Forensic Neuropsychological Assessment of Members of Minority Groups: The Case for Assessing Hispanics

15

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Majority individuals of well-developed countries represent no more than 10% of the world population. In this global context, neuropsychology has been almost exclusively directed to the study of world minorities.

—A. E. Puente and A. Ardila

Introduction

Forensic neuropsychology has experienced spectacular growth recently (Bigler, 2006; Heilbronner, 2004; Sweet, King, Malina, Bergman, & Simmons, 2002). Nevertheless, studies about forensic assessment of minority groups are practically nonexistent. In this chapter, we will review different factors that should be considered when evaluating ethnic and racial minorities, focusing on Hispanics as an example.

We decided to focus on this group because it constitutes the fastest growing ethnic minority in the United States, and by 2050, the U.S. Hispanic population is projected to comprise one quarter of the nation's total population (U.S. Bureau

of the Census, 1997). Considering that referrals for neuropsychological evaluations among ethnic minorities are growing (Echemendia & Harris, 2004), it is highly probable that every neuropsychologist in the forensic arena will face the assessment of several Hispanics during his/her career. Further, the combination of linguistic and cultural variations pose unique challenges that could serve as a paradigm for other neuropsychologists of a majority group attempting to evaluate those from non-majority groups.

Hispanic Definitions and Demographic Variables

Merriam-Webster's Collegiate Dictionary (2009) defines *Hispanic* as "relating to the people, speech, or culture of Spain and Portugal, or Latin America," whereas the *Diccionario de la Lengua Española* (2001) (*The Dictionary of the Spanish Language*) defines the same word as "pertaining to Spain or the nations of Latin America." Thus, depending on the definition, Portugal could be included or not as a Hispanic country. What is important to underscore is that Hispanic is *not* a race, but an ethnic group (Ardila, Rodríguez-Menéndez, & Rosselli, 2002; Puente & Ardila, 2000) comprised of multiple races such as Caucasian, Black, Mongolian, or mixtures thereof (U.S. Census Bureau, 1999). Language variations, cultural characteristics, heritage, behavioral patterns, country of origin and residence, cultural and educational level, socioeconomic status (SES), and so on, make Hispanics a very heterogeneous group. By 2005, the Hispanic population reached 41.8 million people, becoming the largest minority in the United States (U.S. Census Bureau, 2006). Most of them have Mexican origin (63%, according to the U.S. Census Bureau, 1999), but their geographical distribution is uneven across the country (Cubans in south Florida, Puerto Ricans in New York, Mexicans in Texas and California) (Puente & Ardilla, 2000).

Performing Forensic Evaluations With Spanish Speakers

Studies demonstrating the superiority of Anglos performing neuropsychological tests when compared with ethnic minorities are abundant (Agranovich & Puente, 2007; Ardila & Keating, 2007; Arnold, Montgomery, Castaneda, & Longoria, 1994; Baird, Ford, & Podell, 2007; Boone, Victor, Wen, Razani, & Pontón, 2007; Byrd et al., 2006; Byrd, Touradji, Tang, & Manly, 2004; Coffey, Marmol, Shock, & Adams, 2005; Demsky, Mittenberg, Quintar, Katell, & Golden, 1998; Diehr, Heaton, Miller, & Grant, 1998; Norman, Evans, Miller, & Heaton, 2000; Patton, Duff, Schoenberg, Mold, Scott, & Adams, 2003; Ross, Lichtenberg, & Christensen, 1995; Rosselli, Ardila, Salvatierra, Marquez, Matos, & Weekes, 2002; Schwartz et al., 2004; Whitfield et al., 2000). Those differences are generalized to all cognitive domains (perception, attention, spatial abilities, memory, executive functions) and not limited to verbal tasks, as traditionally thought. Nevertheless, the reasons underlying such differences remain elusive, though it is of interest that Anglos comprise almost all, if not all, of the authors of major neuropsychological tests. Variables that are considered most important to those from a well-educated and compensated stratum of the majority group generally use that information to

make up test themes and items. For example, time is of the greatest essence in Anglo cultures, but of much less value in Hispanic ones.

A host of variables have been proposed as mediators of such findings that professionals should take into account when assessing an individual belonging to an ethnic minority. The consideration of such variables could completely change the conclusions and recommendations of a report. Thus, they are especially important on forensic cases because of the repercussion those reports could have for the individual being assessed (including the death penalty as an extreme situation).

Education

Hispanics, compared with Americans, have a low educational attainment (both living in and out of the United States) (Puente & Ardila, 2000). Low levels of formal education are very frequent among immigrants, but very few studies analyze the performance of such individuals on psychometric tests. Most neuropsychological norms erroneously consider people with fewer than 8 years of education a homogenous group, despite the fact that educational effect represents a negatively accelerated curve, tending toward a plateau (thus, differences between 0 and 3 years of education are highly significant, between 3 and 6 can be lower, and so on, with virtually no differences between, for example, 12 and 15 years of education). Given this fact, considering individuals with less than 8 or 10 years of education as a homogeneous group is a big mistake (Ardila, 2007). Neuropsychological performance tends to be extremely poor in illiterates in most cognitive domains. Psychometric testing instruments significantly penalize illiterates because of the undertraining of the abilities included in most tests, and the lack of familiarity with and difficulties in understanding the testing situations, among others (Ardila & Rosselli, 2007), and practitioners should consider all this information in their reports. Nevertheless, educational level is not related to everyday problem solving (Cornelious & Caspi, 1987), so forensic neuropsychologists should provide special attention to this aspect when evaluating illiterate individuals.

Research in the last decade or so has demonstrated that it is more appropriate to consider the quality of the education, and not the number of years of formal education, when evaluating minority groups (Byrd, Sanchez, & Manly, 2005; Byrd, Touradji, Tang, & Manly, 2004; Cosentino, Manly, & Mungas, 2007; Manly, Byrd, Touradji, & Stern, 2004; Manly, Jacobs, Touradji, Small, & Stern, 2002). Because minorities have less opportunity due to their social situation (racism, poverty, etc.), the reasons for obtaining fewer years of education could be different from those in the dominant group. On the other hand, different countries have different education levels. Thus, quality of education seems a better option. A test devised to measure this variable with Hispanics is the Word Accentuation Test (WAT; Del Ser, Gonzalez-Montalvo, Martinez-Espinosa, Delgado-Villapalos, & Bermejo, 1997).

Acculturation

Acculturation is the individual's ability to understand and maneuver outside of the culture in which he or she was raised and with which he or she is most familiar

(Berry, 1997). Consistent with the heterogeneity of Hispanics, acculturation is very variable in this group, but patterns of behavior, as well as beliefs and values of Hispanics living in the United States, tend to become progressively more similar to traditional middle-American standards (Ardila, Rodriguez-Menéndez, & Rosselli, 2002). Acculturation level was related to the performance on different neuropsychological tests, such as the Halstead-Reitan Battery (Arnold, Montgomery, Castenada, & Longoria, 1994), the Wisconsin Card Sorting Test (Coffey et al., 2005), Vocabulary and Similarities subtests (Razani, Murcia, Tabares, & Wong, 2007), Boston Naming Test, FAS, and Digit Span (Boone et al., 2007), Trail Making Test, and Stroop and Auditory Consonant Trigrams (Razani, Burciaga, et al., 2007). Thus, this variable should be considered when assessing minority individuals, because its control will improve the diagnostic accuracy of neuropsychological assessment.

To assess acculturation, we should consider the identification with the culture of origin (Hispanic) and the identification with the host culture (North American) in several aspects of the individual's lifestyle (i.e., food, recreational activities, values, and customs) (Ward & Kennedy, 1994), as well as language (English as first or second language, age at which English was learned), residency (number of years residing in the United States), and education (number of years educated in the United States) (Boone et al., 2007).

Two examples of acculturation measures that could be used with Hispanics are the Marin Acculturation Scale (English and Spanish versions) (Marin & Marin, 1991), and the Acculturation Rating Scales for Mexican Americans, 2nd Edition (Cuellar, Arnold, & Maldonado, 1995).

Language and the Use of Interpreters

To determine the language of the assessment, Pontón has proposed a decision tree that is briefly reviewed here: whether the patient is monolingual, the decision is clear, and the individual should be evaluated in his/her language. Nevertheless, if the patient is bilingual, a formal assessment of the proficiency should be done, and level of acculturation and educational background (years of education in the United States) should be taken into account. If the patient is not a monolingual Spanish speaker, has a low English proficiency, or has a medium or low acculturation and was educated in a Spanish-speaking culture, a bilingual neuropsychologist should conduct the assessment (Pontón, 2001; Ponón & Corona-LoMonaco, 2007).

The use of interpreters should be avoided whenever possible for several reasons: the addition of a third person changes the dynamics of the standard neuropsychological assessment (Wong, Strickland, Fletcher-Janzen, Ardila, & Reynolds, 2000), rapport is decreased and subtleties will be missed (Puente & Ardila, 2000), and their use invalidates the tests being administered (Melendez, 2001). The referral to bilingual neuropsychologists, when necessary, is highly desirable, and recommended by the American Psychological Association (APA, 1991, 2002). Nevertheless, doing so seems unrealistic, considering that the estimated number of bilingual or bicultural neuropsychologists is fewer than 50 some years ago (Puente & Ardila, 2000), and that number has not increased by much. Federal courts require the interpreter to pass a proficiency examination to be employed, but no such requirement exists for neuropsychologists, so this is left to his/her own judgement. The tendency to overestimate our linguistic compe-

tency is remarkably frequent among neuropsychologists, so professionals conduct assessments in Spanish who are not qualified to do so (of course, with their best intention). Professionals are advised that those assessments violate the *Guidelines for Providers of Psychological Services to Ethnic, Linguistic, and Culturally Diverse Populations* (APA, 1991), as well as the *Standards for Education and Psychological Testing* (American Educational Research Association [AERA], American Psychological Association [APA], & National Council on Measurement in Education [NCME], 1999). In chapter 9, they address the critical problems facing interpreters. Standard 9.11 considers this issue and the readers of this chapter ought to be familiar with that language, as well as being cognizant of the ongoing revision of those standards. Among other things, they mention the importance of understanding not just the language, but the culture of the individual being tested. Indeed, being bicultural is much more involved and complex than simply being bilingual. In essence, literal translations often miss the cognitive or emotional equivalence that is the hallmark of an appropriate evaluation. In addition, there is the problem that sometimes an appropriate linguistic and cultural translation still does not match the conceptual goal intended by the author of the original test. The Hispanic Neuropsychological Society, together with the National Academy of Neuropsychology, recently agreed, after much study, to a position paper that addresses these issues (Judd et al., 2009).

When an appropriate referral is not possible, it is important to consider several recommendations for minimizing the damage of using interpreters (Melendez, 2001; Wong et al., 2000):

- Inquire about professionals with experience translating psychological interactions.
- Interview various interpreters before selecting one (taking into account their backgrounds, but also their appearances, attitudes, and social ease).
- The interpreter should be fluent in the dialect of the patient and familiar with the specific culture of the region the patient is from.
- The interpreter should conduct the examination, and not be just a player (the more discreet and self-effacing, the better).
- The neuropsychologist should spend a preparation/training session with the interpreter to explain to him/her the basic neuropsychological assessment principles (i.e., no verbal or nonverbal help or cues should be provided, verbatim instructions and responses are required, confidentiality issues, etc.), and to review the tests and materials that will be used in the examination (so the instructions, lists of words, etc., will flow fluently during the assessment).

Even when following all these recommendations, the use of interpreters was never included on the standardization of neuropsychological instruments, and their use introduces an unknown amount of error in the assessment. This should be noted on the report, and interpretations of the results when using interpreters should be extremely cautious.

Bilingualism

Bilingualism is a very complex concept, influenced by a wide range of variables that make its exact determination almost impossible. Some of these variables

considered crucial to its determination are: age and sequence of acquisition, method of acquisition, schooling language, contexts of the two languages, patterns of use of the two languages, personal and social attitudes toward each language, and individual differences in verbal abilities (Ardila, 1998).

It is probable that different degrees of bilingualism are related differently to each of the cognitive domains. Nowadays, there are no studies that investigate the understanding of the relation of bilingualism and cognitive status, so under- or over-estimation of cognitive abilities is possible when assessing bilinguals. For example, it was stated that Spanish–English bilinguals may be at a disadvantage when using either language, because using either Spanish or English testing materials and norms penalize these bilinguals (Ardila et al., 2002; Puente & Ardila, 2000; Ardila et al., 2000). On the other hand, bilinguals seem to possess better executive function skills, compared with monolinguals (Bialystock, 1999). It is possible that future imaging studies will allow better understanding of the relation between bilingualism and cognitive results (i.e., De Bleser et al., 2003, demonstrated different brain activation in bilinguals, compared with monolinguals).

Socioeconomic Status

Hispanics living below the poverty level exceed by far the non-Hispanic white population in such a condition. Low SES is linked to variables such as lack of appropriate nutrition, which has been associated with brain dysfunction and altered neuropsychological results (Llorente, 2008).

When SES is controlled, studies show that differences between ethnicities often disappeared. As an example, Armengol (2002) studied the effect of SES in children from Mexico City, showing that low-SES children achieve a significantly lower performance on the Stroop, compared with high-SES children. On the other hand, the performance of bilingual children in Massachusetts from low-SES backgrounds was close to that of low-SES children in Mexico City, whereas values obtained by high-SES Mexican children were equivalent to the normative data in American children. Due to its possible impact on neuropsychological measures, SES of the patient should be always contemplated in the report.

Other Cultural Factors

According to Ardila (2005, 2007), some cultural values that are not universal underlie psychometrically oriented cognitive testing, and help to explain why members of the culture in which the test was developed obtain the highest scores:

- There is a one-to-one relationship between an examiner and an examinee who have never met before and will not meet again.
- One must consider the background or situational authority of the examiner.
- The idea is that the examinee will perform at his/her best level of effort.
- Testing is done in an isolated environment; it is a private and intimate situation that may be quite inappropriate in many cultures.
- The examiner uses a stereotyped and formal language. The examinee is not allowed to talk about himself or herself, the examination is far from a

normal social relationship and usual conversation. For Hispanics, the personal relationship with the examiner may be more important than the test results. In fact, Mexicans, compared with Americans, place greater emphasis on being simpatico (friendly, charming, caring) versus being efficient (Diaz-Guerrero, 1993), and acquiescence and trying to please the examiner was found to be more important than the task itself for some groups (Perez-Arce, 1999).

- The idea that the examinee must perform as quickly as possible; for many cultural groups, including Hispanics, speed and quality are seen as contradictory. Speed, competitiveness, and high productivity are important cultural values in literate Anglo-American society, but not in other cultural groups. For example, cooperation and social abilities are very important for Hispanics (being "educated" implies good social skills, and not educational attainment), whereas competitiveness is viewed with suspicion (Puente & Ardila, 2000).
- The examiner may ask questions that are perceived as a violation of privacy. Intellectual testing may be perceived as a kind of humiliating situation and disrespectful of privacy in Latin America.
- The use of specific testing elements (figures, blocks, pictures) and strategies (memorize meaningless information) that are not easy to understand for some cultural groups.

Cultural relevance (meaningfulness) is another important variable in cross-cultural assessments (Puente & Ardila, 2000). In fact, it has been demonstrated that an execution of a particular cognitive task might require the involvement of different constellations of brain structures, depending on relevance of the task to one's cultural background (Golden & Thomas, 2000). All these cultural factors, and the degree to which they are influencing the results of a neuropsychological testing in a specific individual, are very difficult to detect and understand for an examiner who is not familiar with the culture of the examinee. Also, Hispanics frequently do not feel totally comfortable with English-speaking examiners (Ardila et al., 2002), and the "distance" (e.g., gender, age, ethnicity) between the examiner and the examinee may impact the results of the testing situation (Ardila & Keating, 2007). Thus, the reasons for referring Hispanic individuals to Hispanic neuropsychologists go far beyond language factors.

What Tests Can We Use With Hispanics?

We often assume that simply translating the test or obtaining an interpreter resolves the barriers posed in evaluating Spanish-speakers. In reality, the situation is complex.

The Problems of Translating Tests

It is not uncommon for practitioners to merely use idiosyncratic translated tests when faced with a cross-cultural assessment. This method is not only completely erroneous and invalid, but also unethical, according to the *Standards for Educational and Psychological Testing* (American Educational Research Association, American

Psychological Association, National Council on Measurement in Education, 1996). Somebody translating a test assumes that language is the only barrier to a valid assessment in such minority cases (Wong et al., 2000), forgetting the multitude of factors that influence the differences found in cognitive tests between different ethnic groups (see the last section).

Puente and Ardila (2000) highlighted some of the main problems involved in the translation of tests. In the first place, appropriate translation and adaptation of a test is a very complex endeavor that requires the balance of bilinguals familiar with the different dialects and language variations of the subgroups of the population at hand, so the final version could be considered standard language for all members of the population (i.e., Hispanics from Spain, Argentina, Colombia, Mexico, etc.). In the second place, cultural meaningfulness should always be considered, because items literally translated to another culture may have different relevance (i.e., the beaver or an igloo are not as familiar to a Hispanic as they are to a North American), or even make no sense (i.e., "it's raining cats and dogs" makes no sense in Spanish), resulting in differences in performance. Even more important, cognitive equivalence should be addressed (i.e., in the tests requiring digits in the Wechsler Adult Intelligence test [WAIS], is the task to remember a single-digit number or a single-digit number with a specified number of syllables? The numbers 1, 4, 5, 7, 8, and 9 have two syllables in Spanish and only one in English, so is the memorization of digit series equivalent?).

Even when adequate translations are conducted, psychometric properties of the test in the new language need to be determined before considering the test a good tool (Pontón & Ardila, 1999; Ardila et al., 2002; Wong et al., 2000).

The Problem of Adequate Norms

Several authors have pointed out the problems and caveats of developing race-based norms (Ardila, 2007; Brickman, Cabo, & Manly, 2006; Gasquoine, 1999; Manly, 2005; Manly et al., 2002, 2004; Manly & Echemendia, 2007; Pedraza & Mungas, 2008), based on several ideas. First, race is a social or political construct, lacking a genetic or biological base (Helms, Jernigan, & Mascher, 2005; Manly et al., 2004), and explains little about the variations of test scores from group to group (Brickman et al., 2006). Second, the thousands of languages and cultures (including mixtures of them) make impossible the endeavour of developing race-specific norms for all of them (Ardila, 2007; Brickman et al., 2006). Also, it has been pointed out that race could be deconstructed in factors such as those exposed in the previous section (level and quality of education, acculturation, language usage, etc.), responsible for the differences found between ethnic groups on cognitive measures (i.e., Manly et al., 2002; Razani, Murcia, et al., 2007; Touradji, Manly, Jacobs, & Stern, 2001). It is our hope that future studies will determine the specific weight of different cultural factors, so norms could be stratified according to them. Nevertheless, the current situation is far from that.

On the other hand, several authors conclude that separate norms for different ethnic groups could be an appropriate resource, because they increase the sensitivity and specificity of neuropsychological measures in detecting cognitive impairment, and thus the accuracy of diagnosis (Agranovich & Puente, 2007; Ardila, 1995; Lucas et al., 2005; Manly, 2005; Nabors, Evans, & Strickland, 2000; Wong et al., 2000).

Currently, most neuropsychological tests do not have norms for Hispanics (Pedraza & Mungas, 2008), and it is not uncommon to find clinicians scoring Hispanic protocols with norms designed for the United States mainstream (White English-speaking, middle-class subjects with a high school or college level of education) (Ardila et al., 2002), leading to drawing inferences and making erroneous conclusions (Uzzell, 2007). Furthermore, recent research contradicts the traditional assumption that Caucasian norms can be used with Hispanics who speak English as a first language. Both Boone et al. (2007) and Razani, Burciaga, et al. (2007) demonstrated that minorities who spoke English as a first versus second language performed comparably to each other and worse than Anglo-Americans on neuropsychological measures. Once again, studies point out that neuropsychological results are not just a question of language.

Some authors have made the effort to make lists of neuropsychological tests with norms for Hispanic speakers (Ardila et al., 2002; Boone et al., 2007; Llorente & Weber, 2008; Pontón, 2001; Pontón & Corona-LoMonaco, 2007; Poreh, 2002; Salazar, Pérez-García, & Puente, 2007). Considering all of them, we present a list of tests with references that could serve as a guide for clinicians facing the assessment of Hispanic adults (see Table 15.1).

The selection of appropriate norms will depend on the question at hand. Thus, descriptive and diagnostic uses should be differentiated (Manly & Echemendia, 2007). The use of English norms to assess a Hispanic patient can be adequate if, for example, we need to establish the understanding of indications of and explanations about the legal system given in English.

When trying to diagnose brain damage, neuropsychologists interpreting test results should always consider whether age, education, acculturation, specific cultural background, language level, country of origin, region of residence, and SES are similar for the person being assessed and the comparative normative group. It is clear that is not appropriate to compare a 25-year-old Mexican with a master's degree obtained in North Carolina with an elder sample obtained with Puerto Ricans residing in New York. Obviously, all of them are Hispanics, but each situation is substantially different. In this regard, it is noteworthy that the majority of research on the neuropsychological assessment of Hispanics has used elderly, poorly educated, Spanish-speaking participants, resident in the United States for more than 15 years (Gasquoine, 2001). Thus, heterogeneity of Hispanics is not reflected in the available norms.

Detection of Limited Effort in Hispanics

Detection of less-than-optimal effort in minorities is extremely complicated, fundamentally because of the lack of studies in this area. Nevertheless, the forensic assessment would not be complete if the possibility of deception is not considered.

Malingering is the "intentional production of false or grossly exaggerated physical or psychological symptoms" (*Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition* [*DSM-IV*]; American Psychiatric Association, 1994) with the aim of getting an external goal, such as an economic reward or avoiding work. According to the *DSM-IV*, clinicians should suspect malingering if the individual is facing a medico-legal evaluation, if the referred complaints are discrepant with the objective findings, if a lack of cooperation is observed from the patient, and

15.1 Available Tests With Norms for Hispanics

Tests	References
Batería Neuropsicológica en Español	Artiola-i-Fortuny, 2000; Artiola-i-Fortuny, Hermosillo-Romo, Heaton, & Pardee, 1999
Batería Woodcock-Muñoz: Pruebas de Aprovechamiento-R	Woodcock & Muñoz-Sandoval, 1996a
Batería Woodcock-Muñoz: Pruebas de Habilidad Cognitiva-R	Woodcock& Muñoz-Sandoval, 1996b
Batería-III	Woodcock & Muñoz-Sandoval, 2005
Beck Depression Scale	Sanz & Vázquez, 1991
Benton Visual Form Discrimination	Campo & Morales, 2003
Benton Visual Retention Test	Jacobs et al., 1997
Bilingual Verbal Ability Tests	Muñoz-Sandoval, Cummins, Alvarado, & Ruef, 1998
Block Design	Taussig, Henderson, & Mack, 1992; Pontón, Satz, Herrera, Ortiz, Urrutia, Young, et al., 1996
Boston Naming Test	Ardila, Rosselli, & Puente, 1994; Kohnert, Hernández, & Bates, 1998; Loewenstein, Rubert, Arguelles, & Duara, 1995; Pontón et al., 1996
Cancellation Test	Ardila et al., 1994
Cognistat, Spanish Version	Kiernan, Mueller, & Langston, 1998
Color Trails	Pontón et al., 1996
Controlled Word Association Test	Manly et al., 1998
Design Fluency	Delgado, Guerrero, Goggin, & Ellis, 1999
Digit-Span	Ardila et al., 1994; Olazaran, Jacobs, & Stern, 1996; Pontón et al., 1996; Loewenstein et al., 1995
Direct Assessment of Functional Status	Loewenstein, Ardila, Rosselli, Hayden, Duara, Berkowitz, et al., 1992
Fuld Object Memory	Loewenstein et al., 1995
General Ability Measure for Adults	Naglieri & Bardos, 1997
Geriatric Depression Scale	Zamanian, Thackrey, Starrett, Brown, Lassman, & Blanchart, 1992
Mattis Dementia Rating Scale	Taussig et al., 1992
Minnesota Multiphasic Personality Inventory-2	Gómez-Maqueo, León-Guzmán, & Medina-Mora, 2003
Mini Mental Status Examination	Ardila et al., 1994; Bird, Canino, Stippec, & Shrout, 1987; Escobar, Burman, & Marno, 1986; Gurland, Wilder, Cross, Teresi, & Barret, 1992; Mungas, Marshal, Weldon, Haan, & Reed, 1996; Ostroski-Solís, López-Arango, & Ardila, 2000; Taussing et al., 1992; Taussing & Pontón, 1996
Multilingual Aphasia Exam-Spanish	Rey & Benton, 1991
NEUROPSI	Ostrosky, Ardila, & Rosselli, 1997
Neuropsychological Screening Battery for Hispanics	Pontón et al., 1996; Pontón, Gonzalez, Hernandez, & Igareda, 2000; Pontón, 2001
Non-Verbal Reasoning Test Series	Ostrosky, Ardila, & Roselli, 1997

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Table 15.1 (

Tests
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Serial Verba
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Stroop Test
Token Test
Trail Making
Verbal Fluer
Wechsler Ac Scale
Wechsler M
WHO-UCLA Learning
Wisconsin C
Woodcock L Battery-R Form

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Table 15.1 ***(continued)***

Tests	References
Paced Auditory Serial Addition Test	Diehr et al., 1998
Raven's Standard Progressive Matrices	Pontón et al., 1996
Rey-Osterrieth Complex Figure	Ardila, Rosselli, & Rosas, 1989; Ardila et al., 1994; Ardila & Rosselli, 2003; Ostrosky-Solís, Jaime, & Ardila, 1998; Pontón et al., 1996
Serial Verbal Learning	Ardila et al., 1994
Spanish English Verbal Learning	Gonzalez, Mungas, & Haan, 2002
Stroop Test	Golden, 1978: Spanish adaptation by TEA ediciones, 2001
Token Test	Ardila et al., 1994
Trail Making Test	Rosseli & Ardila, 1996
Verbal Fluency	Ardila et al., 1994; Loewenstein et al., 1995; Pontón et al., 1996
Wechsler Adult Intelligence Scale	Wechsler, 1997: Spanish adaptation by TEA ediciones, 1999
Wechsler Memory Scale	Ardila et al., 1994; Demsky et al., 1998; Loewenstein et al., 1995; Ostrosky-Solís et al., 2000
WHO-UCLA-Auditory Verbal Learning Test	Pontón et al., 1996
Wisconsin Card Sorting Test	Artiola-i-Fortuny & Heaton, 1996; Artiola-i-Fortuny & Mullaney, 1998; Mejia, Pineda, Alvarez, & Ardila, 1998; Rey, Feldman, Rivas-Vazquez, Levin, & Benton, 1999; Rosselli & Ardila, 1996
Woodcock Language Proficiency Battery-Revised, Spanish Form	Woodcock & Muñoz-Sandoval, 1993

if the individual presents antisocial personality disorder. The only study that tested this model was done by Rogers (1990) in a criminal forensic sample. The author found that the criterion of two or more indices had a false positive rate of approximately 80%, showing the ineffectiveness of the *DSM-IV* model. Rogers (1997) affirms that this vision is congruent with a "criminological" model. As an alternative, Rogers proposed the "adaptive" model, according to which the probability of malingering is higher when the evaluation context is perceived as adverse, personal risk is very high, and other alternatives do not seem available. This model could be especially applicable with ethnic minority individuals, who tend to perceive the legal system and the concept of justice from a negative point of view (established to benefit those in a powerful/dominant situation), who had suffered discrimination and negative experiences because of being part of a minority, and who may have the necessity of "making themselves be heard" (Poreh, 2002), that could lead to an exaggeration of symptoms. These sociocultural factors should be considered when assessing malingering in Hispanics, who could perceive malingering as the only way to get what they deserve.

Due to the problems and flaws detected on the *DSM-IV* concept of malingering, different authors have proposed alternative diagnostic criteria (Faust & Ackley, 1998; Greiffenstein, Baker, & Gola, 1994; Prigatano, Smason, Lamb, & Bortz, 1997; Slick, Sherman, & Iverson, 1999; Teichner & Wagner, 2004). Slick et al.'s proposal about malingered neurocognitive dysfunction has been widely used in malingering research, and it has a great clinical utility and could be applied

with Hispanics, with an extra-careful consideration for the criteria of probable response bias.

The Study of Inconsistencies

There is a consensus in accepting inconsistencies as the key to detecting malingering. Larrabee (2000) expressed this idea, stating that everything on the assessment should make "neuropsychological sense," and Reynolds (1998) affirmed that malingering detection has three components: congruence, congruence, and congruence. Inconsistencies potentially useful in detecting malingering in minority groups could be produced by:

- Test results from the same domain (i.e., in two tests of verbal memory, the individual appears as severely impaired in one and between normal levels in another one; recall is better than recognition)
- Test results from different domains; results do not coincide with known neuropsychological patterns (i.e., attention is better than memory)
- Test results from different assessments (on a repeated administration of a test, the individual obtains a result significantly different from the first time)
- Test results and the expected results attending to the documented damage (a patient with neuroimaging findings on the left hemisphere obtained higher scores with the right hand on the Finger-Tapping Test)
- Test results and the observed behavior or activities of daily living (i.e., a patient obtained scores indicative of severe memory problems on several tests, but arrives alone on time to the neuropsychological assessment, remembers what he had for breakfast, and does not need any help to live independently)
- Test results and reliable collateral informers (i.e., the patient obtained very poor neuropsychological results, but his boss reports the individual working properly in his administrative position after the supposed brain damage)
- The reported and documented history (i.e., the patient states she was in coma for two days, but her reports indicate her lack of consciousness lasted five minutes)
- The reported symptoms (internal inconsistency in the symptom presentation that do not correspond to any known syndrome)
- The reported symptoms and the observed behavior
- The reported symptoms and the information obtained from reliable collateral informers.

Despite the agreement considering inconsistencies as an important construct, this approach has received little attention from an empirical perspective. Some studies have demonstrated the utility of the test–retest approach with the Halstead Reitan battery (Reitan & Wolfson, 1995, 1997), Victoria Symptom Validity Test (Strauss et al., 2000, 2002), and the Dot Counting Test and Digit subtest (Strauss et al., 2002), but generally, the assessment of the inconsistencies relies on the clinical opinion of the neuropsychologist. No studies proved the utility of this approach with minorities.

The Use of Tests of Effort

Tests of effort could be divided into two broad groups:

1. Floor effect. These tests rely on very basic cognitive abilities with items that should be passed by nearly everyone. The most extended test that uses this approach is the Rey 15-Item Test (see Lezak, Howieson, & Loring, 2004). Other examples are the Dot Counting Test (Boone et al., 2002), or the b test (Boone, Lu, & Herzberg, 2002).
2. Forced-choice tests or symptom validity testing. The use of these tests is recommended by the National Academy of Neuropsychology to assess the patients' effort (Bush et al., 2005), and its contribution to the forensic evaluations is considered very valuable (O'Bryant, Duff, Fisher, & McCaffrey 2004; Tombaugh, 1996). It is the most employed and studied method to detect cognitive malingering (Gervais, Rohling, Green, & Ford, 2004). These tests relied initially on binomial distribution: as there are only two choices, malingerers can be detected if the failure rate significantly exceeds chance level (50%). In other words, if someone selects the correct responses significantly below the chance level because that person knows the correct responses and intentionally decides to select the incorrect ones, that person may be malingering. The Digit Memory Test (Hiscock & Hiscock, 1989) or the Portland Digit Recognition Test (Binder, 1990) use this approach. Nevertheless, this criterion has been considered too stringent and unnecessary, so other tests have established cut-off points under the chance level, such as the Test of Memory Malingering (Tombaugh, 1996), Victoria Symptom Validity Test (Slick, Hopp, Strauss, & Thompson, 1997), Computerized Assessment of Response Bias (Allen, Conder, Green, & Cox, 1997), or the Word Memory Test (Green, Allen, & Astner, 1996). These tools are considered an exception to malingering tests because of their high sensitivity (Slick, Sherman, & Iverson, 1999; Willison & Tombaugh, 2006). For excellent reviews of this method, see Bianchini, Mathias, and Greve (2001) and chapter 6 of this book.

Binomial distribution is a mathematical and universal concept that, from a theoretical point of view, could be applied to any individual (including minorities). Furthermore, if these tests are measuring effort and not ability, there is no reason for them to change systematically with respect to age, education, gender, or variables related to neurologic damage (Boone, Lu, & Herzberg, 2002). In fact, several studies have shown that there is no correlation between malingering tests and demographic or neurological variables (Constantinou & McCaffrey, 2003; Grote et al., 2000; Haber & Fichtenberg, 2006; Macciocchi, Seel, Alderson, & Godsall, 2006; Rees, Tombaugh, & Boulay, 2001; Teichner & Wagner, 2004; Tombaugh, 1996). The problem with the below-chance-level is that, despite its excellent specificity, its sensitivity is unacceptably low (Bender & Rogers, 2004; Gervais et al., 2004; Guilmette, Hart, & Giuliano, 1993; Guilmette, Hart, Giuliano, & Leininger, 1994; Greiffenstein et al., 1994; Hiscock, Branham, & Hiscock, 1994; Holmquist & Wanlass, 2002; Martin, Bolter, Todd, Gouvier, & Niccolls, 1993; Martin, Hayes, & Gouvier, 1996; Rose, Hall, & Szalda-Petree, 1995; Slick, Hopp, Strauss, Hunter, & Pinch, 1994). Thus, the majority of the malingering ethnic minority individuals assessed with these tests would be undetected.

The rest of the tests (both those following the floor-effect approach and the forced-choice tests with cut-off scores under the chance level) are not appropriate for use with minorities, because their sensitivity and specificity have not been studied in such populations. The only studies in this regard were done with Spaniards, and demonstrated that the Victoria Symptom Validity Test and the Test of Memory Malingering, and to a lesser degree, the Dot Counting Test, obtained results very similar to the original populations, whereas the Rey 15-Items Test obtained very poor results (Vilar-López et al., 2007; Vilar-López, Gómez-Rio, Santiago-Ramajo, Rodriguez-Fernandez, Puente, & Pérez-García, 2008; Vilar-López, Gómez-Río, Caracuel-Romero, Llamas-Elvira, & Pérez-García, 2008). Nevertheless, other studies are necessary in order to demonstrate the applicability of such tests to other groups (i.e., Mexican or Puerto Ricans residing in the United States).

The Final Decision

As a result of the lack of empirical data, malingering diagnoses in minority cases depend on the clinical judgment of the professional. In this judgment, we should conduct a careful examination of the individual's history before the damage (birth and developmental, as well as medical, school, work, legal, military, mental health, or substance abuse records), during the incident, if there is one (e.g., witness reports), and in the present time (medical, neurological, psychological reports). All this information should be considered to interpret our neuropsychological evaluation (interview and tests results), always paying special attention to the cultural issues relevant to the specific case.

Special Issues in Forensic Evaluations

Despite forensic neuropsychology being considered an area of clinical neuropsychology, there are some differences between clinic and forensic evaluations that make them substantially different (Bush & NAN Policy & Planning Committee, 2005). Denney & Wynkoop (2000) highlight the following:

1. Although the relationship established in clinical assessment is based on collaboration and confidence, forensic evaluations are frequently considered adverse. This is especially important with Hispanic individuals. For them, opening up to a stranger is abnormal, mental issues are a very private matter, and intellectual or cognitive testing is perceived as aversive (Puente & Ardila, 2000). Thus, it is extremely important to make very clear the terms of our relationship to the individual, the goal of the evaluation, and explain in advance the different steps of the process to diminish the anxiety level of the individual.
2. The alliance of forensic neuropsychologists is with the truth, and not with the patient. Again, this aspect has a special relevance to Hispanics, for whom establishing a good rapport with the professional is a fundamental issue. Transparency, establishing a natural environment, and sincerity are key elements to obtaining reliable information from Hispanics.
3. Forensic evaluations require more information sources and, thus, more time and attention to details. In fact, these assessments are the longest in clinical

neuropsychology (Sweet, Peck, Abramowitz, & Etzweiler, 2002). Even more time will be necessary with Hispanics. A structured interview is recommended, given the possibility of missing important elements because of the complexities associated with cultural issues.

Who Should Conduct a Forensic Neuropsychological Assessment of a Hispanic Patient?

On the first hand, the qualified professional should be a certified clinical neuropsychologist (through The American Board of Clinical Neuropsychology or The American Board of Professional Neuropsychology) with an appropriate knowledge of the area pertinent to the specific case at hand (i.e., traumatic brain injury, dementia, etc.), and possess an adequate knowledge of forensic psychology, being familiar with the American Academy of Forensic Psychology and the *American Law Society's Specialty Guidelines for Forensic Psychologists* (Committee on Ethical Guidelines for Forensic Psychologists, 1991, 2008), and of the legal aspects relevant for the specific case. On the other hand, the clinician should be proficient in the patient's language, or make a referral to another professional whenever possible (APA, 1991; Llorente & Weber, 2008; Melendez, 2001). Also, cultural expertise or competence at the individual level is essential for the clinician who is working with cross-cultural populations (APA, 1992, 2002, 2003). Education and training programs are essential to get that competence (APA, 2003; Brickman et al., 2006; Fastenau, Evans, Johnson & Bond, 2002; van Gorp, Myers, & Drake, 2000), but there is much to work on in this regard.

Conclusions and Recommendations

Forensic evaluations of minorities constitute one of the most difficult challenges in clinical neuropsychology. When facing such a challenge, clinicians should consider:

1. Their proficiency in the patient's language and their knowledge of the patient's culture. If the appropriate language of the assessment is not English, or if the clinician is not sufficiently familiar with the culture of the individual, referral to a bilingual and bicultural neuropsychologist is the best option. If this is not possible, consultation with such professionals is indispensable. The use of interpreters should be avoided, if possible.
2. Using tests appropriately adapted and including studies about psychometric properties for the patient's group.
3. Using demographically matched norms.
4. Considering cultural issues in every phase of the process (interview, assessment, test interpretation, etc.).
5. Fulfilling their professional responsibility to be up-to-date on the literature and scientific advances on minority research.
6. Clearly stating all the variables possibly influencing test results (test version, selected norms, cultural issues, use of interpreters, etc.) on the report. Be cautious with the interpretation of the results.

7. Reviewing other types of information, such as records review, functional assessment of the patient, interviews with the patient and collateral people (family, friends, coworkers...), and so on. Because of limited tests and norms for minorities and their limitations, these other types of information are especially important.

Despite the growing research in the last few years and the remarkable efforts of some researchers, many more studies are necessary in the field of cross-cultural neuropsychology, and specifically, on cross-cultural forensic neuropsychology. The development of these areas will be beneficial not only for ethnic minorities, but for the progress of clinical neuropsychology as a whole.

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