

Neuropsychological Evaluation of Hispanics

Antonio E. Puente

University of North Carolina at Wilmington

Josette Harris

University of Colorado

Presented on August 18, 1997 at the 105th annual convention of the
American Psychological Association.

"Are the inferior races really inferior, or are they merely unfortunate in their lack of opportunity to learn? Only intelligence tests can answer these questions..." (Terman, 1916, pg 20). Eighty years later the forum has shifted from intelligence tests, at least in isolated fashion, to the neuropsychological arena where the questions of cognitive ability have expanded to encompass not just intelligence but learning, memory, planning, problem solving, and so on. As the arena has expanded to neuropsychology and a wider range of cognitive functions, we find Terman's question still muddled with limited research and strong emotion.

Defining Race, Ethnicity, and Culture

One complex problem in the this area is that critical variables have not been well-defined and controlled. Although Jones (1991) has argued that race is difficult to operationalize, there is agreement as to how to define races. Obvious biological characteristics include skin color, facial features and hair type (Betancourt and Lopez, 1993). Further there are three races (Brislin, 1989), Caucasian, Negroid, and Indian. With Hispanics, race is a complex issue since mixture of these races is often the norm rather than the exception.

Another important variable is ethnicity which is more diffuse and behaviorally, rather biologically based. Specifically, ethnicity refers to a set pattern of behaviors which might include rituals, customs, common ancestry, as well as family, social, and even marital restrictions. In contrast, culture is a wider defined pattern of behavior generally more widely accepted across different groups. It is incorrect to assume that Hispanics represent one, cohesive ethnic group although they might well represent one cultural group. Thus,

one might argue that Hispanic represents a conglomerate of sub-groups which might include Central Americans (not Mexicans), Cubans, Mexicans, Puerto Ricans, South Americans, and Spaniards (Bureau of the Census, 1990). It is also important to emphasize that these variables do not appear in clean and isolated fashion.

Further, socio-economic factors complicate group identification. Lesser, Fifer, and Clark (1965) reported that when compared to each other, different cultural groups have different abilities but socioeconomic factors tended to confound apparent ethnic differences.

Thus, in understanding neuropsychological function of Hispanics, it is critical to appreciate the complexities involving race-mixing, sub-group ethnic identification, and socio-economic impact.

Psychometric Issues

It could be argued that differences between Hispanics and other groups could be due to different neurological and genetically-based cognitive capacity. However, before such a radical concept is considered it would appear more parsimonious to explore methodological and psychometric considerations.

According to Olmedo (1981) when linguistic minorities are tested several factors are often ignored: socio-economic class, degree of bilinguality, type of test used, language-based factors, ability to communicate in non-majority language, acculturation, and cultural equivalence. Additional factors might include language proficiency, language of test examiner, language used in the evaluation, translations, translators, reference samples, and tester-subject matching. It will be argued that the issue in question is that of

cultural equivalence. This is defined as the ability to accurately measure the cognitive equivalent across culturally disparate situations (e. g., Anglo-Saxon to Hispanic).

Samples and Norms

It is often assumed that if a patient is not of the majority group then they would belong to a homogenous minority group. Individual performance would then require comparison to a specific minority sample. Both assumptions are incorrect. As stated earlier, Hispanics comprise a heterogeneous group comprised of several smaller sub-groups (e.g., Mexicans) with unique customs, etc. In the development of a Spanish WISC, for example, we could not find proverbs that were equivalent across all Hispanic sub-groups.

If indeed sub-group identification would occur, then the problem remains of appropriate sample reference. Most tests available (e.g., MMPI) in Spanish do not have norms for Spanish-speakers. If norms are available (WAIS and WISC-R), they tend to be for one particular subgroup (e.g., Puerto Ricans). Simply because somebody speaks Spanish does not mean that the reference samples would be equivalent and useful for them.

Acculturation

Acculturation is viewed in a broad context , much like Laosa(1991) who considered this concept an issue of construct validity. The assumption is made that a cultural g is in question when cognitive constructs are being measured. For example, in the WAIS one of the pictures from Picture Completion used a map of the United States with the state of Florida missing. Even very culturally limited or uneducated patients living in Florida usually provided a

correct response for this item; this was not the case for patients from North Carolina. The question of what is culturally relevant and reflected in the idiosyncrasies of the test become important. This might involve the following variables; response to authority figure, expression of confidence as either an unwarranted coping mechanism or lack of courtesy to others, and basic concepts such as time. Indeed, time, which is considered one of the foundations for most intellectual and cognitive processes in North American culture, is not viewed as that critical by those "south of the border". This resulting discrepancy might produce performance in the impaired range on many neuropsychological tests.

Education

The importance of education in interpreting performance on neuropsychological tests has been demonstrated in non-Hispanic samples (Heaton et al, 1991). The influence of education in Hispanics has also been reported with Hispanics (Ostrosky et al, 1985, 1986; Ardila & Rosselli, 1989; Rosselli & Ardila, 1991; Ardila, Rosselli & Puente, 1994). Data in the Ardila, Rosselli, and Puente book Neuropsychological assesment of the Spanish-speaker (1994) provide a particularly interesting glimpse with regards to the importance of education with Spanish-speakers. They reported the results of tests of measuring visual-spatial, memory, language, orientation, attention, and praxic abilities in illiterate Colombian adults with those who had formal education. The overall findings suggested that education played a significant role in mediating neuropsycholigical performance. For example, non-brain damaged illiterate subjects appeared to perform like brain-damaged literate ones. Considering that Hispanics

are the most poorly educated ethnic-minority group in the United States, findings such as this are critical in understanding the neuropsychological abilities of Spanish speakers.

Communication

Assumptions are made that for a neuropsychological evaluation to be performed that communication between the test administrator and test taker has to be established. Further, if communication is not established then it is further assumed that the problem is simply one of language. However, as Malgady, Rogler, and Constantino (1987) have argued, language communication in these situations is more than communication of simple instructions. A host of issues need to be considered including but not limited to: social boundaries, use of slang, eye and physical contact, rapport, and ethnic correlation between the test administrator and taker.

Of the many communication variables, one of the most obvious is that of language. One possible way to resolve this is to simply translate the test (either formally or during the testing session). When measuring complex cognitive processes such as learning and memory, simple and literal translation do not make sense. The translation or translator may miss subtle ethnic differences in understanding or performance as well as complex, and sometimes implicit cognitive nuisances. Thus, while translators and informal translations may provide an approximation, the error variance may produce incorrect conclusions, especially false positives.

Spanish is not equivalent to English in many respects and this poses particular challenges for the neuropsychologists who may be interested, in among other things, language deficits. One example

misspelling which is not used in Spanish- or in any language using a phonological writing system. The use of abbreviations, such as U.S.A., is common in English but not in Spanish where U.S.A. literally translates as *usa*. This may explain why Spanish speakers may have difficulty with phonological fluency tasks relative to category fluency (Taussig, Henderson, Mack, 19; Ardila , 19). Spanish speakers may tend to generate words according to phonologic similarities, disregarding the spelling of the word (e.g., *sal*). Thus, the difficulty in phonological fluency test may not be so much in the choice of letters but in the scoring criteria.

This strong tendency to spell in English is observed even with numbers (where 345 is three, four, five). In contrast Spanish speakers prefer to cluster (345 is three hundred forty-five). These differences may help explain reduced Digit Span performance in Spanish speakers (Lowenstein et al, 1993).

Another linguistic consideration concerns the reduction of immediate memory span due to the longer time it takes to articulate words in Spanish. However, word length effects is not necessarily explained by the number of phonemes or syllables comprising the words (Ellis a& Henneley, 1980).

Another communication variable is bilingualism especially since it is often assumed that when a patient knows two languages, they can manipulate cognitive concepts fluidly between the two. Bilingualism and proficiency in a particular language may differ depending on the modality of communication (i.e., spoken Vs written) as well as the domain of usage (e.g., work vs. home) as well as the content of communication. Quite often bilinguals are at a significant

disadvantage when tested solely in one language because this situation ignores the inter relatedness of the both languages (Ardila, Rosselli, and Granda, unpublished).

In the United States, English/Spanish bilingualism poses particularly complex problems. These include possible iterations between Spanish, English, and "Spanglish", age of acquisition of the "second" language, oral and written proficiency, cultural preference, and patterns of use (Ardila, in press). Code switching, for example is a style of communication wherein the individual may shift between languages in the course of communication, often triggered by a word or concept.

The degree of bilingualism is affected by a variety of variables including; age and sequence of acquisition, method of acquisition, schooling language, context of two languages, patterns of use of the two languages, person and social attitude towards each language, and cultural affiliation and understanding (e.g., Albert & Obler, 1978, Manuel-Dupont, Aridla, Rosselli, & Puente, 1991; Kilborn, 1994); Paradis,, 1987, Vaid, 1986). However, these actually represent general variable and specific variations within each can be found.

These issues make it easy to understand why standardized measures of bilingualsim are largely useless for characterizing level or degree of bilingualism. Nevertheless, these variables may help to explain the inconsistencies reported in the literature regarding language loss and recovery in bilingual aphasics. Case studies of aphasia which illustrate right hemisphere organization of language in bilinguals may simply represent a percentage of the population with

right hemisphere dominance for language, irrespective of their multilingual status.

Spanish Language Tests

There are two ways to utilize neuropsychological tests with Spanish speakers- translate them yourself or obtain one that has been translated. Echemendia et al (199) reported that most clinicians use their own translation or adaptations of published English language tests and to a lesser degree published Spanish measures. While it is obvious that personal translations may violate some psychometric and scientific principles, its often forgotten that such practices also violate copyright laws.

As to published English language tests, problems still exist. Whereas numerous tests are available, most are simple translations with no external verification of its validity or adaptability. Often norms are not included and if so, only of one sub-group. One of the best examples is that of the Spanish translation of the WAIS, the Escala de Inteligencia Wechsler para Adultos ((EIWA, 19). The 1968 normative sample (n=1127) consisted of Puerto Ricans who were predominately rural, with limited education, and who were of low occupational status (Lopez &). A related criticism is the lack of comparability with the WAIS in that standard score conversion of the EIWA raw score result in much higher scaled scores that is true for WAIS raw score conversion. Thus, even with the most widely used translated tests, the EIWA, the test for cultural equivalency appears to have failed.

Summary

The potential differences that appear to exist between Anglo-Saxons and Spanish-speakers on neuropsychological tests may be more an artifact than underlying neurological substrates. Alternatively, such differences may actually reflect cognitive styles rather than cognitive abilities. However, several of us (e.g., Ardila, 1995) have warned that even neuropsychological constructs are highly culturally-based. We propose that neuropsychological differences with Hispanics (as compared to Anglo-Saxons) is due to a combination of methodological discrepancies (e.g., lack of translation fidelity) as well as cultural knowledge. It is important to establish a hypothetical construct that is culturally equivalent and delineate clearly the purpose for which the test is intended. However, even if such differences are found, then it will be for the next generation of neuropsychologists to determine what, if anything, does these differences mean.