



Achievement of Children Identified with Special Needs in Two-way Spanish/English Immersion Programs

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Introduction

As the principal of Key School ~ Escuela Key, a K-5 two-way Spanish/English immersion elementary school in Arlington, Virginia, I often asked myself if the school was the right place for children with disabilities. Not only did I ask myself, but at practically every child study and eligibility meeting the question was raised by the parents of children who were struggling academically in the school. My gut said that two-way immersion (TWI) was not the problem and that bilingualism could do no harm, but the research to support my feeling was sparse. I have traveled all over the world and have had the pleasure of meeting children with little or no formal education speaking the language of travelers in order to do business or merely communicate. How could it be harmful to be bilingual especially in a country where even the worst living and family conditions are better than the living conditions of some of the bilingual children I had encountered in my travels?

About four years after becoming principal of Key School, I was invited to attend The George Washington University (GWU) in Washington, D.C. on a doctoral scholarship in the area of bilingual special education. Dr. Amy Mazur, my program advisor at GWU, together with Dr. Leonard Baca at the University of Colorado had collaborated on the development of this new bilingual special education program area to bridge the gap between teachers of English as a second language and special education teachers. My undergraduate degree was in Spanish education and my Masters in bilingual and multicultural education with a focus on the teaching of English as a second language. The opportunity to add bilingual special education to my English as a second language knowledge through the blending of the two departments at GWU was a perfect opportunity for me to pursue the answer to my question about the appropriateness of two-way Spanish/English immersion for children identified with special needs.

The Study

The title of my doctoral research was *Achievement of children identified with special needs in two-way Spanish immersion programs*. The study compared standardized test results of special education students in two 50:50 two-way Spanish/English immersion schools in Arlington, Virginia to a random sample of similarly identified special needs students from the other twenty regular monolingual English-only public elementary schools in Arlington Public Schools, a northern Virginia

school district. The children were selected based on native language (English or Spanish) and disability label: learning disabled (LD), emotionally disturbed (ED), developmentally delayed (DD), other health impaired (OHI).

In 1986, Arlington Public Schools established its first two-way immersion program as an educational strand at Key School. At that time, grade level English speakers and balanced bilinguals were selected to enter the program. English language learners and special needs children, on the other hand, were assigned to self-contained classes in the non-immersion strand in the school. In 1995, the school went from a TWI strand in the building to become a school-wide two-way Spanish/English immersion school, and over the next few years, the special education and English language learner students were gradually integrated fully into the TWI program. In 2004, the district opened a second full school TWI program at Claremont Immersion School. Since then, there has been a need to evaluate the achievement of special needs students in the two-way Spanish/English programs because some feel that dual language programs might be too challenging for such struggling learners. This was the basis for my research.

The Office of Planning and Evaluation in the school system provided the test scores for the special education children from the two district TWI elementary schools and made available data from a random sample of students who were identified as either English or Spanish speakers and who were coded as special education students from the other elementary schools in the district. The random selection of students was done so that there would be similar numbers of students in each disability group, language group, gender, economic status, ethnicity, limited English proficiency level and educational program group. By using standardized test scores, the chance of subjectivity was minimized for data analysis.

The Standards of Learning (SOL) are the state learning objectives in Virginia as well as the name for the end-of-year tests for the third graders up to high school seniors. Elementary schools in the state are Kindergarten to fifth grade institutions, the children then feed into middle schools until eighth grade, and the high schools serve ninth through twelfth graders. From third through eighth grade the students take comprehensive writing, reading, math, science, and social studies tests. In high school they must take end-of-course exams which are more content specific.

For my research I received test results from the Writing SOLs, which only fifth graders took for the years 2006-2008; results from the non-Writing SOL tests, which all third, fourth and fifth graders took for the years 2006-2008; as well as results from the Stanford 10, which only fourth graders took for the years 2006-2008. Arlington Public Schools administers the Stanford 10 in order to have a nationally normed test that compares our students with others across the country. All of these tests are administered in English. After comparing results of the fifth grade writing assessments and the fourth grade Stanford 10 tests, it was clear that a similar pattern existed across data sets. Therefore, the results of the largest data set will be used to demonstrate the results of this research. The largest data set was the non-Writing SOL results, referred to in the research as totalss (total scaled scores). Non-Writing SOLs are the results of all the tests except the writing tests. These are the test scores from the reading, mathematics, science, and history assessments for third, fourth, and fifth graders. The data set also included information about each student's first language, educational program, level of English, race, gender, ethnicity, disability, free lunch status, the specific tests taken, and the year in which a particular test was taken. Data files were first used to do general sorts to produce descriptive demographic statistics to compare students in the two educational programs (TWI and comparison). For a closer look at some of the demographic data, see tables 1-4. Inferential statistical analyses were then performed with the Statistical Package for the Social Sciences (SPSS).

Table 1: Number of study participants from each educational program by ethnicity

	Asian	Black	Hispanic	White	Total N
English-only	4	33	245	87	369
TWI	10	10	253	96	369

Table 2: Number of study participants from each educational program by free/reduced lunch status and ethnicity

	F/R Lunch	Asian	Black	Hispanic	White	Total N	Total Group N
English-only	Yes	0	20	199	0	219	369
	No	4	13	46	87	150	
TWI	Yes	0	0	200	4	204	369
	No	10	10	53	92	165	

Table 3: Number of study participants from each educational program by gender and ethnicity

		Asian	Black	Hispanic	White	Total N	Total Group N
English-only	Female	0	16	71	24	111	369
	Male	4	17	174	63	258	
TWI	Female	10	3	108	33	154	369
	Male	0	7	145	63	215	

Table 4: Number of study participants from each educational program by first language background and special education group

		LD (#7)	ED (#8)	OHI (#10)	DD (#16)	Total N	Total Group N
English-only	L1 Spn (EL=154)	161	13 (EL=13)	68 (EL=65)	0	242 (EL=232)	369
	L1 Eng	56	13	54	4	127	
TWI	L1 Spn (EL=142)	151	20 (EL=20)	66 (EL=66)	8 (EL=8)	245 (EL=236)	369
	L1 Eng	53	13	54	4	124	

L1 Spn = First language Spanish; L1 Eng = First language English; EL = English learner

LD = Learning disability; ED = emotionally disturbed; OHI = Other health impaired; DD = Developmental delay (Code numbers for each of the four disability groups were assigned by the district's Office of Planning and Evaluation and were maintained during analysis.)

The disability groups studied were those identified as developmentally delayed (DD), emotionally disturbed (ED), with a learning disability (LD), or were other health impaired (OHI). After studying the results of the statistical analysis some interesting information emerged. The following discussion of

study findings will be limited to two areas: 1) TWI vs. English-only students' average performance by first language group, and 2) TWI vs. English-only students' average performance by disability group.

Study Findings

Average Student Performance in TWI vs. English-only Programs by First Language Group

The first and most notable finding was that on average students in the two educational program groups (TWI and English-only) did not perform differently when controlling for first language background. In other words, the results did not show that one program, TWI or an English-only education, made any difference to a learning-disabled child's success on standardized tests of academic content.

What was also striking was the difference between the English and Spanish speakers and the difference between children who were economically disadvantaged and those who were not. This difference was observed in both educational environments (TWI and English-only). So, within each of the educational programs there was an achievement gap between English and Spanish speakers (English speakers outperformed Spanish), and between children on free and reduced lunch and those who were not (children not receiving free and reduced lunch outperformed those that did). In sum, first language background and socio-economic status did play a significant role in these students' academic success. However, participation in the TWI program had no statistically significant bearing on special needs children's academic achievement (Myers, p. 197).

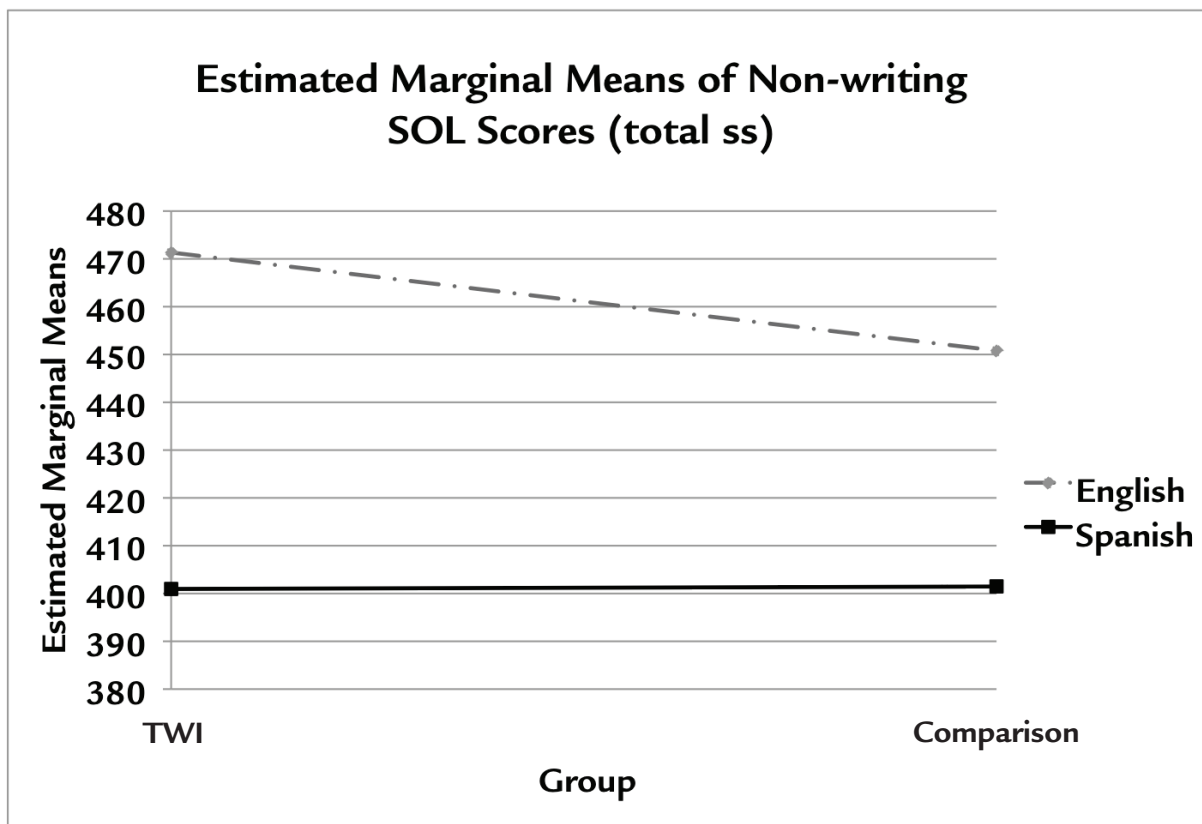


Figure 1: Estimated marginal means of non-writing SOL scores (Myers, p. 201)

In Figure 1, the TWI test scores are on the left column and the comparison (English-only) are on the right column. Data are also coded by students' first language group: solid line for Spanish, dot-dash-dot for English. These scores are the average of all of the reading, math, science and history scores across the three grade levels (3rd, 4th, and 5th). A passing score on the SOL assessment is 400. The highest possible score is a scaled score of 600. The bar graph in Figure 2 displays the same information in a different format. The English-speaking children scored slightly higher in the TWI program, while the Spanish speakers had the same results in both the TWI and the English-only program.

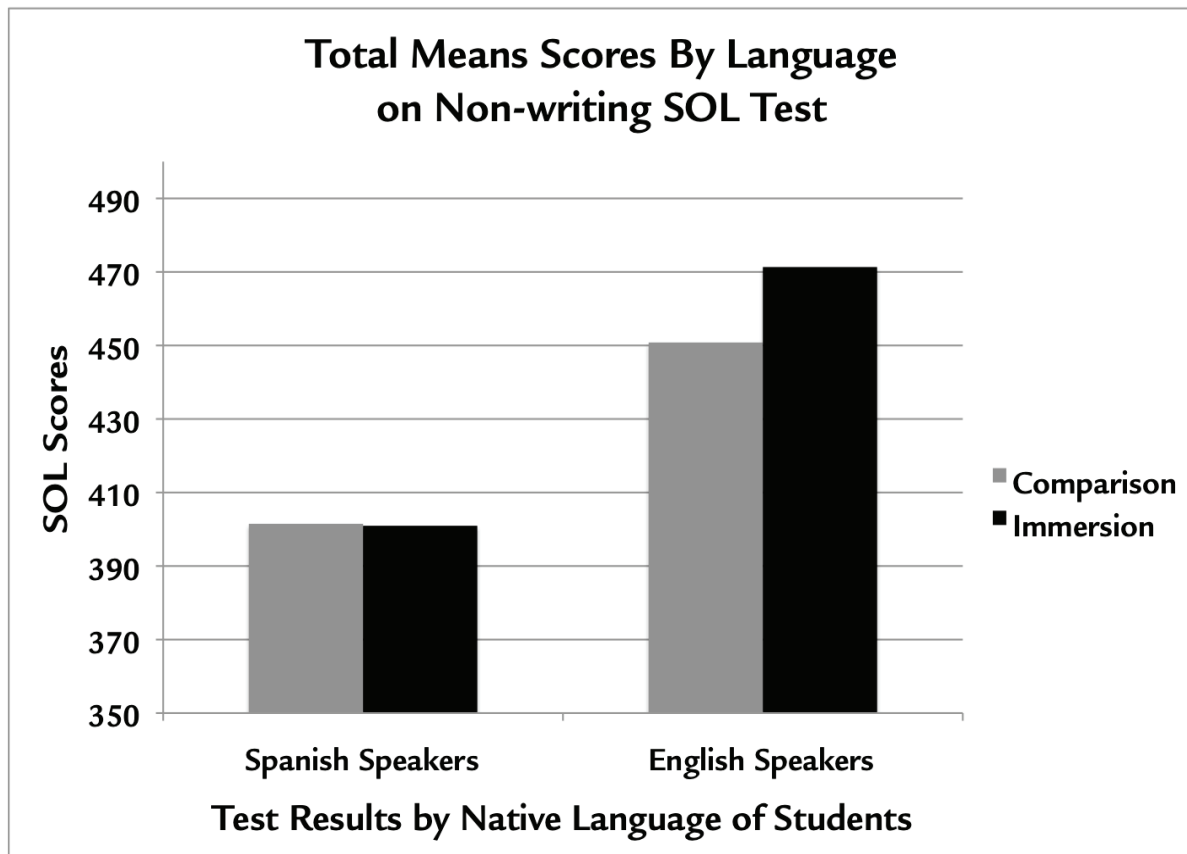


Figure 2: Bar graphs of TWI and comparison groups for non-writing SOL results by first language group (Myers, p. 202).

Figures 1 and 2 show that while first language background plays a significant role in test results, the program in which the students are studying does not. Both the two-way ANOVA and the chi-square tests run on these data found that English-speaking special education students outperformed Spanish-speaking special education children in both TWI and regular English-only schools on standardized tests given in English.

Beyond the results for the SOL non-Writing tests, the fourth grade nationally normed Stanford 10 assessment (Table 5) also showed no statistically significant differences in scaled scores between the TWI group (M=425.09, SD=145.03) and the comparison group (M=382.38, SD=147.40), $t(109) = 1.51, p = .13$.

Group Statistics

Table 5: Independent samples t-test results for Stanford 10 scaled scores for fourth graders (2006-2008) comparing TWI and English-only comparison students

		N	Mean	SD	Std. Error Mean
STAN10	TWI	46	425.09	145.03	21.38
	Comparison	65	382.38	147.40	18.28

Taken together, these results indicate that the achievement of special education students, who come from two different linguistic backgrounds in a TWI program, is comparable to the achievement of special education children from English- and Spanish-speaking backgrounds in a regular English-only elementary school. The students in TWI achieved academically on par or slightly above compared to their non-immersion peers. Therefore the null hypothesis, which states that linguistically-diverse students with special needs in TWI would perform comparably to students of two different language backgrounds with special needs in regular monolingual English school, cannot be rejected. These data indicate that the population means for TWI and comparison scores do not differ for either language group (Myers, p. 231). When looking at the raw test results, a trend existed whereby students in TWI from both language backgrounds had slightly higher scores than those in the regular English-only program, but because the sample size is relatively small it is best to interpret the results as statistically comparable for each group.

These findings will add to the knowledge base for bilingual special education and two-way Spanish/English immersion. Test results on the Standards of Learning (SOLs) can be seen as indicators of a child's cognitive academic language proficiency (CALP) (Cummins, 1979) as well as content knowledge. These scores suggest that both CALP and content knowledge are developing through schooling for children from both Spanish- and English-speaking backgrounds who struggle.

Average Student Performance in TWI vs. English-only Programs by Disability Group

Four disability groups were numerically coded in the data received from the district's Office of Planning and Evaluation, and the original numbers or codes were maintained during analysis. A 7 indicated a child identified with a learning disability (LD), an 8 emotionally disturbed (ED); a 10 was the code for other health impaired (OHI), such as hyperactivity or autism; and a 16 for developmentally delayed (DD). In Table 6, the columns from left to right are disability group, TWI program and English-only program. Within each educational program group, Table 6 displays the average or mean of all of the SOL scores (M), the standard deviation (SD) of the scores, and the N or number of participants in that particular group. Mean scores show that all students are passing; however, it is clear that some students scored above the passing benchmark level of 400 while others were below the benchmark. Nevertheless, it can be concluded that, on average, children identified with one of these four types of special needs were as academically successful in two-way Spanish/English immersion as peers in English-only programs.

Table 6: Non-Writing SOL performance comparison of two-way immersion vs. English-only programs by disability group

	TWI Program			English-only Program		
	N	M	SD	N	M	SD
Learning Disability (7)	204	403.13	61.27	217	402.73	68.43
Emotional Disturbance (8)	33	458.06	82.69	26	423.38	81.87
Other Health Impairment (10)	120	451.03	72.30	122	447.59	81.87
Developmental Delay (16)	12	452.42	63.10	4	404.00	5.66

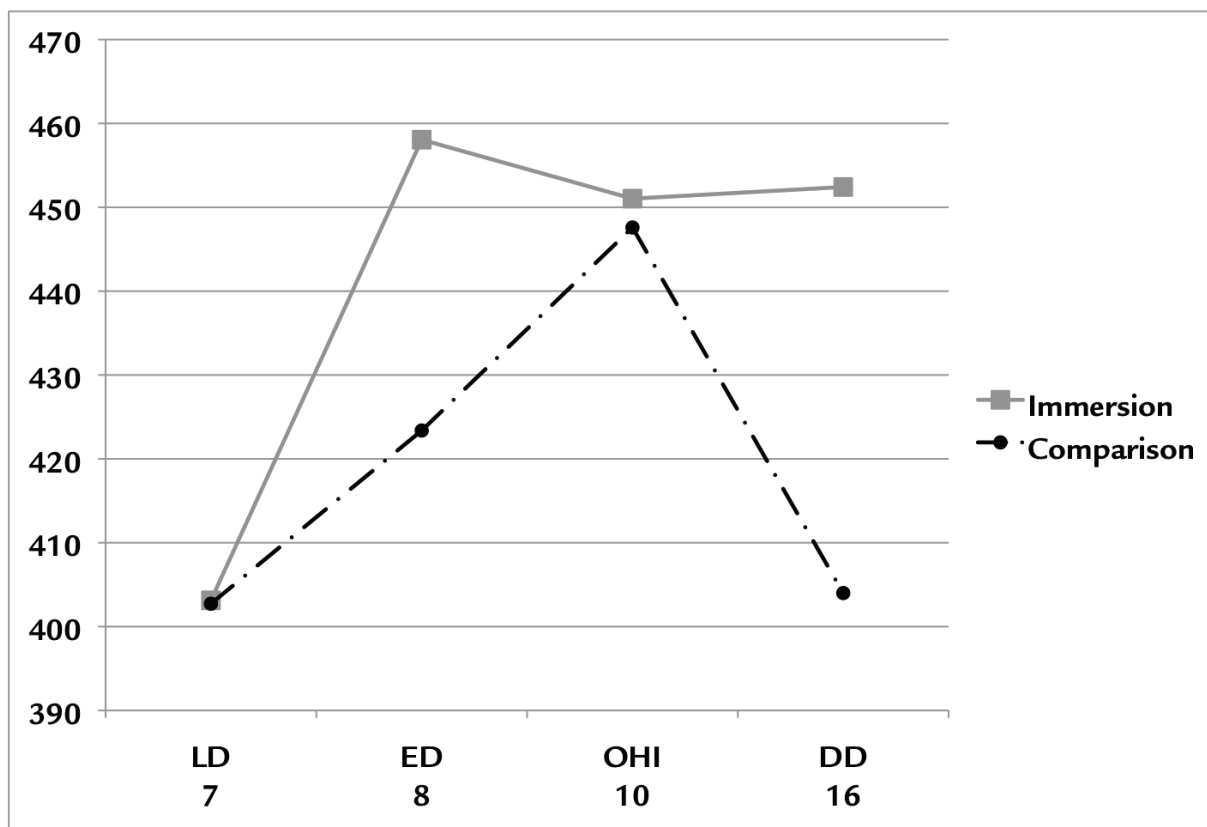


Figure 3: Graph of non-Writing test scores by educational program and disability group

Figure 3 displays these same data in a graph. The four disability categories are referenced numerically across the bottom (x axis) and the SOL scores are listed up the left side of the graph (y axis). We can see that the educational program had no significant effect on student test results in any of the four disability groups although certain disabilities may have had an effect. However, where the greatest distance between TWI and comparison scores exists, in the groups 8/ED and 16/DD, there were far fewer case numbers than in groups 7/LD and 10/OHI. Like the analyses for achievement

differences by first language background, the results for the comparisons of four disability groups were similar in that the educational program on its own had no effect on student performance. It is possible that the nature of the disability itself does, and this is an area for future research.

Conclusion

Cloud, Genesee and Hamayan (2000) and Echevarría and Graves (1998) have argued that special needs students can and should be included in enriched educational programs, such as TWI, with appropriate modifications to insure their success (Cloud, et al., 2000, p. 131). This study combined with others in the field of bilingual special education certainly add support for this argument by providing data that show two-way Spanish/English immersion as a highly respected and appropriate educational environment for all students, in particular, students identified with special education needs. Educators need to work together to make parents and administrators fully aware that despite identification as a special needs child, academic success in a two-way immersion program is possible. In other words, students do not need to be moved to a monolingual English program simply because of a disability classification. They can enter TWI programs and succeed in them while reaping the benefits of an enriched education offered in two languages.

Keep in mind that whenever there is a discussion about two-way Spanish/English immersion versus an English-only elementary school education, if on the surface it appears that all things are equal, they are not really equal: the TWI students speak, read and write in two languages. TWI students leave school with more. They leave with two languages.

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