Puerto Rican Children's Codeswitching and their Performance on Receptive Vocabulary Instruments and a Nonverbal Cognitive Measure

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Abstract
Analyses of Puerto Rican bilingualism reveal the unique role of Spanish/English codeswitching in their communication. In the present study, 34 bilingual students (aged 9 to 13 years) of both sexes were administered forms of the Test de Vocabulario en Imágenes Peabody—Adaptación Hispanoamericana (TVIP-H) (Dunn, Padilla, Lugo & Dunn, 1986) and Peabody Picture Vocabulary Test-Revised (PPVT-R) (Dunn & Dunn, 1981), along with translations of both aforementioned tests. The Standard Progressive Matrices (SPM) (Raven, 1958) was administered as a nonverbal cognitive measure. Standard scores were recorded; then, a separate set of combined scores was derived for the TVIP-H and PPVT-R and their respective translations, in which the student was given credit for items answered incorrectly in one language but correctly in the other. Standard scores were also recorded for the SPM. Results revealed significant mean differences between the TVIP-H monolingual vocabulary tests and its respective combined/bilingual scores. Both combined/bilingual instruments' results positively correlated with the nonverbal measure. These findings suggest that the influence of codeswitching/bilingualism on verbal tests must be accounted for with this population.

U.S. Hispanics: The Present Educational Challenge
Dramatically underscoring the need for developing fairer and more accurate assessment techniques for bilingual Hispanics in the United States is the reality of present and projected demographic trends for this population. The number of Hispanic limited English proficient (LEP) children is projected to triple by the year 2020 (Pallas, Natriello, & McDill, 1989). Estimates of bilingual Hispanic school-aged children in this country...
presently vary between 653,000 and 6.5 million. Such a range/variation occurs because there is no established definition of limited English language proficiency; nor are there uniform procedures for assessing students’ proficiency bilingually (Fradl, 1987).

There is an immediate urgency for more appropriate educational assessment procedures and interventions for the Hispanic subpopulation. The following factors contribute to this urgency: the higher than U.S. average Hispanic fertility rates, the continued immigration and circular migration of thousands of Hispanics annually, the high proportion of Hispanic women in their peak child-bearing years, and the persistently low educational and economic attainment of the majority of Hispanics (Hodgkinson, 1985; McKay, 1986; Medina, 1988).

General Cognitive Assessment

Not only has the fairness of intelligence tests for minority populations come under critical scrutiny in the last few decades, but the Anglocentric conventional conceptualization of intelligence itself has been widely questioned. Feuerstein (1979, 1980), Ryan (1971), Samuda (1975) and Sewell (1981), among others, have argued that minority group children have long been victims of the western tradition of classifying individuals along a limited range of cognitive abilities.¹

Not surprisingly, numerous studies have shown that Hispanics generally score higher on nonverbal than on culturally biased verbal measures (De Avila, 1987; Figueroa, 1983; Kaufman & Kaufman, 1983; Pearce, 1983; Powers, Barkan, & Jones, 1986; Wilen & Sweeting, 1986). Typical of conventional verbal and nonverbal measures, the Peabody Picture Vocabulary Test (PPVT) (Dunn, 1959) and the Standard Progressive Matrices (SPM) (Raven, 1958) "represent extremes on a continuum of culture-loaded tests (PPVT) and culture-reduced (RPM) [sic] tests" (Figueroa, 1983, p. 432). These two measures, the PPVT and the SPM, have been reported to be among the most commonly used assessment devices for minority children in the United States (Vazquez Nuttall, 1987).

For the SPM, Raven (1986) reported considerable cross-cultural stability in its norms. However, it has been documented that cultural bias even exists in the more culture-fair nonverbal measures such as the SPM. Results of a study of Black, Anglo, and Hispanic subjects on the SPM found that on the items designated as culture-loaded, errors were partly due to test-taking skills, which can be learned through sufficient test-taking training (Ulibarri, 1982).²

Yet, for economically disadvantaged students, an increasing proportion of whom are Hispanic (Pallas et al., 1989), the SPM (i.e., norms for 1966, 1973 and 1979) generally seems to be an appropriate nonverbal cognitive measure (Karnes, Lee, & May, 1982). The SPM is also reported to be independent of achievement and ethnicity variables (Powers & Barkan, 1986; Powers et al., 1986).

Verbal Cognitive Assessment

Verbal/performance gaps on the widely used Wechsler Intelligence Scale for Children-Revised (WISC-R) (Wechsler, 1974) have been found to be unrelated to age, sex or race variables (Kaufman, 1979a). Specifically, the low verbal scores for minority youngsters, especially bilingual Hispanics, on traditional intelligence instruments (e.g., WISC-R) cannot be considered an intellectual limitation because of the possible interaction of scores on crystallized tasks with variables such as language ability, culture and cognitive style (Kaufman, 1979a). Thus, caution should be exercised when assessing the intelligence of students from backgrounds other than the dominant culture group since there are likely to be inherent cultural and/or linguistic biases in verbally loaded tests (Cummins, 1989; Duran, 1989; Ovando & Collier, 1985).

Of particular relevance to the present study, receptive and/or expressive vocabulary scores have been reported to be the best predictors of overall intelligence/IQ scores for native language speakers (Cummins, 1984; Dunn et al., 1986). Nevertheless, Cummins (1984) properly cautioned that for second language learners, such receptive and/or expressive vocabulary measures should not be interpreted as sole valid indices of verbal intelligence until after at least 5 years of second-language cognitive/academic exposure.

Socio-economic Status

Within the context of the U.S. educational milieu it has been suggested

¹ More contemporary views of cognition, though as yet empirically untested, reflect its more dynamic and multi-faceted aspects, most or all of which can not be reduced to a single numerical index. Gardner (1983) has proposed a theory of multiple intelligences/basic processing types including: linguistic, logical-mathematical, musical, spatial, bodily intrapersonal, and interpersonal domains. Each of these is seen as a distinctive and dynamic functioning area utilizing its own distinctive pattern of thinking, problem solving and skill development. Such a contemporary view radically challenges the unitary, reductionist and conformist methods of sorting minority groups into the conventional majority-minority caste system (Cummins, 1986, 1989; Gardner, 1983; Miller, 1989; Sewell, 1991).

² Ulibarri concluded:
The pattern of performance for Hispanics is consistent with a culture-loaded hypothesis as follows: 1) significant group differences on culture loaded but not non-culture loaded items, 2) elimination of group differences on culture-loaded items due to training, 3) significant training effects for Hispanics but not for Anglos on culture-loaded items, and 4) significantly greater gains for Hispanics over Anglos on culture-loaded items. (p. 88)
that the interaction of SES, language minority status and unequal educational advantages have combined to depress execution levels on cognitive/academic measures for U.S. Hispanics (Cummins, 1989). Yet, Figueroa reported that Hispanic children’s execution on performance/nonverbal IQ measures is virtually equal to English-speaking whites, even when there are socio-economic status (SES) differences (cited in Ovando & Collier, 1985). Moreover, the SES influence on the WISC-R, for example, is apparent in the ten-point average verbal vs. performance discrepancy for children of professionals versus unskilled workers (see Kaufman, 1979b).

Language

In two extensive studies (Cummins 1981; Cummins, 1984), it has been demonstrated that there have been substantial numbers of erroneous conclusions and placement decisions with bilingual or LEP children because the test interpreter improperly assumed their basic communicative competence in the second language (L2) to be synonymous with their cognitive/academic performance. Further, Cummins and Swain (1986) indicated that face-to-face communicative skills are mastered by immigrant children within 2 years of arrival in the host country, while it takes on the average, about 5 to 7 years for students to approach grade-level norms in L2 academic skills.

Designation of minority children as language impaired or learning disabled has been shown to be as much a function of the presence or absence of a speech pathologist or psychologist on the evaluation team, as of the unique nature of the child’s skills or individual characteristics (Rueda & Mercier, 1985, cited in Cummins, 1989). Cummins (1989) further indicated that such misclassification practices with language-minority children continue to be an all too prevalent phenomenon.

Language and Age

Regarding the optimal age for L2 learning, the popularly held myth that younger children are more adept at painlessly acquiring academic competence in L2 no longer seems applicable (Hakuta & Gould, 1987). Rather, recent evidence suggests that “older learners who are more cognitively mature and whose L1 proficiency is better developed will acquire cognitively demanding aspects of L2 proficiency more rapidly than younger learners” (Cummins & Swain, 1986, p. 87).

Especially relevant to the present investigation, Cummins and Swain (1986) reported significant effects of both age on arrival and length of residence on the Ammons Picture Vocabulary Test with immigrant students in Canada. They concluded that in every case, older learners

acquired more vocabulary in the same amount of time than younger learners.

Collier’s study (1987) on age and rate of L2 learning has provided valuable insights into when the optimal stages for learning a second language may be for lower- and middle-class L2 learners. Her study of 1,500 LEP children in the English as a second language (ESL) programs in a large suburban East coast district did not include students who were not on grade level in L1 literary skills or older L2 learners with low literary skills in L1, and thus, must be interpreted cautiously when examining an LEP population that is qualitatively different in overall preparation in L1 skills.

The results indicate that LEP students who entered the ESL program at ages 8–11 were the fastest achievers, requiring 2–5 years to reach the 50th percentile . . . in all the subject areas tested. LEP students who entered the program at ages 5–7 were 1–3 years behind the performance level of their LEP peers who entered the program at ages 8–11 . . . Arrivals at ages 12–15 experienced the greatest difficulty and were projected to require as much as 6–8 years to reach grade level norms in academic achievement when schooled all in the second language. (p. 617)

Puerto Rican Codeswitching

DiPietro (1976) defined codeswitching as the use of more than one language by communicators in the execution of a speech act. Moreover, it

“is a verbal skill requiring a large degree of competence in more than one language, rather than a defect arising from insufficient knowledge of one or [sic] other” (Poplack, 1979, p. 72).

Due to various discrete historical and linguistic factors, there exists among Puerto Rican bilinguals a high degree of Spanish/English language mixing or codeswitching in their communication repertoire (Barona & Santos, 1987; De Avila & Havassy, 1974; Flores, Attinasi, & Pedraza, 1981; Morales, 1986; Zentella, 1981, 1985). In studies of Puerto Rican children’s language, Zentella (1981) found that when the structure of both languages is congruent, a high degree of communicative potential rather than monolingual deficiency is manifested. Thus, the codeswitching phenomenon is substantially more than a random use of L2 words in a bilingual’s language (Flores et al., 1981; Morales, 1986).

According to Zentella (1981), codeswitching as part of the Puerto Rican communication repertoire is influenced by such factors as the language choice of the listener, the first language (L1) environment’s use of the second language (L2) for clarity, regional or dialectic use of anglicisms for certain terms, and as an identity marker of membership. Since Puerto
Rican children exhibit such a high incidence of this language mixing, "... an awareness of the role of codeswitching in the communicative competence of the United States Puerto Rican bilinguals can make an important contribution to classroom methodology and educational success" (Zentella, 1981, p. 130). Specifically regarding Hispanic verbal functioning, Wilen and Sweeting (1986) warn against the potential language mixing or confusion which may confound the results of any verbally loaded test administered in either language to Hispanic youngsters.

**Purpose of the Present Study**

Traditionally, psychoeducational assessment procedures have used monolingual instruments in either language (Wilen & Sweeting, 1986), but have failed to consider the language experience of Hispanic students (e.g., codeswitching). The Peabody Picture Vocabulary Test-Revised/PPVT-R (Dunn & Dunn, 1981) and its Spanish adaptation, the Test de Vocabulario en Imágenes Peabody-Adaptación Hispanoamericana/TVIP-H (Dunn et al., 1986) are monolingual instruments widely employed with this population.

It must be noted that the TVIP-H is not a mere translation of the PPVT-R into Spanish. Rather, the TVIP-H standardization process of item selection, quantity of items selected, order of item difficulty and sampling procedures were specifically designed for Mexican (in Mexico City) and Puerto Rican (in Puerto Rico) populations, differing markedly from the PPVT-R standardization in item selection, quantity and sequence.

Considering the language experience and linguistic environment factors, it is the contention of the present investigators that these monolingual instruments, by themselves, do not fully reflect the receptive vocabulary functioning of these children when compared to their performance on a nonverbal cognitive measure. Consequently, the bilingual testing and scoring procedures employed on the vocabulary assessments used in this study are likely to diminish the discrepancy between verbal and nonverbal/performance functioning significantly.

Specifically, there were four research hypotheses in the present investigation:

1. The combined/bilingual scores for both TVIP-H and the PPVT-R versions are significantly higher than their contributing respective monolingual scores. As cited above, accounting for LEP children's bilingualism/codeswitching may effectively diminish the bias inherent to any monolingual strategy.

2. There are no significant mean differences between: (a) the TVIP-H combined/bilingual scores and those from the SPM, and (b) the PPVT-R combined/bilingual scores and those from the SPM. A bilingual assessment strategy will decrease the verbal versus nonverbal/performance discrepancy, as language experience is more effectively incorporated.

3. The English PPVT-R mean scores are significantly lower than those of all other instruments (i.e., Spanish PPVT-R translation, PPVT-R combined/bilingual, Spanish TVIP-H, English TVIP-H translation, TVIP-H combined/bilingual and the SPM). This result can be anticipated due to: (a) the present sample's Spanish language predominance and (b) the standardization sample differences for both respective vocabulary instruments. The TVIP-H included strictly Mexican and Puerto Rican samples, the latter of which was based on the 1980 U.S. Census, while the older PPVT-R used the 1970 Census figures. The PPVT-R sample represented a drastically smaller Hispanic percentage of the U.S. general population.

4. The TVIP-H and PPVT-R combined/bilingual scores correlate significantly with performance results on the SPM.

**Method**

**Subjects**

To gauge the kinds of language experience represented in the study's sample, the subjects \( n = 34 \) and their families were given a survey of Spanish/English language usage. As reported by 94% of the subjects, Spanish was the primary home language. The remaining 6% reported their homes to be bilingual. Seventy-two percent of the subjects reported their peer communication to be in Spanish only. Regarding subjects' perceptions of their neighborhoods' dominant language, 40% saw it as Spanish while another 30% viewed it as bilingual. Nearly 75% viewed the school they attended as a bilingual environment.

The TVIP-H, PPVT-R (Form-L), their respective translations, and the SPM were administered to 34 students (16 males and 18 females) from 2 bilingual Spanish fifth/sixth-grade classes in a Philadelphia public school, located in a largely Puerto Rican area of the city. The students were placed into these bilingual classes based on English proficiency levels as measured by the Language Assessment Battery (Board of Education, City of New York, 1982). The data collection occurred during the 1987–88 and 1988–89 school years. On average, the subjects, ranging in age from

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*The percent of Hispanics reflected by the 1970 Census and utilized for the standardization sample of the PPVT-R was 3.8 (Dunn & Dunn, 1981). In contrast, the 1990 Census reflected a 8.0% Hispanic proportion (U.S. Department of Commerce, Bureau of the Census, 1990). As of 1989, the U.S. Hispanic school-aged subcohort, has increased to 10.5% (National Council of La Raza, 1990). Projections of the school-aged Hispanic contingent predict an increasing future growth rate (U.S. Department of Commerce, Bureau of the Census, 1990).*
9.75 to 13.6 years, had been residing on the U.S. mainland for 1.9 years. All subjects derived from low SES home environments, as determined by reports of occupational status.

Procedure

The items from the TVIP-H were translated into English and those from the PPVT-R were translated into Spanish using a modified back-translation technique (Sattler & Altes, 1984). A native-born Puerto Rican, educated in Puerto Rico and the U.S. and bilingual (Spanish/English), translated the items. The translated items were reviewed by an English speaking native-born American, who was proficient in Spanish also. Translation discrepancies were resolved by agreement of the native Spanish and English-dominant speakers. Dictionaries were used as a resource. The SPM was group administered by the co-investigator to both classes of subjects, observing all procedural directions from the test manual.

The vocabulary tests were administered individually by the co-investigators and a bilingual classroom teacher. The order of administration was as follows: TVIP-H (Spanish), PPVT-R (English), TVIP-H English translation and PPVT-R Spanish translation. The SPM was administered in small groups after the conclusion of the vocabulary testing. Directions for all the tests were given in Spanish. Standardized procedures in the administration and scoring were observed.

For the SPM, the converted percentile scores were transformed into standard scores using the U.S. smoothed norms (Raven, 1986). The standard Puerto Rican age norms for the TVIP-H and its respective translation were used, while for the PPVT-R and its respective translation, the standard age score equivalents were recorded.

In order to account for the examinees' language experience on the vocabulary measures, a combined score was obtained. This was derived by incorporating correct results/answers in either language for the given instrument (i.e., TVIP-H and its translation, combined; PPVT-R and its translation, combined). Thus, if the subject incorrectly responded on an item in either the TVIP-H or PPVT-R or their respective translations, but correctly responded on that instrument's translated counterpart, credit was awarded for that item in the combined score for that particular test.

Results

The following statistics were computed: means and standard deviations (Table 1), Pearson product-moment correlations between the seven scores (Table 2), a MANOVA, \( F(5,29) = 50.85, p < .001 \), and \( t \) tests

<table>
<thead>
<tr>
<th>Tests</th>
<th>Mean</th>
<th>Std. Dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>TVIPH</td>
<td>88.2</td>
<td>15.6</td>
</tr>
<tr>
<td>TVIPH-English</td>
<td>80.1</td>
<td>20.9</td>
</tr>
<tr>
<td>PPVT-R</td>
<td>51.3</td>
<td>15.8</td>
</tr>
<tr>
<td>PPVT-R-Spanish</td>
<td>80.6</td>
<td>21.5</td>
</tr>
<tr>
<td>TVIPH-Combined</td>
<td>96.2</td>
<td>17.0</td>
</tr>
<tr>
<td>PPVT-R-Combined</td>
<td>82.8</td>
<td>21.9</td>
</tr>
<tr>
<td>SPM</td>
<td>91.8</td>
<td>12.2</td>
</tr>
</tbody>
</table>


(Table 3) to discriminate significant differences. Because of the number of multiple comparisons, a Bonferroni adjustment, \( d(21, 33) = 3.27; p < .05 \), was applied to the \( t \) test results (Kirk, 1968).

Discussion

A perusal of the foregoing tables clearly reveals the influence of a codeswitching or language mixing factor in these children's performance on the TVIP-H, PPVT-R, their translations and the combined results. Three of the study's four hypotheses are confirmed.

The above-mentioned results suggest partial acceptance of the first

Table 2: Correlations of Tests and Combined Scores

<table>
<thead>
<tr>
<th>Tests</th>
<th>TVIPH English</th>
<th>PPVT-R</th>
<th>PPVT-R Spanish</th>
<th>TVIPH Combined</th>
<th>PPVT-R Combined</th>
<th>SPM</th>
</tr>
</thead>
<tbody>
<tr>
<td>TVIPH</td>
<td>.372&lt;sup&gt;1&lt;/sup&gt;</td>
<td>.192</td>
<td>.722&lt;sup&gt;3&lt;/sup&gt;</td>
<td>.845&lt;sup&gt;3&lt;/sup&gt;</td>
<td>.684&lt;sup&gt;4&lt;/sup&gt;</td>
<td>.576&lt;sup&gt;5&lt;/sup&gt;</td>
</tr>
<tr>
<td>TVIPH-English</td>
<td></td>
<td>.342&lt;sup&gt;1&lt;/sup&gt;</td>
<td>.498&lt;sup&gt;3&lt;/sup&gt;</td>
<td>.693&lt;sup&gt;3&lt;/sup&gt;</td>
<td>.521&lt;sup&gt;4&lt;/sup&gt;</td>
<td>.514&lt;sup&gt;5&lt;/sup&gt;</td>
</tr>
<tr>
<td>PPVT-R</td>
<td></td>
<td></td>
<td>.406&lt;sup&gt;2&lt;/sup&gt;</td>
<td>.290&lt;sup&gt;3&lt;/sup&gt;</td>
<td>.483&lt;sup&gt;4&lt;/sup&gt;</td>
<td>.097&lt;sup&gt;5&lt;/sup&gt;</td>
</tr>
<tr>
<td>PPVT-R-Spanish</td>
<td></td>
<td></td>
<td></td>
<td>.785&lt;sup&gt;3&lt;/sup&gt;</td>
<td>.860&lt;sup&gt;3&lt;/sup&gt;</td>
<td>.431&lt;sup&gt;5&lt;/sup&gt;</td>
</tr>
<tr>
<td>TVIPH-Combined</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.775&lt;sup&gt;3&lt;/sup&gt;</td>
<td>.548&lt;sup&gt;3&lt;/sup&gt;</td>
</tr>
<tr>
<td>PPVT-R-Combined</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.426&lt;sup&gt;3&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

<sup>1</sup> p<.05.<br>
<sup>2</sup> p<.01.<br>
<sup>3</sup> p<.001.<br>

hypothesis. The combined/bilingual TVIP-H scores were significantly higher than their respective contributing monolingual results. Paired t-tests of combined/bilingual (Spanish and English) scores on the TVIP-H reveal the significant influence of the study sample's bilingual experience and codeswitching on their overall receptive vocabulary performance. These results confirm Zentella’s (1981) position on the role of codeswitching on the communicative competence of Puerto Rican bilinguals.

For the PPVT-R combined/bilingual scores and their contributing monolingual results, significant differences were not found between the PPVT-R Spanish and the PPVT-R combined/bilingual means. The latter nonsignificant result may be due to three possible sources. First, the sample used in this study was Spanish predominant. Consequently, it could be expected that the TVIP-H would be a more reliable and valid instrument for this population. In contrast, the PPVT-R was designed for, and standardized on, a predominantly English-speaking population. Second, cognitive/academic skills in L2 (English) were in a beginning stage of development for this study's sample. As cited previously, at least 5 years would be required to fairly measure verbal L2 cognitive/academic skills (Cummins, 1984). Third, the PPVT-R's general standardization procedures including sampling, item selection, and order of item difficulty, more aptly suits the linguistic/cultural experience of the mainstream U.S. population.

Analysis of data for the second hypothesis shows that: (a) there was no significant mean difference between the TVIP-H combined and SPM scores; (b) there was no significant mean difference between the PPVT-R combined and SPM results. Thus, when a nonverbal instrument (SPM) is used as a criterion, these students' bilingual vocabulary (combined/bilingual) functioning is shown to not vary significantly from their assessed nonverbal performance.

Thirdly, significantly lower mean differences were found for the English PPVT-R as compared to each of the following results: PPVT-R (Spanish), PPVT-R combined/bilingual, TVIP-H, TVIP-H (English), TVIP-H combined/bilingual and the SPM. The present results, especially taking into consideration the nonverbal SPM scores, are consistent with those of Sattler and Altes (1984), who found the PPVT-R to underestimate the cognitive potential of Hispanic children. Also supportive of the Sattler and Altes (1984) results was the finding that the PPVT-R, given in either Spanish or English, yielded significantly depressed scores compared to those gleaned from the TVIP-H composite profiles or the SPM.

Fourthly, as predicted, the TVIP-H combined/bilingual and PPVT-R combined/bilingual scores significantly correlated with the SPM. A moderate significant correlation exists between the TVIP-H combined/bilingual and the SPM results.

As a monolingual instrument, the TVIP-H is shown to be a generally more accurate indicator of these Puerto Rican children's Spanish receptive vocabulary knowledge. The nonsignificant means difference between the TVIP-H and SPM is plausible due to the appropriateness of the TVIP-H's standardization characteristics for this sample as well as the subjects' Spanish predominance.

The nonsignificant differences between the TVIP-H combined and SPM results for this Puerto Rican sample might be interpreted in the light of Ulbarri's (1982) findings on the influence of training in test-taking skills by low SES Hispanic students on the SPM. Subsequently, it is speculated that if the present sample were provided test-taking training on the SPM (Ulbarri, 1982), correspondingly higher scores might be expected, more closely approximating the TVIP-H combined results. Conversely, such possible test-taking training benefits on the TVIP-H would not be anticipated for this population due to: (a) the nature and extent of the experience-based language exposure, environmental and schooling-related acculturation tapped by this verbal measure (Cummins, 1984), and (b) the above cited TVIP-H standardization sampling characteristics.

The present study sample of low SES Puerto Rican children may be characterized as a bilingual group whose mastery of the second language is incomplete. Nevertheless, even in nonbalanced bilinguals, Hakuta (1984, 1990) found a positive relationship between bilingualism and cognitive ability. This may, in part, account for the closeness of the SPM current results to those of the TVIP-H (Spanish).

The present study's procedure of administering translated versions of the same test in succession may have created a refast/practice and/or carry-over effect in the subjects' responses. These possible effects were
not methodologically controlled. Future replications of the study might attempt to control for these possible effects.4

The limited and linguistically/culturally homogeneous sample size of this study may restrict the generalizability of these results. Further psychometric investigations with this population must take into consideration the subjects’ language experience (e.g., bilingualism, codeswitching), in order to develop new bilingual assessment techniques and generate more valid and less biased verbal/verbally loaded instruments and their interpretations.

Overall, it can be reasonably concluded from this study that, for Puerto Rican children, verbal assessments must take into account their unique linguistic experiences (Loyola, McBride & Janowitz, 1989; Zentella, 1981, 1985). As one ingredient of a culturally sensitive assessment milieu, the present study’s procedure of computing a composite bilingual receptive vocabulary profile may more effectively reduce the impact of a cultural bias factor.

As Figueroa (1989) aptly observed, “bilingual testing means accurately accessing what is shared by the two language systems” (p. 148). Accordingly, this study’s method incorporates these bilingual children’s unique language experience into an overall bilingual profile. The assumption that Puerto Ricans’ verbal performance can be validly measured by any monolingual assessment strategy is inconsistent with this study’s findings.

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* The term carry over, as used in reference to the present study’s vocabulary assessments, suggests the possibility of subjects guessing a correct response of an unknown L2 item by visually recalling the stimulus picture from the prior L1 test.

References


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