

Socioeconomic and sociolinguistic predictors of children's L2 and L1 writing quality¹

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Résumé

Les prédicteurs socio-économiques et sociolinguistiques de l'écriture d'enfants en L1 et L2.

Les enfants anglo-espagnols sont plus faibles dans leur compréhension du vocabulaire anglais et de la grammaire anglaise comparativement à leurs pairs monolingues natifs. En revanche, ils sont aussi habiles dans certaines évaluations de la conscience phonologique, de la compréhension en lecture ainsi que pour des aspects de l'écriture (qualité, syntaxe, fluidité, transcription et diversité du vocabulaire). Un modèle de ces activités prédit 67% de la variance de la qualité de l'écriture de ces enfants. Le statut de bilingue ne constitue pas un prédicteur fiable de la qualité de l'écriture, ce qui suggère que les études des habiletés en L1 et en L2 devraient inclure à la fois des variables sociolinguistiques et socioéconomiques.

Mots clés : Qualité de l'écrit, L1/L2, prédicteur socio-économique, prédicteur sociolinguistique.

Abstract

Spanish-English bilingual fourth grade children were reliably poorer in English receptive vocabulary and English grammar awareness compared to their English-speaking monolingual peers, but were as skillful in English language assessments of phonological awareness, reading comprehension, and five measures of writing (writing quality, word, clause, and transcribing fluency, and vocabulary diversity). A model with phonological awareness, grammar awareness, receptive vocabulary, reading comprehension, transcribing fluency, home literacy and SES predicted 67% of the variation in children's writing quality. Bilingual status was not a reliable predictor of writing quality suggesting that studies of L1 and L2 skill should include both sociolinguistic variables as well as socioeconomic ones.

Key words: Writing quality, L1/L2, Socioeconomic predictor, sociolinguistic predictor.

1. Introduction

Bilingual children benefit from having acquired two sets of vocabularies, grammars, and cultures. Such children have an unusually rich linguistic environment, but often a poor economic one, especially if they are recent immigrants. Bilingualism has been extensively studied because it provides an interesting example of how both social and language factors can influence cognitive development. But the complex multifactor nature of such relations has proven elusive and difficult to explain. The present research focuses on the socioeconomic and sociolinguistic factors that interact with bilingualism in predicting writing and reading-related behaviors. Socioeconomic factors have traditionally included variables such as family income, education and occupation

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levels (Hollingshead & Redlich, 1985). Sociolinguistic Status (SLS) is a new concept we are beginning to explore with this research. SLS is an index of language richness and includes home literacy, exposure to an L1 and L2, multicontext of use of an L1 and an L2, and identity and affect regarding language use and diversity. These linguistic factors are not directly related to cognitive processing, but are hypothesized to serve as a protective factor against the known risk associated with low SES.

A second novel aspect of this research is that we have included a wide range of writing-related behaviors, as well as the more traditional reading ones. The present research will demonstrate that both SES and SLS are necessary to understand the best predictors of L1 and L2 writing quality. It is possible that SES and SLS interact in an additive way such that SES matters even more to the performance of bilingual children than it does to monolingual. The majority of bilingual children in our sample fall into this category of high SLS and low SES. It is predicted that bilingual children with high SLS and relatively low SES will show higher than typical performance relative to monolingual children with relatively low SLS and low SES.

Decades of research, dating from studies by Wallace Lambert and others, have focused on the potential additive and subtractive effects of bilingualism on cognitive development (Lambert, 1977; 1981). Early on, some researchers concluded that bilingualism could only subtract from a child's ability to read and write in their L1 and L2 because of the longer amount of time necessary to respond under dual language code situations (i.e. Magiste, 1979). Other researchers pointed out the limits of simple comparisons of children who speak one or more than one language (Bialystok, 1988). In fact, the benefits of bilingualism to academic skills are only beginning to be fully understood as they are extracted from other nonlinguistic variables (i.e. Bialystok, in press; Ransdell, Arecco, & Levy, 2001). Bialystok has recently reported data suggesting that bilingual children perform better on problem solving that involves the inhibition of misleading information. Ransdell et al. found that multilingual students can maintain writing quality and fluency under dual-task situations that reduce bilingual, and to an even greater extent, monolingual, performance.

The present study focuses on the identifying the best predictors of children's English writing skills among Spanish-English bilinguals and their English-speaking monolingual peers in South Florida in the United States. The unique effects of bilingualism are especially important to study in this region because Spanish is now the heritage language of most children entering first-grade in South Florida. Broward County, the focal point of our targeted elementary schools, has seen a 77% growth in the Hispanic population in the last decade (Brinkley-Rogers, 2000). Local school officials are struggling to keep up with increases in new students who speak almost no English and who are often the children of new arrivals from Latin America. Recent data show that the Latinization of the United States reveals increasingly higher rates of Spanish-speaking children throughout the country.

Comparisons among bilingual and monolingual children have been fraught with many problems that are common in the study of individual differences. Bilingual children often come from economically-disadvantaged homes and therefore socioeconomic status (SES) differences may be driving "bilingual" disadvantages in academic skill development, especially in an L2. SES is generally measured as a composite of the mother and father's education and occupation levels (Hollingshead & Redlich, 1958). A second problem is that bilinguals have a distributed characteristic to their vocabulary knowledge. Children know words in one language, but perhaps not in another language. This distributed characteristic of bilingual knowledge implies that vocabulary knowledge is broader than can be assessed by looking at either language alone. The present study takes SES differences into account and investigates vocabulary as a composite across L1 and L2, and other reading-related behaviors, in order to predict L1 and L2 writing quality.

Research has demonstrated that children from lower SES backgrounds are more likely to have difficulty in reading and writing when compared to children of a higher status, especially during the elementary school years (Bowey, 1995; Hecht & Greenfield, 2001; Hecht, Burgess,

Torgesen, Wagner, & Rashotte, 2000; White, 1982). Poorer home literacy, including limited access to reading materials or modeling of reading by adults in the home, has been cited as a main causal variable leading to reduced academic performance in low SES children. Few studies have separated sources of variance in reading and writing due to SES from those associated with bilingualism (see Oller et al., 2002). We hypothesize that low SES may contribute to differences in L2 writing performance in a more reliable way than bilingualism per se. We also predict strong relations among reading-related behaviors, such as phonological awareness and writing outcomes. Writing outcomes, particularly the wide range of them included in the present study, have been relatively neglected compared to reading outcomes. The present study includes them as an important indicator of academic progress in addition to the traditional measures of reading comprehension, phonological awareness, and vocabulary.

2. Method

2.1. Participants

The subjects in this study were 100 4th grade children from a public elementary school in South Florida. The children were representative of their region of the country in that about two-thirds of them were English-speaking monolinguals and one-third were bilinguals, the majority, native speakers of Spanish. The mean age of the monolingual children was 10.30 years and the mean age of the bilinguals was 10.19 years. A full range of reading performance was represented in the sample with children from the first to the 99th percentile in standardized English reading achievement. No children with known language disorders were included in the study. The children were also normally distributed in socioeconomic status. That is, the children showed a mean SES of 51.5 with a SD of 18.78. The bilingual children showed a mean SES of 45.7 (SD = 17.2) which was reliably lower than the SES of the monolingual children, 54.5 (SD = 18.9), $t(59) = 2.76$, $p < .05$.

2.2. Materials and Procedure

All subjects were assessed on a wide range of reading-related behaviors including phonological and grammar awareness, receptive vocabulary, reading comprehension, and a range of quantitative and qualitative measures of expository writing. All assessments were in English except for receptive vocabulary which was assessed in both English and Spanish. The children's socioeconomic status (SES) was determined by means of the Hollingshead's index of social class (1958). A questionnaire was used to find out the education and occupation level of the one or two primary caregivers and in cases of only one parent, the score was doubled in order to obtain comparable scores. The questionnaire was also used to determine the home literacy of the children. The children's bilingual status was determined by means of self-reports.

2.3. Phonological and grammar awareness

The children's phonological awareness was assessed of by means of an elision task. Children were asked to indicate what sublexical part remained from a word when another part (one or more phonemes) was deleted. Wagner and Torgesen (1987) have reviewed the extensive literature indicating that phonological awareness is one of the single best predictors of reading performance. The test of grammar awareness was adapted from Galambos and Goldin-Meadow (1990). Thirty grammatical or ungrammatical sentences were presented and for each of them, the subjects stated whether they were grammatical or not.

2.4. Vocabulary

The English receptive vocabulary of the subjects was tested by means of Peabody Picture Vocabulary test or PPVT-R (Dunn & Dunn, 1981). For the Spanish receptive vocabulary, Test de Vocabulario en Imagenes Peabody or TVIP was used (Dunn, Padilla, Lugo, & Dunn, 1986). In the PPVT and TVIP respectively, an English or Spanish word was said to the child and the child was asked which of four pictures corresponded to the word spoken. A composite of the English and Spanish vocabularies (PPVTTVIP) was calculated in order to take into account that the Spanish-speaking children may have complementary vocabularies in Spanish and English depending on which contexts they use each language.

2.5. Reading Comprehension

The children's reading comprehension was tested by means of the reading comprehension subtest of the Florida Comprehensive Assessment Test or FCAT (Link, Sykes & Johnson, 1998) administered by the schools. The FCAT reading comprehension test involves asking the child to read short passages and then answer questions about each one.

2.6. Writing

The writing assessment included two tasks: transcribing a short passage from a children's story, and writing a story on the topic "I like.... because...". For the transcribing task, the subjects were given a sheet of paper containing an excerpt from the children's story and asked to copy as much as they could as quickly and carefully as they could. The time was limited to 90 seconds. The texts were then scored for number of words. For the task-oriented writing, the subjects were asked to write a story on the topic "I like... because...". The time was limited to five minutes. All texts were scored for number of words, lexical diversity, and quality. Holistic quality was scored as in Ransdell et al. (2001) by two trained raters for whom a reliability coefficient of .79 was obtained. Writing quality was scored on a 1-5 scale taking into account lower-level processes such as spelling, punctuation, grammar, as well as higher-level, adherence to topic, word choice, sentence variety, and strength of organization.

Concerning the word count, all word tokens were counted, including the last word even if the subjects didn't manage to finish it. Two words that had been written together by mistake (erroneous run-ons) were counted as two words, and abbreviations like "don't" and "I've" etc were also counted as two words.

For lexical diversity the measure VocD, included in the CLAN package (McKee, Malvern & Richards, 2000) was used. A traditional way of measuring lexical diversity in texts and transcriptions has been to calculate the ratio of different words (types) to the total number of words (tokens), in order to get the Type/Token ratio (TTR). However, since TTR is very sensitive to text length and as the words' number of the texts in our corpus varies, a measure independent of text length is required. Therefore VocD was used. The lexical diversity "D" in VocD is based on the predicted decline of the TTR as the sample size increases. The predicted decline is then compared to an empirical text sample. A high value of D indicates a rich vocabulary.

3. Analyses

Two types of analyses were made. The first were comparisons between monolingual and bilingual children taking SES into account. The second were multiple linear regressions in order to find the best predictors of writing quality in monolingual and bilingual children. The comparisons were made by means of analyses of covariance where the independent variables were receptive

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vocabulary (measured by the PPVT and TVIP), phonological awareness, grammar awareness, reading comprehension, transcribing fluency (number of words produced in the transcribing task), word fluency (number of words produced in the free writing task), lexical diversity, and writing quality. The fixed subject variable was bilingual status, and the covariate was socioeconomic status (SES).

The dependent variable of the analysis of covariance was writing quality, and in order to find out the best predictors of children's writing skills, both cognitive and linguistic skills of the children were included, along with the background factors of home literacy and SES. Home literacy was measured by a series of questions asked of the children and their parents at the outset, such as "about how many books do you usually have at home just for you to read, either ones you own, or from school, or the library?"

The variables entered into the model were phonological awareness, grammar awareness, receptive vocabulary, reading comprehension, transcribing fluency, SES and home literacy. The modeling was conducted twice, once with the SES composite calculated according to Hollingshead's index and once with the occupational levels of the parent entered as separate variables in order to find out which of them was the best predictor of writing skills. For all analyses the alpha level was 0.05 and the probability values will only be given for results significant on that level.

Results and Discussion

As was mentioned earlier, Spanish-English bilingual children often come from economically-disadvantaged homes and therefore the subjects' socioeconomic status has to be taken into account in order to find out whether there are any "pure" bilingual differences between the two groups. In fact, the SES and bilingual status were reliably correlated (Pearson $r = .23$). Table 1 displays the results of an analysis of covariance (ANCOVA) where bilingualism was the fixed factor and SES the covariate. The mean results and the standard errors of means are shown for both groups and for each variable. The table also shows whether there was a significant effect for bilingualism (ESL), socioeconomic status (SES) or an interaction effect between the two.

Table 1. Adjusted mean scores, standard errors (SE), and ANCOVA outcomes for monolingual and bilingual children's receptive vocabulary (PPVT & PPVTTVIP percentile scores), phonological awareness (Elision standard scores), reading comprehension (FCATRead standard scores), word fluency (Words), transcribing fluency (Copy), Lexical diversity in written texts (VocD) and Writing Quality (Quality) by bilingual status (ESL) and SES.

| Variable | Monolinguals | | Bilinguals | | ESL | SES | ESL* SES | Adj R square |
|----------|--------------|--------|------------|---------|-----|-----|-------------|-----------------|
| | Mean | SE | Mean | SE | | | | |
| PPVT | 55.03 | (4.04) | 37.02 | (5.25) | ** | ** | ** | .16 |
| PPVTTVIP | 56.01 | (4.92) | 50.42 | (6.40) | --- | --- | --- | .05 |
| Grammar | 26.02 | (0.52) | 23.96 | (0.62) | * | --- | ** | .12 |
| Elision | 13.04 | (0.62) | 13.52 | (0.80) | --- | ** | * | .09 |
| FCATRead | 317.42 | (8.70) | 325.06 | (11.94) | --- | *** | ** | .15 |
| Words | 65.18 | (3.92) | 65.26 | (5.81) | --- | --- | --- | .01 |
| Copy | 17.93 | (0.90) | 18.51 | (1.34) | --- | --- | --- | .07 |
| VocD | 42.67 | (3.62) | 46.46 | (5.49) | --- | --- | --- | .04 |
| Quality | 5.36 | (0.26) | 5.04 | (0.39) | --- | ** | ** | .16 |

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

In a simple comparison of means among the language groups, the means of the monolinguals are higher for English receptive vocabulary (PPVT) and English grammar awareness. English receptive vocabulary yielded a reliable difference, $F(1, 76) = 9.06$, $p < .003$.

The grammar awareness analysis showed a second reliable difference, $F(1, 76) = 8.61, p < .004$. Notice that this difference disappears when their Spanish vocabulary (not overlapping with the English) is taken into account (PPVTTVIP).

However, when taking the covariation of socioeconomic status into account, an interaction was found between bilingualism and SES, $F(1, 76) = 8.21, p < .001$, for English receptive vocabulary and for English grammar awareness $F(1, 76) = 6.30, p < .003$. There were still main effects for bilingualism, $F(1, 76) = 7.26, p < .009$ for receptive vocabulary and $F(1, 76) = 5.74, p < .01$ for grammar, but these effects were not as strong as when SES was not taken into account. Notice also that SES covaries highly with phonological awareness and writing quality and that it also interacts with bilingualism for these variables although they showed no main effect for bilingualism. Bilingual children were only reliably poorer in the two pure English-language variables, vocabulary and grammar, and these still have a strong interaction with SES. Finally, it is also worth noting that no differences were found between the two groups for any of the writing measures.

SES was just as important, or perhaps even more important than bilingualism per se in determining linguistic skills related to reading and writing in bilingual children. The next section discusses how these linguistic skills and social background factors contribute to predicting children's writing skills. A model including phonological awareness, grammar awareness, receptive vocabulary, reading comprehension, transcribing fluency, home literacy and SES predicted 67% of the variation in the children's writing quality ($R^2 = .67, p < .001$). The only unique predictors were SES ($t(44) = 2.53, p < .02$) and grammar awareness, $t(44) = 2.68, p < .01$. There is no reason to suspect that the model predicting writing skills would differ between monolingual and bilingual children, especially given there were no differences in their writing quality. There were different missing data present in each sample which would preclude separating the language groups in order to test the model.

Knowing that SES was a strong predictor of writing skills the next analysis was conducted in order to find out which part of the SES composite was the strongest predictor. The regression was run again with mothers' and fathers' educational and occupational levels entered into the model instead of SES. Mother's and father's educational level turned out to correlate highly with their occupational level and therefore did not uniquely contribute to the model. When they were removed, the new model predicted 70% of the children's writing quality, with the mother's occupation as the strongest unique predictor ($t(44) = 3.10, p < .004$) followed by grammar awareness ($t(44) = 2.25, p < .03$) and transcribing fluency ($t(44) = 2.09, p < .04$). Table 2 shows the zero-order and semi-partial correlations of the entered variables with writing quality. Monolingual and bilingual children's data are combined for these analyses of semi-partial correlations because such correlations are less powerful indicators of reliable relations among variables when there are uneven sample sizes.

Table 2. Zero-order and Semi-partial correlations between writing quality and other reading-related predictors.

| | Writing Quality | |
|---------------------------|-----------------|--------------|
| | Zero-order | Semi-partial |
| Reading comprehension | .69 | .12 |
| Phonological awareness | .52 | .14 |
| Receptive vocabulary | .31 | .09 |
| Metagrammatical awareness | .56 | .20 |
| Transcribing fluency | .59 | .19 |
| Home literacy | .11 | .17 |
| Father's occupation | .39 | .05 |
| Mother's occupation | .40 | .28 |

While the zero-order relations measure the simple bivariate correlations between two variables without taking any other variables into account, the semi-partial correlation measures the relation between a predictor and the outcome, controlling for the relationship between that predictor and any other predictors in the model. It therefore measures the unique contribution of a predictor to explaining the variance of the outcome.

Notice that while the highest zero-order correlations (reading comprehension and phonological awareness) are dramatically reduced when the other variables are taken into account, mother's education is kept much closer to the original level and the home literacy correlation is even increased. Notice also that receptive vocabulary per se does not contribute to predict writing quality in children.

4. Conclusion

The only the difference between the monolingual and bilingual groups is in two "pure" English language variables. These differences could probably be explained by the bilingual children's lagging behind in their development of English lexicon and grammar. Bilingual children are exposed to less English language input at home and the subtractive effect is therefore not likely to be due to a cognitive deficit. It is probable that their conceptual development is normal but distributed over two lexicons.

Another conclusion that can be drawn from these results is that the covariance of SES and bilingualism must be investigated together with other background factors. SES can be considered a main predictor of "bilingual" differences. The complex relation between SES and bilingual status, at least within Spanish-English samples in South Florida in America, points to the necessity of combining these effects. The effects are most profound on writing quality relative to phonological and grammar awareness, among other mainly spoken forms of linguistic input. Written language input is especially important because it contributes to other grammatical structures and often contains a more lexically-dense input than does spoken language.

Finally, there be differing school expectations among children who vary is SES which may affect writing quality independently of bilingual status. For example, is there a mismatch between language input in low SES homes and schools' (and test creators') "middle class expectations" that is not taken into account in these assessments? The result that lexical diversity does not covary with SES implies that low SES children may be as good as high SES in varying the vocabulary in their writing. The present study has looked at three novel additions to the existing literature: a range of writing-related behaviors are included, SES and bilingualism interactions are analyzed explicitly, and bilingual children's distributed vocabulary in L1 and L2 is taken into account. Future research (Ransdell & Barbier, 2002) will need to include these factors as well as the ways in which bilingual children of varying SES respond to reading and writing instruction.

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