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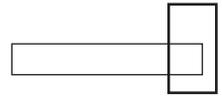
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Confounds in Assessing the Associations Between Biliteracy and English Language Proficiency

C. Patrick Proctor and Rebecca D. Silverman

It has long been theorized, if not exhaustively researched, that bilingualism and biliteracy are beneficial in promoting linguistic and academic gains; but the operationalization of these constructs is confounding. In the current study, the authors worked with 118 Spanish–English bilingual Latina/o students and investigated whether Spanish–English biliteracy (vs. English monoliteracy) was associated with stronger performance on three English metalinguistic measures. Results indicated an effect of biliteracy on these measures; however, English predictors were confounded with the biliteracy indicator, making results difficult to interpret. The authors argue that new measures that tap bilingualism and biliteracy as a single construct are necessary to move the field forward.

Keywords: bilingualism; biliteracy; metalinguistic awareness; Spanish

Children who are exposed to a language other than English at home and who are also exposed to English in American schools are, to varying degrees, bilingual (Grosjean, 2010). These students, like their English monolingual counterparts, must acquire sophisticated levels of English literacy to access the social and economic benefits associated with higher education. Although some attention over the past decade has been devoted to understanding how bilingualism and literacy interact, the vast majority of education research, practice, and policy making has been keenly focused on English proficiency and the deficits that bilingual speakers display in this arena (Valdés, Capitelli, & Alvarez, 2011). This monolingual perspective typically fails to explore how bilingualism itself may be an asset for youth in U.S. schools (Brisk & Harrington, 2007).

Recent studies of bilingualism and literacy are relatively rare, yet there is historical evidence that bilingualism is linked to one's ability to attend to specific properties of language (i.e., metalinguistic awareness; Hakuta & Díaz, 1985), which has been associated with improved literacy outcomes (Snow, 1990). Although the empirical record is mixed, recent research shows small amounts of variance in English literacy outcomes explained as a function of bilingualism, especially when students receive literacy instruction in two languages (Nakamoto, Lindsey, & Manis,

2008; Proctor, August, Carlo, & Snow, 2006). Thus there appear to be some links between verbal abilities in two languages (bilingualism), but less research has focused on how reading skills in two languages (biliteracy) might accrue to improved literacy outcomes.

In our estimation, a central challenge in conducting research on bilingualism and biliteracy is the absence of measures that tap these constructs (the Bilingual Verbal Ability Tests remain a notable exception; see Muñoz-Sandoval, Cummins, Alvarado, & Ruef, 1998; Páez, 2008). Currently, we must rely on monolingual measures of the two languages spoken by a bilingual individual, which leaves researchers with three options for investigating bilingualism and biliteracy. The first is to use norm-referenced scores, when available, to determine what constitutes proficiency in each language and to decide if students are high or low in both languages. This categorical approach lends itself to arbitrary proficiency cutoffs in which a student who performs just one point below the demarcation is considered differently from the student who performs one point above. The second approach, also categorical, is to look within a sample and compare students' relative scores on language and literacy skills. This is often necessary in cases where sample performance across languages is relatively weak and distributions constrained. Third, the researcher can use continuous variables to make statistical inferences. Although this approach allows for the use of continuous rather than categorical variables, statistical inferences do not assess individual students' actual degrees of biliteracy. We offer the present study to illustrate confounds related to these approaches.

The Present Study

In this study, we specifically addressed the operationalization of biliteracy and whether it predicted differences in initial status and growth in English literacy measures that possessed metalinguistic characteristics (i.e., morphological, syntactic, and semantic awareness). The data were taken from a larger study on literacy development among English monolingual and Spanish–English bilingual students, all of whom were enrolled in English-only schools. We worked with 118 Latino/a students whose parents reported Spanish being spoken in the home. The children were enrolled in Grades 2 through 4 and were assessed on a variety of language and literacy indicators in both languages (see Table 1 for measures and their descriptions). We asked, *Do biliterate Spanish–English bilinguals outperform English monoliterate Spanish–English*

Table 1
Overview of Measures

Construct	Measure	Description
Language[a]		
Expressive vocabulary	WMLS-R	Student names pictured objects of increasing difficulty until making 6 consecutive errors
Literacy[a]		
Decoding	WMLS-R	Student reads individual words until making 6 consecutive errors
Reading	WMLS-R	Student reads cloze passages and provides an oral response to missing word until making 5 consecutive errors
Metalinguistics		
Morphology	Extract the Base	Student writes a response to a cloze sentence requiring the base of a word to be extracted; e.g., FARMER → My uncle works on a (farm)
Syntax	CELF	Student is shown a picture and given a target word (e.g., *children*) and uses target word to describe the picture
Semantics	CELF	Student chooses 2 semantically related words from a 4-word array (e.g., from *school, cake, street, teacher,* the student chooses *school* and *teacher*) until making 5 consecutive errors

Note. WMLS-R = Woodcock-Muñoz Language Survey–Revised (Woodcock, Muñoz-Sandoval, Ruef, & Alvarado, 2005); Extract the Base = researcher-developed morphological decomposition task (August et al., 2001); CELF = Clinical Evaluation of Language Fundamentals (Semel, Wiig, & Secord, 2003). Metalinguistic measures were administered in English only.
[a]Administered in Spanish and English.

bilinguals on English language and literacy measures that have a metalinguistic component?

English assessments were administered in October (Time 1) and May (Time 2) and Spanish assessments in January (Time 1.5) of 2009–2010. To establish biliteracy, we used an indicator of real-word reading in Spanish as the gatekeeper for a dichotomous biliteracy indicator (*yes* or *no*). We administered the Woodcock-Muñoz Language Survey–Revised Letter-Word Identification subtest in Spanish. This is a highly reliable and valid measure that indicates how well a student can read (or *decode*) real Spanish words. Words are presented in order of increasing difficulty, and administration is stopped once a student misreads five consecutive items.

We reasoned that the students were all instructed in English-only classrooms, and possessed a range of literacy skills in English. Thus limited performance or nonperformance on Spanish word

reading would indicate English monoliteracy. All students began the assessment with the following six basal words: *una, ser, al, del, lápiz,* and *suyo*. Students who correctly read all six basal words were characterized as Spanish–English bilingual and biliterate. Students who misread one or more of these words were characterized as bilingual and monoliterate. All students were assessed to ceiling on this measure, but we assumed that those who misread one or more of the six basal words would likely have been frustrated by the reading demands of the Spanish reading assessment. Thus only the biliterate group was assessed on Spanish reading, and in this group the correlation between Spanish decoding and Spanish reading was .66 ($p < .001$).

Two types of repeated measures ANCOVAs were run: First, we tested the effect of the dichotomous variable (biliterate vs. monoliterate) on the English outcomes from Time 1 to Time 2, with grade level as a covariate to account for age differences. In a subsequent analysis, we used the continuous Spanish decoding variable as the main predictor.

Results

Both approaches revealed evidence for the benefits of biliteracy. In the dichotomous approach, the biliterates, not surprisingly, outperformed their monoliterate counterparts on the Spanish language and literacy measures. Biliterates also outperformed monoliterates on English literacy, although the two groups showed similar English language proficiency (see Table 2).

ANCOVAs showed a significant main effect in favor of biliteracy versus monoliteracy for English morphology, $F(1, 107) = 18.53$, $p < .001$, and syntax, $F(1, 111) = 4.26$, $p = .041$, but not for semantics, $F(1, 109) = 2.27$, $p = .14$. There were no Time × Biliteracy interactions that would indicate differences in slope. There were simply significant differences at both Times 1 and 2 for two of the three English metalinguistic measures. Using Spanish decoding as a continuous variable yielded similar predictive results for morphology, $F(1, 104) = 27.55$, $p < .001$, and syntax, $F(1, 108) = 5.7$, $p = .019$. Spanish decoding was also a significant predictor of semantics, $F(1, 106) = 6.23$, $p = .014$. (see Table S1 in the supplemental document available at http://er.aera.net).

However, further scrutiny of the cross-linguistic correlations revealed confounds. In this sample, Spanish decoding at Time 1.5 was significantly correlated with English decoding ($r = .562$, $p < .001$). English decoding also correlated at $p < .001$ at Times 1 and 2 with morphology ($r = .845$ and .688, respectively), semantics ($r = .55$ and .554, respectively), and syntax ($r = .671$ and .591, respectively). When English decoding was entered as a covariate in both types of repeated measures ANCOVAs, the main effects of biliteracy were eliminated and English word reading was the significant predictor. In short, Spanish decoding, which defined biliteracy, was confounded with English decoding, which was a better predictor of English metalinguistics. (see Table S2 in the supplemental document available at http://er.aera.net).

Discussion

A clear debate in the field of bilingualism and biliteracy is the degree to which language and literacy skills in two languages may accrue to academic achievement over time. Yet the debate is muddied by measurement and design difficulties that make it difficult

Table 2
Means (SDs) of English and Spanish Language and Literacy Indicators Comparing Biliterate and Monoliterate Performance

Language Status	Spanish Language	Spanish Decoding	Spanish Reading	English Language	English Decoding	English Reading
Monoliterate	64.82	77.97	NA	91.81	95.57	88.29
(*n* = 75)	(24.6)	(15.38)		(14.43)	(15.62)	(17.64)
Biliterate	81.21	113.47	83.79	92.05	105.79	94.91
(*n* = 43)	(18.07)*	(16.1)*	(17.06)	(17.15) *ns*	(17.78)*	(15.91)*
Sample	70.9	91.36	83.79	90.7	99.3	83.79
(*n* = 118)	(23.69)	(23.27)	(17.06)	(17.26)	(17.09)	(17.06)

Note. All scores are standard scores with a norming sample mean of 100 and standard deviation of 15.
*p < .05.

to disentangle effects. There were no differences between the biliterate and monoliterate groups on reported socioeconomic indicators (mother's level of education and household income). So were these biliterate children just better English readers, or did their relative facility with Spanish indeed provide the metalinguistic bootstrapping that results in stronger language and literacy skills?

Spanish and English share very similar orthographies, such that the sound–symbol relationships among consonants are largely isomorphic and thus require no new learning. It is therefore possible that many of the bilingual children were actually monoliterate in English but possessed reasonable Spanish language skills and were able to work through reading Spanish words such that they were categorized as biliterate. The ability to do that, however, is precisely the metalinguistic skill that researchers argue is predictive of strong literacy outcomes. In any case, English decoding skill set the limit on performance, confirming the constraints of using parallel measures to study biliteracy.

With so many bilingual and biliterate learners entering U.S. schools, the educational community needs to take strides toward the creation of assessments that tap dual language performance as a single outcome. Given the links between language and culture, it is our hope that such strides will result in new, cutting-edge measures and analytic approaches that more thoroughly explore bilingualism and biliteracy and their relevance to the academic lives of bilingual children.

NOTE

REFERENCES

August, D., Kenyon, D., Malabonga, V., Louguit, M., Caglarcan, S., & Carlo, M. (2001). *Extract the Base Test—English*. Washington, DC: Center for Applied Linguistics.

Brisk, M. E., & Harrington, M. M. (2007). *Literacy and bilingualism: A handbook for all teachers*. Mahwah, NJ: Lawrence Erlbaum.

Grosjean, J. (2010). *Bilingual: Life and reality*. Cambridge, MA: Harvard University Press.

Hakuta, K., & Díaz, R. (1985). The relationship between bilingualism and cognitive ability: A critical discussion and some new longitudinal data. In K. E. Nelson (Ed.), *Children's language* (Vol. 5, pp. 319–344). Hillsdale, NJ: Lawrence Erlbaum.

Muñoz-Sandoval, A. F., Cummins, J., Alvarado, C. G., & Ruef, M. L. (1998). *Bilingual Verbal Ability Tests*. Itasca, IL: Riverside.

Nakamoto, J., Lindsey, K. A., & Manis, F. R. (2008). A cross-linguistic investigation of English language learners' reading comprehension in English and Spanish. *Scientific Studies of Reading*, 12(4), 351–371.

Páez, M. (2008). English language proficiency and bilingual verbal ability among Chinese, Dominican, and Haitian immigrant students. *Equity and Excellence in Education*, 41(3), 311–324.

Proctor, C. P., August, D., Carlo, M. S., & Snow, C. E. (2006). The intriguing role of Spanish language vocabulary knowledge in predicting English reading comprehension. *Journal of Educational Psychology*, 98(1), 159–169.

Semel, E. M., Wiig, E. H., & Secord, W. A. (2003). *Clinical Evaluation of Language Fundamentals–4*. San Antonio, TX: PsychCorp/ Harcourt.

Snow, C. E. (1990). The development of definitional skill. *Journal of Child Language*, 17, 697–710.

Valdés, G., Capitelli, S., & Alvarez, L. (2011). *Latino children learning English: Steps in the journey*. New York: Teachers College Press.

Woodcock, R. W., Muñoz-Sandoval, A. F., Ruef, M., & Alvarado, C. F. (2005). *Woodcock-Muñoz Language Survey–Revised*. Itasca, IL: Riverside.

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