kah Kee College since 2013. He has done extensive research in CALL and ESL/EFL. He was a professional computer consultant for high technology companies in the US, such as HP, Alcatel-Lucent (DSC), Samsung Telecommunications America, Fujitsu Network Communication, Cisco, and other medium to small innovative technology companies all over the United States. He started to tap his software prowess a few years ago to build a corpus and write software to analyze language features. He has also created remedial English programs for elementary school children and junior high school in Taiwan. He is currently developing a medical translation program for English major students.

Rining Wei, PhD, is a Lecturer at the Department of English, Culture and Communication, Xi'an Jiaotong-Liverpool University (XJTLU), Suzhou, China. He teaches courses related to bilingualism, sociolinguistics, and research methods at undergraduate and postgraduate levels. He is an active member of the Research Centre for Language Technology, and serves as a core member respectively in the Centre's advisory group and XJTLU's Language Policy Working Group. He specialises in EAP, Content and Language Integrated Learning (CLIL), language policy, and quantitative methodology. He has published in journals including *Asian EFL Journal*, *English Today*, *Journal of Multilingual and Multicultural Development*, and *World Englishes*.