DOCUMENT RESUME

ED 408 843 FL 024 598

AUTHOR	Oller, D. Kimbrough; And Others
TITLE	Educational Implications of Early Bilingualism: A Review of Recent Results.
SPONS AGENCY	National Institutes of Health (DHHS), Bethesda, Md.
PUB DATE	[97]
NOTE	34p.; Paper presented at the American Association for the Advancement of Science (Atlanta, GA, February 1995).
CONTRACT	NIH/NICHD-R01-HD30762
PUB TYPE	Information Analyses (070) -- Speeches/Meeting Papers (150)
EDRS PRICE	MF01/PC02 Plus Postage.
DESCRIPTORS	Academic Achievement; *Age Differences; *Bilingualism; Elementary Education; English (Second Language); Higher Education; Language Maintenance; Language Research; *Language Role; Language Skill Attrition; Monolingualism; Preschool Education; Second Language Learning; *Spanish Speaking; *Student Characteristics
IDENTIFIERS	University of Miami FL

ABSTRACT

At the University of Miami, the Bilingual Study Group has been evaluating linguistic and academic performance of children from a broad spectrum of socioeconomic status who appear to be well-matched across bilingual and monolingual groups. Because the studies vary in the degree of exposure to English and Spanish among bilingual subjects who are compared with monolinguals, the outcomes are complex. On the whole, research results emphasize advantages of bilingualism because they show that in most cases of appropriate comparison, children learning two languages simultaneously acquire the ability to function effectively in two cultures. Competent function in two languages also commonly occurs with sequential learners, children who learn one language at home (L1) and begin to acquire a second language (L2) early in life. This research and research from other laboratories suggest that when poor linguistic or academic performance does occur in bilinguals, it may be associated with what has been subtractive sequential learning, a circumstance where L2 largely replaces L1; knowledge of L1 is allowed to wane, and the learner may never acquire native competence in L2. A preferable approach is one in which competence in L1 is maintained while L2 is acquired. (Author/MSE)

Educational Implications of Early Bilingualism:

A Review of Recent Results

D. Kimbrough Oller, Barbara Pearson, Vivian Umbel,

María Fernández, and Ana Navarro

University of Miami

Coral Gables, Florida

Address correspondence to:

D. Kimbrough Oller, Ph.D.

University of Miami

Department of Psychology

Psychology Annex

P.O. Box 249229

Coral Gables, FL 33124-0721

This research reported in this manuscript was supported by NIH/NICHD grant # R01 HD30762 to D. Kimbrough Oller.

Abstract

Bilingualism is often thought to have harmful effects because the learner of two languages is assumed to bear the burden of duplicate efforts -- double vocabularies, double sets of syntactic rules, and so on. To evaluate whether or not bilingualism truly results in academic or linguistic deficits it is necessary to compare children who are well-matched socioeconomically (not an easy matter given the special cultural, economic and educational circumstances typically associated with bilingualism in America). It is also important to evaluate bilingualism in its various forms -- some children learn two languages simultaneously, some learn sequentially, acquiring one language at home and not beginning to learn another till school age, and so on. It turns out that which group of "bilinguals" we choose to compare with monolinguals affects both the outcome and the appropriate interpretation of outcomes.

At the University of Miami, the Bilingualism Study Group has been evaluating linguistic and academic performance of children from a broad spectrum of socioeconomic status who appear to be well-matched across bilingual and monolingual groups. Because the studies vary in the degree of exposure to English and Spanish among bilingual subjects who are compared with monolinguals, the outcomes are rather complex. On the whole the results of our research emphasize advantages of bilingualism because they show that in most cases of appropriate comparison, children learning two languages *simultaneously* acquire the ability to function effectively in two cultures. Competent function in two languages also commonly occurs with *sequential* learners, children who learn one language at home and begin to acquire a second language early in life, say in kindergarten. This research and research from other laboratories suggest that when poor linguistic or academic performance does occur in bilinguals, it may be associated with what has been called subtractive sequential learning -- a circumstance where the second language largely replaces the first; knowledge of the first is allowed to wane, and the learner may never acquire native competence in the second. A preferable approach is one in which competence in the first language is maintained while the second language is acquired.

Educational Implications of Early Bilingualism:

A Review of Recent Results from Miami

Introduction: The bilingual deficit hypothesis. To speak a single language is the norm in our country, but it is atypical in many nations (Serpell, 1980; Southworth, 1980), and may be less common than speaking two or more languages worldwide (Grosjean, 1982). Yet in spite of the commonness, and apparently the naturalness, of bilingualism, there is a long history of belief that learning two languages may be harmful to children (Jespersen, 1922; Kelley, 1936; Tireman, 1955; Macnamara, 1967). Those who subscribe to this belief assert that it is preferable for children to learn a single language well (especially the primary language of the host community) and to avoid the presumable intellectual burdens of learning two vocabularies, two sets of syntactic rules, and so on. It is also typically assumed (in accord with this line of reasoning) that young speakers of two languages will have lower intelligence and will be at a disadvantage in school. Illiteracy is expected to be more common in bilinguals, drop-out rates are expected to be higher, and ultimately unemployment is anticipated to be more likely.

Although it appears to be less in vogue to subscribe openly to such beliefs in recent years, the reasoning associated with this "bilingual deficit" hypothesis has been very influential in American educational circles. Children who come to school without a command of English are assumed to be at a disadvantage (and of course as far as English goes, they *are* at a disadvantage), and it is usually presumed that the best treatment for the problem is to begin teaching English immediately. Though it is not commonly stated openly, the implication is clearly left that such children will be better off they dispense with the home language while they learn English. This pattern of learning has been referred to by Lambert (1977) as "subtractive" bilingualism (see Figure 1A). One acquires the host language, L2 (in this case English), at the expense of the home language, L1 (often Spanish). By the end of schooling children speak English better than Spanish, and they are typically literate in English only. During the period of schooling, they experience a period (perhaps a fairly long period) during which they know neither

English nor Spanish as well as monolingual peers. To refer to them as "bilinguals" at this point may be inappropriate, because their knowledge is substantially limited in both languages.

Indeed, Hispanic children in the United States often appear to experience this pattern of learning, although it has not been very well documented (especially in terms of declining Spanish knowledge). It is critical that we ask the question, is this pattern optimal? There are a variety of reasons to think it is not. For one thing, it seems certain that academic progress of subtractive bilinguals is stunted during the early period of schooling, limited by the fact that the children do not know English well enough to understand the kinds of instructions that are given in class, to proceed with learning to read, to do arithmetic, and so on. One may suffer intellectually from spending several years during which communication in any language is limited. Those of us who have tried to learn and *live* in a foreign language know that there is a lot one misses when one is not a native speaker of the language in which information is being transmitted.

We need to ask if there are better ways -- especially practical ones to deal with two languages early in life. Two possibilities are worth considering. The first is referred to as "additive bilingualism" (the term again is Lambert's [1977]; see Figure 1B). In theory it works like this: when the child comes to school with limited English proficiency, teaching includes substantial academic instruction in the home language, for example, Spanish -- that is reading, arithmetic, etc., are taught in Spanish, and English instruction includes both language and content matter (i.e., reading and so on). It is hoped the child will acquire full command of English eventually, but will not experience years of general school failure prior to that point, since the academic material that cannot be learned in English due to lack of fluency, can be learned in Spanish until fluency in English is established. The child is eventually literate in two languages, and is orally competent in both as well. This approach to training is gaining acceptance in "two-way programs" that are now fairly common nationwide. Miami has one of the oldest such programs (see Mackey & Beebe, 1977), although it is limited in operation to just a few of the elementary schools in the very large Dade County public school system. In two-way programs

subject matter (e.g., social studies, history, arts, etc.) is taught, typically throughout elementary school, in both languages, with the school-day being split roughly half and half into home language and English segments. Research on the outcomes of two-way programs has provided preliminary indications that children do academically as well as, and perhaps better than, children learning in a more traditional English immersion approach that is feared to result in subtractive learning (see Mackey & Beebe, 1977; and more recent results from Thomas & Collier, 1995). Other studies have focused on "late-exit" programs in which bilingual children receive training in the home language (though not necessarily for half the school day, and not necessarily in a wide variety of subject matter) for several years before "exiting" to English only. Again it is assumed that, with long term educational experience in the home language, subtractive learning may be avoided. Ramirez et al. (1991a; 1991b) report research suggesting that late-exit programs may have notable educational advantages for children entering school with limited English proficiency.

The second possibility is called "simultaneous bilingualism" and is depicted in Figure 1C. The child is assumed to learn both languages from birth, and while the child may be a little more competent in one language than the other, the proficiency level is high in both, and both can be maintained effectively in a two-way program, from which the child may emerge literate in both. It seems likely that the child may be better off even than additive sequential learners from an academic standpoint, since the early educational experience (whether in English only or in a two-way approach) should be one in which the child is able to understand and participate fully from the beginning.

The "bilingual deficit" hypothesis suggests that the child who learns two languages, whether simultaneously or sequentially, is bound to suffer from the added burdens of acquiring the two languages, and cannot possibly do as well in either as monolingual peers. The hypothesis suggests that a subtractive approach to education is appropriate because it eliminates the burden of the second language, and encourages the child to adapt to the requirements of the host

community.

At the University of Miami, the Bilingualism Study Group has been evaluating the "bilingual deficit" hypothesis in a variety of empirical studies on early language learning in Hispanic and non-Hispanic children. The goals of the work are many, but among the key ones is that of determining the extent to which bilingual children (and the focus is often on very young bilingual children) may be disadvantaged linguistically or academically when compared with monolingual peers. The questions implied here are complex, since there are a number of possible dimensions of potential evaluation, and in some cases no obvious way of determining which is most important. To some extent we have proceeded to study that for which we are most well-equipped. At the same time, the breadth of our group is such that we already have some fairly intriguing results in a number of areas.

Our work has also profited from the existence in Miami of a large population of Hispanic children from a broad spectrum of socioeconomic status. Much previous research on Spanish/English bilingualism in the USA has suffered from the inability to provide appropriate monolingual matching samples for bilingual groups due to low socioeconomic status of large proportions of Hispanic bilingual children in the Southwest and Northeast, where most of the research has been conducted. Miami presents a different picture, where mayors and city councilpersons, bank presidents, physicians and attorneys, are typically, rather than rarely, Hispanic. The Miami metropolitan area is dominated by an economically and educationally affluent Spanish-speaking community. Consequently, the Bilingualism Study Group has been able to recruit subjects who speak Spanish, English or both from well-matched socioeconomic strata.

Two characteristics have been held in common across most of the studies we have conducted. Most provide the possibility of comparing performance of simultaneous bilingual children (i.e., children learning both English and Spanish from birth, although the proportion of exposure to the two languages varies somewhat from home to home, and also varies from month

to month) with that of monolingual peers, and most evaluate, to the extent possible, the performance of bilingual (or even partially bilingual) children in both English *and* Spanish. The bilingual deficit hypothesis would suggest that children from bilingual or partially bilingual homes should perform less well on language and academic tests than socioeconomically matched monolingual peers.

The general outcome of the studies might be summarized as follows: given appropriate comparisons between socioeconomically similar, and educationally matched children, bilinguals commonly function comparably with monolingual peers. Where differences occur they sometimes favor the monolinguals and sometimes favor the bilinguals, but in general, the differences do not suggest that bilinguals suffer intellectually from the learning of two languages. Their language capabilities are similar to those of monolinguals in both languages in many regards. One might be well advised at this point to issue the caution that no one can prove that two groups of children are identical in linguistic and intellectual function (this is the well-known impossibility of proving the null hypothesis). The work continues, not with the intention of demonstrating equality, then, but with the intention of evaluating ways in which monolingual and bilingual children are similar and different across a number of dimensions, and at different points in the learning process. Only in this way does it seem possible for us to gain a broad perspective on the meaning of bilingualism and to provide a practical basis for improving educational approaches, both bilingual and monolingual. The present review provides an overview of completed studies from the project.

Comparison studies: Number 1 -- precursors to speech in bilingual and monolingual children. The first area of evaluation concerns very early infant vocal development. We know now that during the first year of life, infants pass through various stages of vocal development that presage and manifest the emerging capacity for speech. A key development is the onset of what is called "canonical babbling," an event that usually occurs from 5-9 months of age (Oller, 1980; Koopmans van-Beinum & Van der Stelt, 1986). At this point infants begin to produce

well-formed syllables and syllable sequences, for example, [bababa] or [dIdIdI]. We know that it is very rare for infants to begin canonical babbling later than 10 months of age, and in fact, it is now well-known that such late onset is a reliable risk indicator, especially for hearing impairment, and it is believed, for other linguistically significant disorders (Oller & Eilers, 1988; Stoel-Gammon & Otomo, 1986; Oller, 1995). These facts make theoretical sense because canonical babbling manifests the child's ability to produce well-formed syllables -- languages are composed of syllables, and if one cannot produce them one cannot learn to talk except in very rudimentary ways. One might say that canonical babbling is a necessary (though not a sufficient) condition for learning to talk.

So what effect might living in a bilingual household have on the development of canonical babbling? Might the added burdens of hearing two languages slow the development down? Might the child have more speech sound information to process than monolingual peers, and consequently might there not be a lag in onset of canonical babbling associated with emergent bilingualism? The empirical answer is based upon comparison of onset in 23 infants reared in bilingual homes in Miami, and 27 infants reared in monolingual homes. The method of determination of onset is based on detailed longitudinal evaluation using both periodic tape recordings in our laboratories and weekly parent report on the status of the infants' vocalizations. The results are reported in Eilers et al. (1993), Lynch et al. (1995), Oller and Eilers (1988), and Oller et al. (in submission), and show (Figure 2) virtually identical onsets of canonical babbling for bilingual (mean = 26.7 weeks) and monolingual (mean = 27.3 weeks) children. The monolingual group is broken down in the Figure to show the results for a mid to high SES subgroup and for a low (but not very low) SES subgroup. As can be seen, just as bilingualism appears not to affect the onset of canonical babbling much if any, so, this degree of SES difference also seems not to affect it much if any. However, linguistic handicapping conditions such as Down Syndrome or deafness, have very reliable retarding effects on the onset of canonical babbling, as seen in the Figure. DS slows the onset by several weeks, and deafness

slows it by many months. Other evaluations that we have conducted to assess the extent of usage of canonical syllables and features of canonical syllables by bilingual and monolingual children across the first 18 months of life have also shown remarkable similarities (and no reliable differences) between bilingual and monolingual children.

Comparison studies: Number 2 -- early speech intelligibility in bilingual and monolingual children. There are a variety of ways to assess early speech intelligibility. One that proves useful is to give children a speech articulation test requiring them to pronounce a number of common words in a picture naming task designed to elicit all the phonemic units (i.e., the contrastive speech sounds) of the language in question. In one of our evaluations we (Navarro et al., in submission) used such tests in both Spanish and English (the Hodson, 1980; 1986) with children who were 34-36 months of age. We then performed phonetic transcriptions of the tape recorded tests and analyzed the resulting transcriptions with special software (LIPP, Oller, 1991) that compares the children's actual pronunciations with the "correct" pronunciations of the same words. The program tells us how often children make various kinds of errors of pronunciation, and this we recognize as an indicator of intelligibility. For example, it is well-known that percentage of correctly produced consonants and correctly produced vowels are highly correlated with intelligibility as measured by direct means (i.e., as measured through having adults listen to children's tape recorded utterances and identify their word targets). So for simplicity we shall here merely present the correct consonant and correct vowel percentages for 11 bilingual children and two monolingual comparison groups (13 monolingual English and 7 monolingual Spanish).

The bilingual deficit hypothesis might suggest that bilingual children would be less intelligible than their monolingual peers and show lower percent correct scores in both English and Spanish. But the results of the evaluation do not conform to that prediction. In English (Figure 3) the bilingual children do no less well than monolingual English speakers in intelligibility as indicated by both consonant and vowel scores. The segment score represents a

combination of the two. The differences (favoring the bilinguals) are not statistically reliable. By the same token, in Spanish, (Figure 3) the bilingual children appear to be no less intelligible than monolingual peers. Again the differences are not statistically reliable.

Comparison studies: Number 3 -- early vocabulary acquisition in bilingual and monolingual children. Thus far we have considered ways in which bilingual children might be affected in development of speech production or pronunciation abilities. Clearly language has much more to it than just pronunciation (even though adequate pronunciation is a requirement of adequate talking). For example, children must learn words -- they have to connect particular pronunciations with their appropriate meanings, and learn to use those pronunciations at appropriate times, and to recognize them when they are used by others. We evaluate very early learning of vocabulary in a variety of ways. One of the most useful (the MCDI, Fenson et al., 1991) is based on a parent interview evaluation that was developed in recent years by an illustrious group that includes Larry Fenson, Elizabeth Bates, Philip Dale, and other colleagues. Parents are asked to identify from a list of common words of child language the ones that their child "comprehends" (up to 16 months of age) and "produces" reliably (up to 30 months). The list includes the great majority of items the child would be likely to know and so parents do not have to "recall" words -- they merely need to recognize the ones their child commands. The method works well, as demonstrated by a variety of methodological checks (Dale, 1991; Dale et al., 1989), and it is available and normed in both English and Spanish.

Now one might imagine, in accord with the bilingual deficit hypothesis, that bilingual children would be at a notable disadvantage in learning words, and perhaps especially so in the very early period of development. The outcome of our research on this topic is complex. Figure 4 shows the results for production of words in percentile rankings on the MCDI for 57 children. Note first that even the monolingual children appear to rank fairly low (34th percentile on average) on the test. This we believe to be a result of a very strict application of the instructions to parents in our laboratory, rather than to generally lower performance of the Miami children

than those of the norming sample. Performance of the Miami children might have been expected to be high since the SES of our samples tends to be on the high side. But in any case, all the children represented in the Figure were evaluated in our laboratories and the criteria for instructions to parents were equivalent across the groups.

The results compiled in studies by Pearson, Fernández and Oller (1993) suggest that indeed the bilingual children show low percentile rankings in English and Spanish *production* vocabulary when compared with monolingual peers, a statement we include with the caution that given large intragroup variance, the differences were not statistically reliable. Moreover, before concluding that this outcome confirms the deficit hypothesis, other matters need to be considered. It turns out that bilingual children (especially in very early development) often learn a word in one language without learning the translation equivalent. Consequently, they learn to represent some concepts with a single word (i.e., as "singlets") and to represent other concepts with words in both languages (i.e., as "doublets"). Consequently, if we compare the vocabulary in Spanish only for a bilingual child against a monolingual Spanish-speaking child of the same age, the bilingual may appear to show less vocabulary than the monolingual. Does this mean that the bilingual has mapped less conceptual territory than the monolingual (i.e., that the bilingual has words for fewer concepts)? Not necessarily, because the bilingual may have represented many additional concepts in English, and this is not accounted for if we only compare performance in one language at a time.

To assess the "conceptual vocabulary" of the bilinguals, we need to look at all the words, singlets and doublets, count each singlet once, and each doublet once, and then compare the total of all concepts represented by the bilinguals against their monolingual peers. When this is done, the apparent bilingual disadvantage shrinks considerably (and the remaining difference is also not statistically reliable). The Figure also shows that the total vocabulary of bilingual children (i.e., the total number of different words known in both languages -- in this case singlets are counted once and doublets twice, because a doublet constitutes two different lexical items even though

the two items represent the same concept) at this age is higher (though again not reliably so) than the vocabularies of monolinguals.

If we consider comprehension vocabulary, the bilinguals show quite comparable performance in both languages to their monolingual peers (Figure 4 also based on Pearson et al., 1993). And when conceptual vocabulary and total vocabulary are considered, the bilinguals show higher percentile rankings than monolingual peers, appearing to have mapped more conceptual territory than their monolingual competitors, though again the differences are not statistically reliable.

Given the magnitude of intragroup variation, and patterns of difference that did not reach standards of statistical significance, we add with caution that results seem to suggest that comprehension and production may be very different matters for bilingual children. This is a result that has been reported in other research on bilinguals (see Swain, 1991). They may understand more in two languages than they are able to express in both, and when comparing with monolingual peers, the asymmetry of comprehension and production may confuse the matter. But overall, while the outcome is complex for these very young children (note they one or two years old in most cases in these evaluations), the primary message is that to assume the deficit hypothesis to be generally accurate would be dangerous. Bilingual children seem to do at least as well as monolingual peers when we consider the key matter of conceptual mapping of the world in linguistic terms.

Comparison studies: Number 4 -- preschool and elementary school vocabulary in bilingual and monolingual children. As children acquire a substantial vocabulary during the period just before school age, it becomes possible to test their knowledge a bit more directly. A widely utilized recognition vocabulary test is the PPVT (Dunn & Dunn, 1981), which is available in a Spanish normed version called the TVIP (Dunn et al., 1986). Our studies that are completed to date in preschool and elementary school have focused primarily on recognition vocabulary (and we are attempting to fill the gap with ongoing studies of production vocabulary). The

recognition vocabulary studies address the monolingual/bilingual comparison in a different way from the previously reviewed studies. We have many children in Miami who learn only Spanish at home, and begin to learn English only when they go to school. This is commonly a matter of choice by the parents (not merely a matter of practical availability of someone to teach the child English at home). Many Miami parents (even if they speak English well) choose to speak Spanish with their children at home on the assumption that if their children do not learn Spanish at home, they will never learn it, and the cultural legacy of Spanish will be lost to the family. Our estimate, based on data from subject recruitment, is that about 90% of Hispanic families in Miami endorse this view -- they believe it is best to teach Spanish at home and let English wait until school.

The fact that about 10% of the families go the other way, teaching both languages at home from the beginning, offers us the possibility of another look at the bilingual deficit hypothesis. The hypothesis would suggest that the monolingual Spanish children should have notably better Spanish vocabulary than their simultaneous bilingual peers. The simultaneous learners are acquiring two vocabularies, and according to the hypothesis the language learning task for them should be especially burdensome, resulting in slow acquisition when compared with monolinguals.

This matter has been evaluated in a study of several hundred preschoolers in Miami who were tested in both English and Spanish by Fernández et al. (1993). Figure 5 shows results on the tests for four-year-old children who experienced almost exclusively Spanish at home, and for children who had substantial English as well as Spanish in the home (though the amounts of exposure were not precisely equal, according to our parent report measures). Note that the Spanish vocabulary scores are very similar, while the English scores differ dramatically (and these differences are reliable). The deficit hypothesis is not supported by the results of the research. The simultaneous learners do not seem to suffer in Spanish in order to gain ground in English.

Similar results are seen in the work of Umbel et al. (1992) who considered elementary school children. Figure 5 shows the outcome for first graders, again broken down to show those from monolingual Spanish homes and those from simultaneous bilingual homes. The results again do not support the deficit hypothesis since they show similar outcomes in Spanish for the two groups. The English results are indicated merely to show that the bilingual children are actually learning both languages.

It is worth commenting on the fact that the vocabulary scores for all groups of children in Figure 5 are below 100 in every case, suggesting that the children in these studies trail the norming samples. Again we must ask why, especially since the SES of the Miami samples is not low. The answer is as yet undetermined, but we have two possibilities to consider. One is that the low scores are a manifestation of bilingual deficit. Another is based on inherent problems of comparing vocabularies across bilingual and monolingual groups. Remember that very young bilingual children have singlet vocabulary that tends to make their single language vocabulary look lower than their conceptual vocabulary. Only by evaluating both languages can we gain a view of children's knowledge of conceptual vocabulary. If school age children have singlet vocabulary (just as very young children do), then the scores they get when compared with norming groups that are essentially monolingual will tend to look low and will not represent the bilinguals' total conceptual vocabulary knowledge.

We verified that the first graders in the Umbel et al. study had significant singlet vocabulary. Unfortunately, we have not yet developed a theoretically satisfying and practical way to convert scores on monolingual tests to account for this bilingual factor. Consequently, though we know the scores for the bilinguals systematically underestimate conceptual linguistic mapping in the bilinguals, we do not yet know by how much. As a result the possibility of a bilingual deficit in comprehension vocabulary remains unproven in this work.

Comparison studies: Number 5 -- academic aptitude and achievement in bilingual and monolingual college students. There are many additional studies that are currently

underway to evaluate the role of bilingualism in linguistic and academic outcomes. One already completed by Pearson (1993) evaluated the Scholastic Aptitude Test and grade point averages over a four semester period for hundreds of University of Miami undergraduates both Hispanic bilingual and non-Hispanic monolingual. SES data based on questionnaires administered to the students suggested that the bilingual and monolingual groups were well matched.

The bilingual deficit hypothesis would suggest that performance in both SAT scores and grades should be suppressed for the bilingual students. It should be noted at the outset that questionnaire data from the Hispanic students confirmed that they viewed themselves as bilingual -- but it also confirmed that the great majority spoke English better than Spanish. Consequently, it is hard to know how many of the Hispanic students had experienced a "subtractive" learning pattern, in which the acquisition of English had occurred with substantial cost in terms of the students' knowledge of Spanish.

The results show reliably higher SAT scores in both the verbal and math sections of the test (see Figure 6) for monolingual than bilingual students. The differences are on the order of 45 points (the test score maximum is 800 for verbal and math). At the same time, grade point averages over a four semester period were virtually identical for the two groups. The Figure displays GPA's for male and female subgroups, and shows small, statistically unreliable differences between the bilingual and monolingual groups.

The interpretation of the SAT outcome is a bit tricky, for two reasons. One is that the study offered no direct way to assess the extent of Spanish knowledge of the bilinguals, and consequently no way to assess the conceptual linguistic knowledge of the bilinguals in a way that took account of their knowledge in both languages. This is an important issue since the SAT, being administered in English only, does not necessarily provide a full-scale assessment of bilinguals' scholastic aptitude.

The second reason interpretation is difficult is that in the SAT study, unlike all the BSG investigations described above, the bilingual group is not composed exclusively of simultaneous

bilinguals. The great majority (85%) of the subjects learned Spanish first and many began to learn English only when they first went to school. As a result the apparent deficit in performance on the English SAT may not be the result of bilingualism per se, but rather the result of monolingualism in Spanish until school age, and a late beginning for the learning of English.

It may seem surprising that bilingual students with discernibly lower SAT scores than their monolingual competitors would perform at least as well in college (as indicated by GPA's) as the same competitors. There have been many critiques of the SAT as a predictor of performance in college within narrow ranges of scores (and the differences here between monolingual and bilingual students represent a very small proportion of the SAT scale); consistent with the trend in criticism of the test, we see here a sharp advantage of monolinguals in the SAT scores that is not manifest in school performance at all. Perhaps the communicative events of classroom instruction and study simply do not require subjects to rely so heavily on specific linguistic knowledge as do standardized testing instruments such as the SAT. Or perhaps bilinguals whose English skills trail those of their monolingual competitors (and consequently score relatively low on the SAT) have advantages in "cognitive flexibility" and "creativity" (see Lambert, 1977; Ben-Zeev, 1977) or in some other domain that allows them to make up for their limited English capabilities in the context of college education. Whatever the reasons, bilingual students seem academically to compete very effectively at the University of Miami with otherwise comparable monolingual peers.

Conclusions: Bilingualism is a complex matter, and it is probably not sensible to try to draw a single overarching conclusion that bilingualism is or is not linguistically or intellectually advantageous. The problem is partly that of defining what we mean by bilingualism. Do we limit ourselves to simultaneous, life-long bilingualism that produces full literacy in both languages? Or do we include sequential additive bilingualism that ultimately produces literacy in both languages and does not allow knowledge of either language to fade? Or do we include in addition, the kind of bilingualism that may be the most common in our country, a bilingualism

wherein the first language (Spanish) is largely abandoned in middle childhood in favor of a second language which may never be spoken with full native command? Our data thus far seem to suggest that if we limit ourselves to consideration of just simultaneous bilinguals very early in life, there is little reason for concern that bilingualism has significant disadvantages -- not in development of precursors to speech, not in early intelligibility, not in very early vocabulary development, and not in preschool and elementary receptive vocabulary. In cases where monolinguals do seem to have advantages over bilingual peers, it is often clear that the advantages obtain only when we narrowly compare linguistic performance in the single language. When we take into account more general intellectual capabilities as manifest in linguistic mappings in both the languages of bilinguals (who often fill gaps of mapping from one language with units of the other), the apparent monolingual advantage is attenuated, and may even be reversed.

If there are no significant intellectual or linguistic disadvantages to bilingualism, one might argue that the advantages of being able to function in another language should outweigh the minor concerns that might be appropriate regarding possible burdens of learning two linguistic systems rather than one. As additional studies that are now underway come to be completed, we will have the opportunity to compare numerous characteristics of oral language and academic development in bilinguals in various circumstances -- simultaneous learners as opposed to sequential learners in both two-way programs designed to create full literacy in both languages and in immersion programs designed to nurture English only. These studies should afford us the opportunity to evaluate the circumstances that maximize whatever advantages bilingualism may have. In effect they may help us to define the circumstances of optimal bilingualism.

References

Ben-Zeev, S. (1977). Mechanisms by which childhood bilingualism affects understanding of language and cognitive structures. In P. A. Hornby (Ed.), Bilingualism (pp. 29-55). New

York: Academic Press, Inc.

Dale, P. S. (1991). The validity of a parent report measure on vocabulary and syntax at 24 months. Journal of Speech and Hearing Research, 34, 565-571.

Dale, P. S., Bates, E., Reznick, J. S., & Morisett, C. (1989). The validity of a parent report instrument of child language at twenty months. Journal of Child Language, 16, 239-249.

Dunn, L., & Dunn, L. (1981). *Peabody Picture Vocabulary Test--Revised.* Circle Pines, MN: American Guidance Service.

Dunn, L, Padilla, E., Lugo, D., & Dunn, L. (1986). *Test de Vocabulario en Imágenes Peabody--Adaptación Hispanoamericana* [Peabody Picture Vocabulary Test--Latin American adaptation]. Circle Pines, MN: American Guidance Service.

Eilers, R. E., Oller, D. K., Levine, S., Basinger, D., Lynch, M. P., & Urbano, R. (1993). The role of prematurity and socioeconomic status in the onset of canonical babbling in infants. Infant Behavior and Development, 16, 297-315.

Fenson, L., Dale, P. S., Reznick, J. S., Thal, D., Bates, E., Hartung, J. P., Pethick, S., & Reilly, J. S. (1991). *Technical manual for the MacArthur Communicative Development Inventories.* San Diego, CA: San Diego State University.

Fernández, M. C., Pearson, B. Z., Umbel, V. M., Oller, D. K., & Molinet-Molina, M. (1992). Bilingual receptive vocabulary in Hispanic preschool children. Hispanic Journal of Behavioral Sciences, 14, 268-276.

Grosjean, F. (1982). Life with two languages. Cambridge, MA: Harvard University Press.

Hodson, B. W. (1980). The assessment of phonological processes. Danville, IL: The Interstate Printers & Publishers, Inc.

Hodson, B. W. (1986). The assessment of phonological processes--revised. Danville, IL: The Interstate Printers & Publishers, Inc.

Jespersen, O. (1922). Language. London: George Allen and Unwin.

Kelley, V. (1936). Reading abilities of Spanish and English speaking pupils. Journal of Educational Research, 29, 209-211.

Koopmans-van Beinum, F. J., & van der Stelt, J. M. (1986). Early stages in the development of speech movements. In B. Lindblom & R. Zetterstrom (Eds)., Precursors of early speech (pp. 37-50). New York: Stockton Press.

Lambert, W. E. (1977). The effects of bilingualism on the individual: Cognitive and sociocultural consequences. In P. A. Hornby (Ed.), Bilingualism (pp. 15-27). New York: Academic Press, Inc.

Lynch, M. P., Oller, D. K., Steffens, M. L., Levine, S. L., Basinger, D. L., & Umbel, V. M. (1995). Development of speech-like vocalizations in infants with Down syndrome. American Journal on Mental Retardation, 100, 68-86.

Mackey, W. F., & Beebe, V. N. (1977). Bilingual schools for a bicultural community: Miami's adaptation to the Cuban refugees. Rowley, MA: Newbury House.

Macnamara, J. (1967). The bilingual's linguistic performance - a psychological overview. In J. Macnamara (Ed.), Problems of bilingualism. Journal of Social Issues, 23(2), 58-77.

Navarro, A., Pearson, B. Z., Cobo-Lewis, A. B., & Oller, D. K. (in submission). Phonological development in bilingual and monolingual children: A comparative study.

Oller, D. K. (1980). The emergence of the sounds of speech in infancy. In G. Yeni-Komshian, J. Kavanagh, & C. Ferguson (Eds.), Child phonology, Volume 1. Production (pp. 93-112). New York: Academic Press, Inc.

Oller, D. K. (1991). Computational approaches to transcription and analysis in child phonology. Journal for Computer Users in Speech and Hearing, 7, 44-59.

Oller, D. K. (1995, December). Precursors to language and how they can forecast disorders. Paper presented in Invited Seminar on Current Theories of Etiology in Specific Language Disorders, organized by R. Paul, American Speech, Language and Hearing Association, Orlando.

Oller, D. K., & Eilers, R. E. (1988). The role of audition in infant babbling. Child Development, 59, 441-449.

Oller, D. K., Eilers, R. E., Urbano, R. & Cobo-Lewis A. B. (in submission). Development of precursors to speech in infants exposed to two languages.

Pearson, B. Z. (1993). Predictive validity of the Scholastic Aptitude Test (SAT) for Hispanic bilingual students. Hispanic Journal of the Behavioral Sciences, 15, 342-356.

Pearson, B. Z., Fernández, S. C., & Oller, D. K. (1993). Lexical development in bilingual infants and toddlers: Comparison to monolingual norms. Language Learning, 43(1), 93-120.

Ramirez, D. J., Yuen, S. D., Ramey, D. R., & Pasta, D. J. (1991a). Final report: Longitudinal study of structured-english immersion strategy, early-exit and late-exit transitional bilingual education programs for language-minority children, Volume I. Technical report, Aquirre International, San Mateo, CA.

Ramirez, D. J., Pasta, D. J., Yuen, S. D., Billings, D. K., & Ramey, D. R. (1991b). Final report: Longitudinal study of structured-english immersion strategy, early-exit and late-exit transitional bilingual education programs for language-minority children, Volume II. Technical report, Aquirre International, San Mateo, CA.

Serpell, R. (1980). Linguistic flexibility in urban Zambian schoolchildren. Annals of the New York Academy of Sciences, 345, 97-119.

Southworth, F. C. (1980). Indian bilingualism: Some educational and linguistic implications. Annals of the New York Academy of Sciences, 345, 121-146.

Stoel-Gammon, C., & Otomo, K. (1986). Babbling development of hearing impaired and normally hearing subjects. Journal of Speech and Hearing Disorders, 51, 33-41.

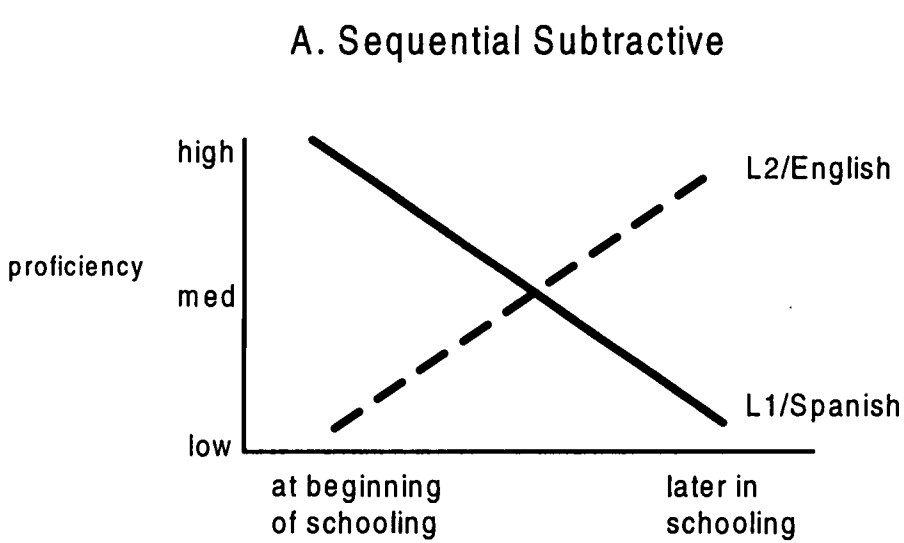
Swain, M. (1991). French immersion and its offshoots: Getting two for one. In B. F. Freed (Ed.), Foreign language acquisition research and the classroom (pp. 91-103). Lexington, MA: D. C. Heath and Co.

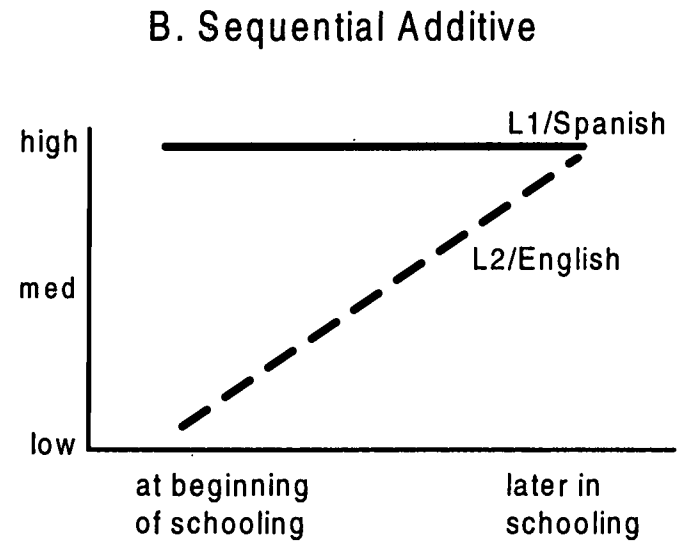
Thomas, W. P., & Collier, V. P. (1995). Language minority student achievement and program effectiveness. Unpublished research summary of study in progress (faxed by author).

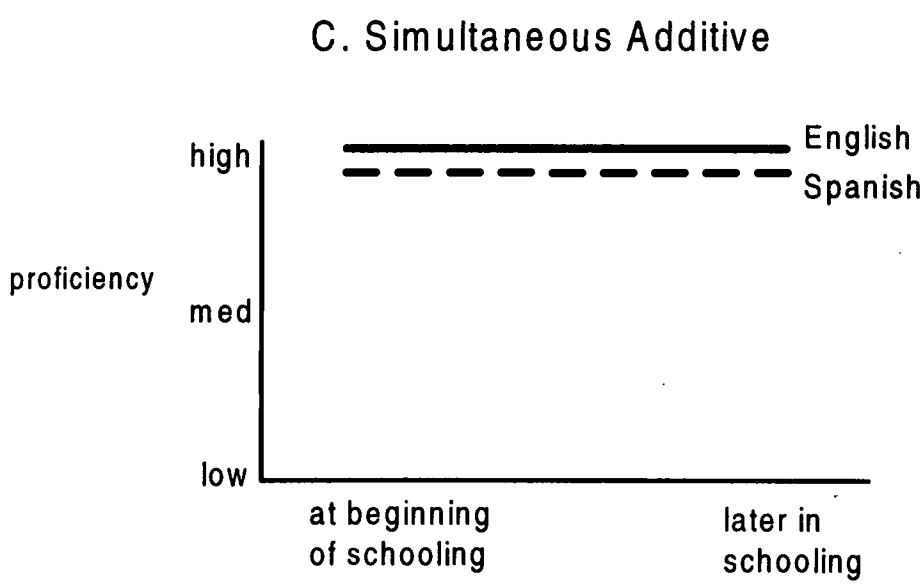
Tireman, L. (1955). Bilingual child and his reading vocabulary. Elementary English, 32, 33-35.

Umbel, V. M., Pearson, B. Z., Fernández, M., & Oller, D. K. (1992). Measuring bilingual children's receptive vocabularies. Child Development, 63, 1012-1020.

Different Types of Bilingualism

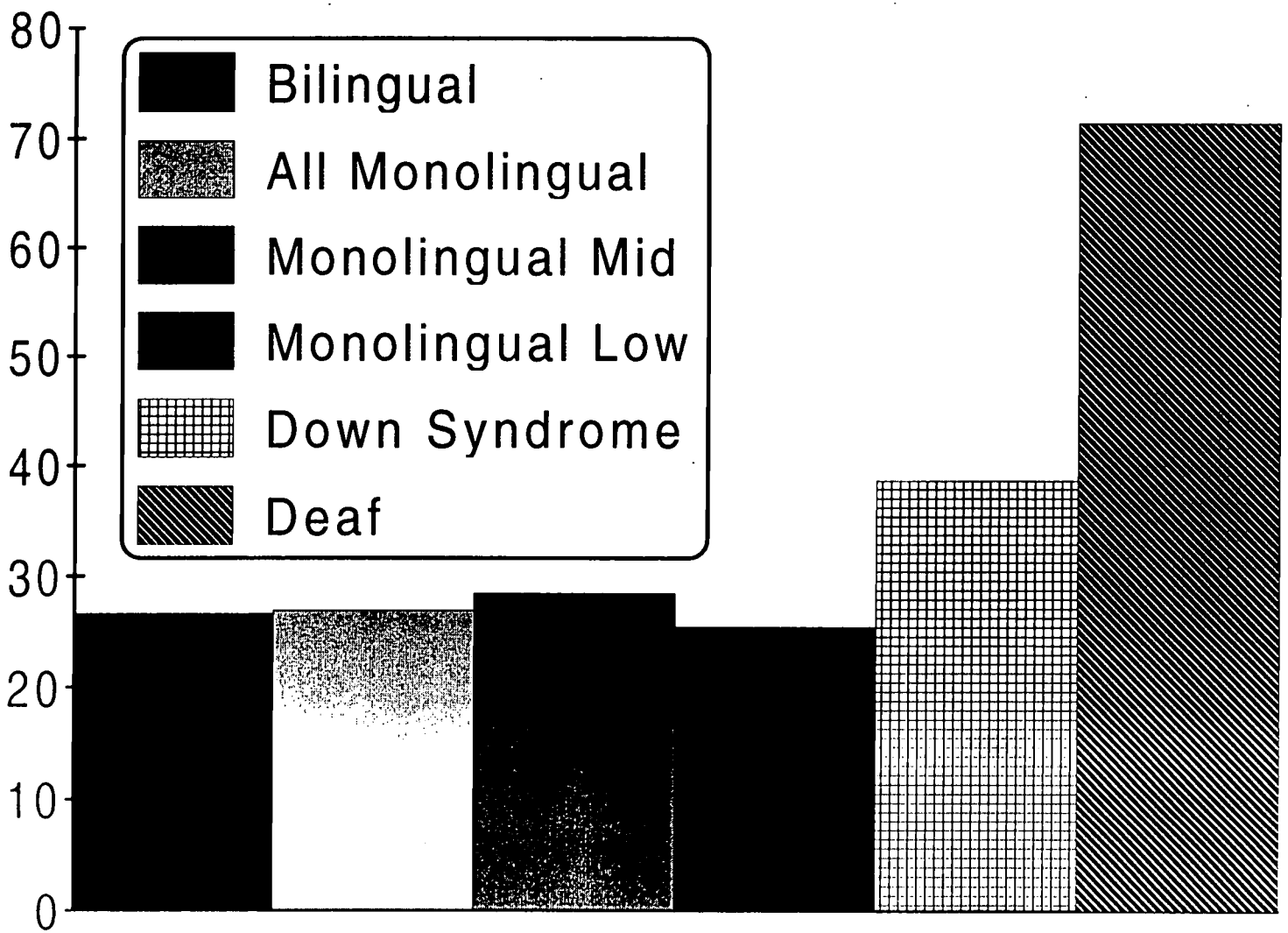






Figs. 1A, 1B, 1C

Onset of Canonical Babbling in Weeks

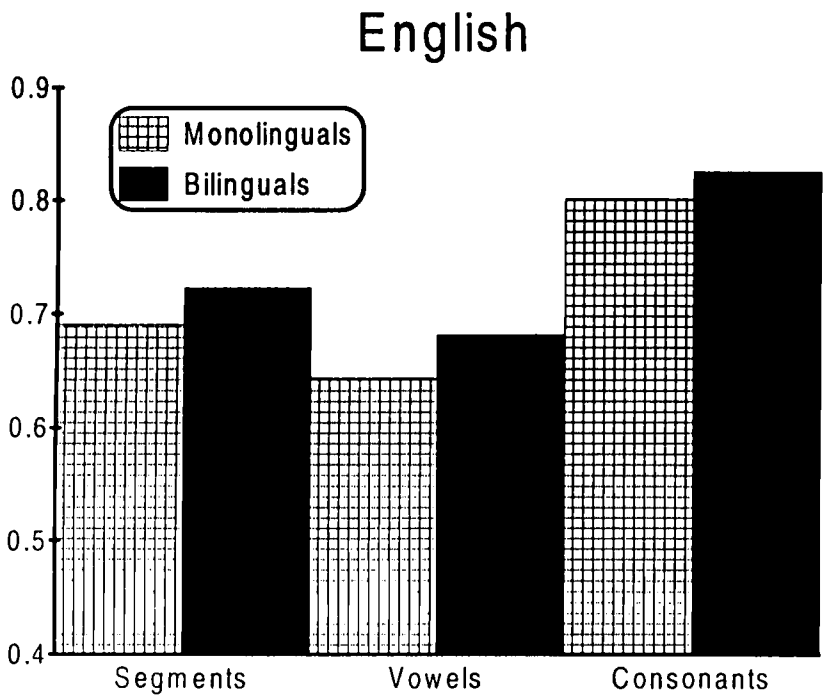


from: Oller et al., in submission, Eilers et al., 1993, Lynch et al., 1995, and Oller & Eilers, 1988

Fig. 2

Correctness of Articulation at 34-36 months

from Navarro et al., in submission



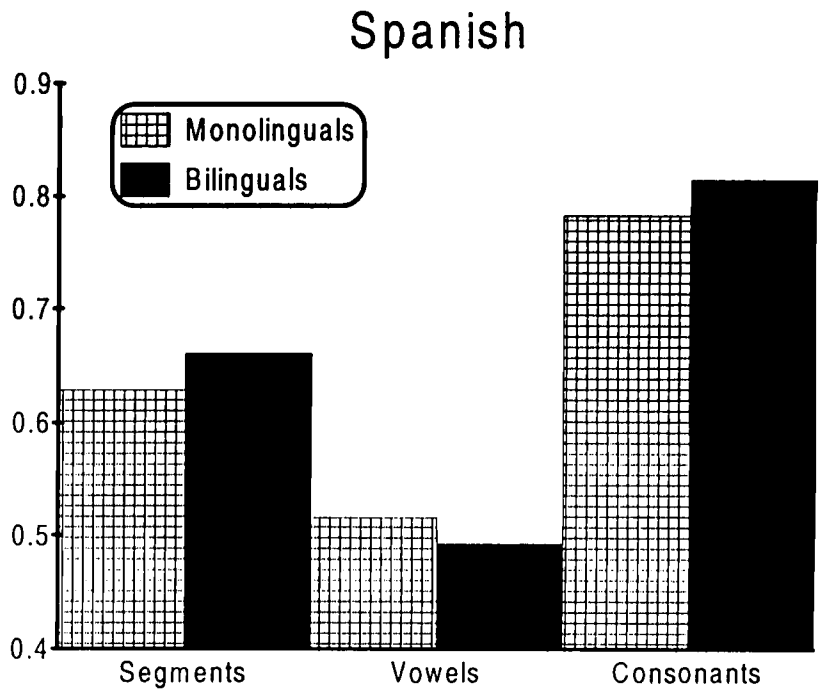


Fig. 3

Vocabulary in Monolingual and Bilingual Children

from Pearson, Fernandez, and Oller, 1993

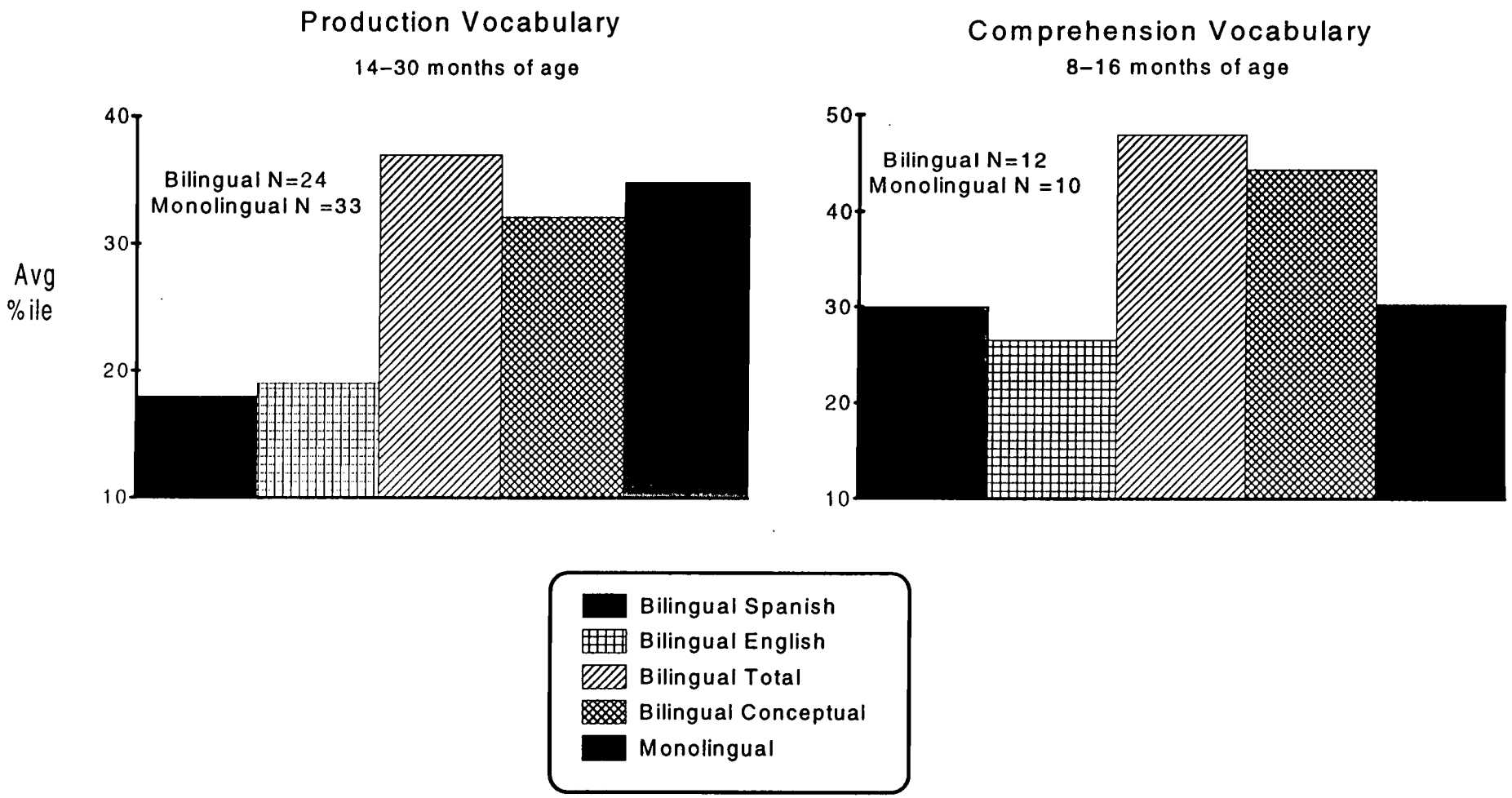


Fig. 4

Comprehension Vocabulary

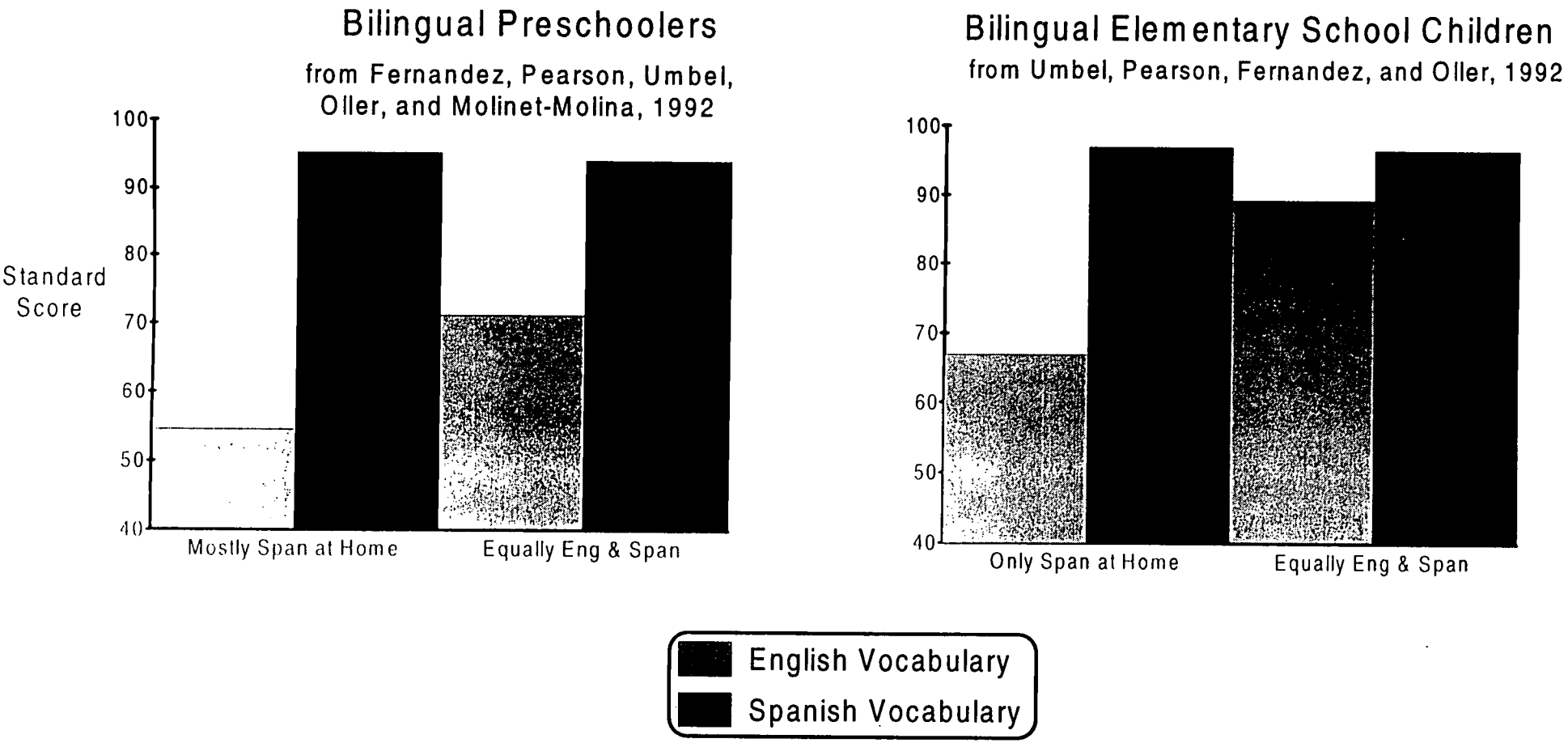
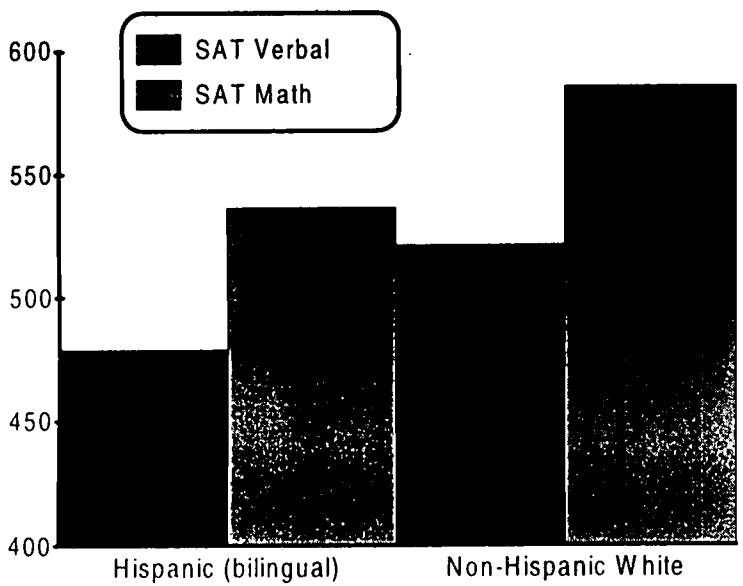
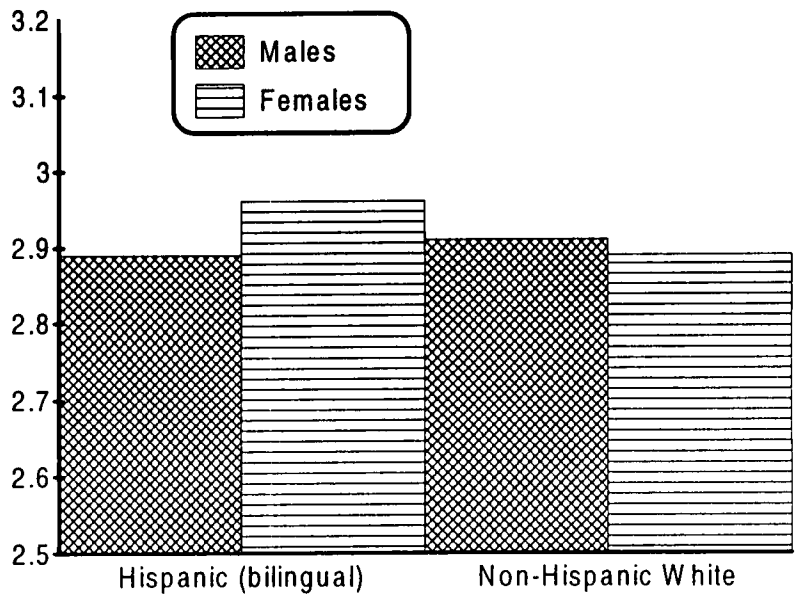


Fig. 5

Scholastic Aptitude Scores
for Bilingual and Monolingual College Students



Achievement Measured by Grade Point Average
for Bilingual and Monolingual College Students



from Pearson, 1993

Fig. 6

FL024598

U.S. Department of Education
Office of Educational Research and Improvement (OERI)
Educational Resources Information Center (ERIC)

REPRODUCTION RELEASE

(Specific Document)

I. DOCUMENT IDENTIFICATION:

Title: Educational Implications of Early Bilingualism: A Review of Recent Results

Author(s): D.K. Oller, B. Pearson, V. Umbel, M. Fernández, & A. Navarro

Corporate Source: University of Miami

Publication Date:

II. REPRODUCTION RELEASE:

In order to disseminate as widely as possible timely and significant materials of interest to the educational community, documents announced in the monthly abstract journal of the ERIC system, *Resources in Education* (RIE), are usually made available to users in microfiche, reproduced paper copy, and electronic/optical media, and sold through the ERIC Document Reproduction Service (EDRS) or other ERIC vendors. Credit is given to the source of each document, and, if reproduction release is granted, one of the following notices is affixed to the document.

If permission is granted to reproduce and disseminate the identified document, please CHECK ONE of the following two options and sign at the bottom of the page.

[X] Check here **For Level 1 Release:** Permitting reproduction in microfiche (4" x 6" film) or other ERIC archival media (e.g., electronic or optical) *and* paper copy.

The sample sticker shown below will be affixed to all **Level 1** documents

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL HAS BEEN GRANTED BY

Sample

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

Level 1

The sample sticker shown below will be affixed to all **Level 2** documents

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL IN OTHER THAN PAPER COPY HAS BEEN GRANTED BY

Sample

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

Level 2

[ ] Check here **For Level 2 Release:** Permitting reproduction in microfiche (4" x 6" film) or other ERIC archival media (e.g., electronic or optical), but *not* in paper copy.

Documents will be processed as indicated provided reproduction quality permits. If permission to reproduce is granted, but neither box is checked, documents will be processed at **Level 1**.

"I hereby grant to the Educational Resources Information Center (ERIC) nonexclusive permission to reproduce and disseminate this document as indicated above. Reproduction from the ERIC microfiche or electronic/optical media by persons other than ERIC employees and its system contractors requires permission from the copyright holder. Exception is made for non-profit reproduction by libraries and other service agencies to satisfy information needs of educators in response to discrete inquiries."

Sign here→ please

Signature:

Printed Name/Position/Title: D.K. Oller, Professor of Psychology & Pediatrics

Organization/Address: University of Miami, Dept. of Psychology, P.O. Box 249229, Coral Gables, FL 33124-0721

Telephone: 305-284-2331 x2

FAX: 305-284-4795

E-Mail Address: koller@peds.med.miami.edu

Date: 1/23/97

Presented at the American Association for the Advancement of Science, Atlanta, GA February 1995

III. DOCUMENT AVAILABILITY INFORMATION (FROM NON-ERIC SOURCE):

If permission to reproduce is not granted to ERIC, *or*, if you wish ERIC to cite the availability of the document from another source, please provide the following information regarding the availability of the document. (ERIC will not announce a document unless it is publicly available, and a dependable source can be specified. Contributors should also be aware that ERIC selection criteria are significantly more stringent for documents that cannot be made available through EDRS.)

Publisher/Distributor:

Address:

Price:

IV. REFERRAL OF ERIC TO COPYRIGHT/REPRODUCTION RIGHTS HOLDER:

If the right to grant reproduction release is held by someone other than the addressee, please provide the appropriate name and address:

Name:

Address:

V. WHERE TO SEND THIS FORM:

Send this form to the following ERIC Clearinghouse:

KAREN E. SMITH
ACQUISITIONS COORDINATOR
ERIC/EECE
805 W. PENNSYLVANIA AVE.
URBANA, IL 61801-4897

However, if solicited by the ERIC Facility, or if making an unsolicited contribution to ERIC, return this form (and the document being contributed) to:

ERIC Processing and Reference Facility
1100 West Street, 2d Floor
Laurel, Maryland 20707-3598

Telephone: 301-497-4080
Toll Free: 800-799-3742
FAX: 301-953-0263
e-mail: ericfac@inet.ed.gov
WWW: http://ericfac.piccard.csc.com