

# PUBLIC ANNEX E

# Cultural Values Underlying Psychometric Cognitive Testing

Alfredo Ardila<sup>1,2</sup>

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It is proposed that culture (values, beliefs, styles of behavior) can affect neuropsychological testing. Cognitive testing represents a social situation that—as any social situation, it is one governed by implicit cultural rules. At least eight different culture-dependent values underlie cognitive testing: (1) One-to-one relationship, (2) Background authority, (3) Best performance, (4) Isolated environment (5) Special type of communication, (6) Speed, (7) Internal or subjective issues, and (8) The use of specific testing elements and strategies. In addition, it is proposed that “the distance” (e.g., gender, age, ethnicity) between the examiner and the examinee may potentially impact the testing situation. A special analysis regarding the function of instruction in cognitive tests is also presented emphasizing that test instruction interpretation is also culture-dependent. Some potential avenues of research are finally proposed.

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... a very limited kind of neuropsychology, appropriate to only a fraction of the world's population, is presented to the rest of the world as if there could be no other kind of neuropsychology, and as if the education and cultural assumptions on which neuropsychology is based were obviously universals that applied everywhere in the world. (Matthews, 1992, p. 421).

## WHAT IS CULTURE?

Culture refers to the set of learned traditions and living styles, shared by the members of a society. It includes the ways of thinking, feeling and behaving (Harris, 1983). Traditionally, culture has been interpreted as that complex whole which includes knowledge, belief, art, law, morals, custom, and any other capabilities and habits acquired by man (humans) as a member of society (Tylor, 1871). The minimal definition of culture could simply be, *culture is the specific way of living of a human group* (Ardila, in press).

Different dimensions of culture can be distinguished: (1) *The internal, subjective or psychological representa-*

*tion of culture*, including thinking, feeling, knowledge, values, attitudes, and beliefs. (2) *The behavioral dimension*, including the ways to relate with others, ways of behaving in different contexts and circumstances, festivities and meeting, patterns of associations, etc. (3) *Cultural elements*: the physical elements characteristic of that human group such as symbolic elements, clothes, ornaments, houses, instruments, weapons, etc. (Geertz, 2000; Harris, 1983; Hofstede, 1997).

Culture represents a particular way to adapt to and live in a specific context. Cultural differences are strongly related with environmental differences (Geertz, 2000; Peoples and Bailey, 2003). Arctic and Amazonian jungle cultural differences are to a significant extent due to the geographical, ecological and environmental differences between the Arctic and the Amazonian jungle regions. Cultures, however, are usually in some contact with each other and a significant degree of cultural diffusion is generally observed. Cultural evolution and cultural changes are found throughout human history, depending upon, (a) new environmental conditions, (b) contact with other cultures, and (c) internal cultural evolution (MacDonald, 1998; Linton, 1936; Sahlins and Service, 1960). For example, Gypsies in Russia, Spain, and the United States not only have many cultural commonalities, but also differences due to the amount of time as well as degree of interaction with and acceptance from their host societies.

<sup>1</sup>Department of Communication Sciences and Disorders, Florida International University, Miami, Florida.

<sup>2</sup>To whom correspondence should be addressed at Department of Communication Sciences and Disorders, Florida International University, HLS144, Miami, Florida 33199; e-mail: ardilaa@fiu.edu.

Certain cultural elements have been particularly successful and have tended to strongly diffuse across cultures (Linton, 1936). For instance, science and technology have been extremely successful in solving different human problems and have, in consequence, tended to spread throughout virtually all-existing world-wide societies. In this regard, contemporary humanity has tended to become more technologically homogeneous and to share the culture of science and technology. As communication speed and access to shared information increases exponentially over its historic archive of record, cultural diffusion and its impact has become a considerable variable of research interest.

Formal education and school have played a crucial role in the diffusion of science and technology, and in the contemporary trend toward cultural homogenization. In this regard, school can be considered as a subculture, the subculture of school (Ardila et al., 1989, 2000). School not only provides some common knowledge but also trains some abilities and develops certain attitudes. Cognitive testing is obviously based on the assumptions as well as the values of scientific and technologically oriented societies. Schooled children usually share more scientific and technologic values and attitudes than their illiterate parents, and schooled subjects significantly outperform illiterate individuals in cognitive testing (e.g., Ardila et al., 1989; Goldblum and Matute, 1986; Lecours et al., 1987a, 1987b, 1988; Manly et al., 1999; Matute et al., 2000; Ostrosky et al., 1998; Reis and Castro-Caldas, 1997; Rosselli et al., 1990).

School attendance, however, does not mean that educated people simply possess certain abilities that less educated individuals are lacking. It does not mean that highly educated people have the same abilities as less educated individuals, plus something else (Ardila et al., 2000). The individual with no formal education obviously have certain learnings that educated people do not. Nonetheless, formal cognitive testing evaluates those abilities that the educated people was trained in, and is not surprising that s/he will outperform the subjects with no formal education. Noteworthy, educational level has a substantial relationship with performance on some cognitive tests but is not systematically related to everyday problem solving (functional criterion of intelligence; Cornelious and Caspi, 1987). Luria (1976), for instance, observed that illiterate individuals can have more rich and differentiated perception, but they lack skills in the categorization and generalization processes trained at school.

To operationalize culture is not simple. As mentioned above, culture refers to the living styles (thinking, feeling and behaving) shared by the members of a society (Harris, 1983). Values (ways of thinking and interpreting),

attitudes (beliefs and feelings) and interpersonal behavior styles, may potentially affect cognitive testing. Cultures can be identified because of distinctive styles of *behaviors* which are based upon different patterns of *beliefs* and these in turn are due to patterns of *values*.

### Values

Culture supposes a specific value system. Kluckhohn and Strodtbeck (1961) proposed a conceptual map which tried to include the complete range of values which it is possible for human beings to hold in relation to five key issues about which all human beings hold opinions. The five key issues are (1) human nature (how it is: good, bad, neutral, mixed), (2) man–nature relationship (subjugation to nature, harmony with nature or mastery over nature), (3) time orientation (past, present, future), (4) activity (being, being in becoming, doing), and (5) relational (lineality, collaterality, individuality). The prevalent value orientations of an individual, and indeed of the culture to which s/he belongs, can act as a barrier to intercultural communication in that, what passes for common sense in one culture might appear deviant in another (Condon and Yousef, 1981).

### Attitudes and Beliefs

Usually refers to positive or negative evaluations of people, objects, or situations that often predispose people to feel and behave positively or negatively toward them. According to Greif (1994) cultural beliefs are the ideas and thoughts common to several individuals that govern interaction—between these people, and between them, their gods, and other groups—and differ from knowledge in that they are not empirically discovered or analytically proved. In general, cultural beliefs become identical and commonly known through the socialization process by which culture is unified, maintained, and communicated. Cultural beliefs serve not only to guide, but also to instigate action, that is, they possess emotional content. During childhood, people acquire beliefs and values from others by teaching, imitation, and other forms of social learning. This process is known as “cultural transmission.” Many kinds of cultural transmission are possible.

### Interpersonal Behavior

For a long time, anthropology and cross-cultural psychology have been interested in analyzing the ways

people interpret interpersonal behavior (Adamopoulos, 2002). The core question is, how people understand the social behavior they experience in their environment. It has been proposed that there exist at least three universal dimensions used to interpret interpersonal behavior: (1) Association-Dissociation (Affiliation); (2) Superordination-Subordination (Dominance); and (3) Intimacy-Formality. Naturally, this does not mean that other, culture-specific dimensions, do not exist (Triandis, 1978, 1994). It has been further proposed that around the world, regardless of cultural, ethnic, and linguistic background, people understand social behavior as communicating primarily the presence or absence of affiliative motives, the desire to dominate another or be submissive to another's authority, and the need for interpersonal closeness (or its absence; Adamopoulos, 1988, 1991).

An increasing emphasis in cultural variables, potentially affecting cognitive test performance has been evident during recent years (e.g., Ardila, 1995; Ferraro, 2002; Fletcher-Janzen et al., 2000; Nell, 2000; Perez-Arce and Puente, 1996; Pontón and León-Carrión, 2001; Puente and Perez-Garcia, 2000; Puente and Salazar, 1998; Puente and McCaffrey, 1992; Rosselli and Ardila, 2003; Samuda et al., 1998; Toomela, 2003; Geisinger, 1992; Uzzell et al., in press). Progressively, it has become evident that cognitive testing represents a culture-dependent activity and test scores may be affected by different culture conditions and idiosyncrasies (Ardila, 2003). Neuropsychology has become more and more aware of the cultural dimension in behavior and cognition.

Furthermore, cognitive testing itself is a cultural concept and was developed within a specific cultural context: Western societies (Puente and Agranovich, 2003). The attempt to measure cognitive abilities represents one of the major endeavors in twentieth-century psychology. A tremendous amount of research has been directed to understanding the organization of intellectual activity and to discuss the procedures appropriate to its measurement. As known, the history begins in France at the turn of the century. In 1904 the Ministry of Education in France commissioned Alfred Binet and Théophile Simon to develop a practical procedure to distinguish between mentally retarded and normal children at school. To fulfill this purpose, they developed kind of developmental scale describing the types of abilities that were normally expected at different ages (Binet, 1905, 1908). The concept of "mental age" was introduced to refer to the level of development expected at each age. The Binet-Simon tests were rapidly adopted in England, United States, and other Western countries. In the United States Terman (1916) adapted and standardized the scales presented by Binet and further developed the concept of IQ.

As a matter of fact, neuropsychological testing uses two different sources in assessing intellectual abilities: psychometric and neurological tradition. Both have been developed within the Western cultures. This does not mean, however, that every Western culture individual is equally familiar with neurological and psychometric testing procedures. Psychometric testing procedures have particularly flourished in some specific countries. It is understandable that some cultures and individuals do not have many good models or roles for the undertaking of one person directly examining the intellectual abilities of another. The idea that the examiner is able to determine the characteristics of cognitive abilities using some specific testing procedures may not be familiar to many people worldwide. It may seem strange to some examinees to have the examiner asking questions to which the examiner obviously knows the answer (Nell, 2000).

#### HOW CULTURE AFFECTS COGNITIVE TEST PERFORMANCE

Luria (1966, 1973) and Vygotsky (1934/1978) analyzed the interaction between biological and cultural factors in the development of human cognition. The main purpose of Luria's expedition to Uzbekistan during the 1930s (Luria, 1931, 1933) was to investigate the influence of culture, and particularly, its most important institution, education, on the development of higher mental functions. According to Luria (1973), mental functions are ". . . *social in origin and complex and hierarchical in their structure and they all are based on a complex system of methods and means . . .*" (p. 30). An intrinsic factor in systemic organization of higher mental functions is the engagement of external artifacts (objects, symbols, signs), which have an independent history of development within culture. It is this principle of construction of functional systems of the human brain that Vygotsky (1934/1978) called the principle of *extracortical organization of complex mental functions*, implying that all types of human cognitive processes are always formed with the support of cultural elements.

Greenfield (1997), in a magisterial paper published in the journal *American Psychologist*, pointed out that there are three different reasons to account for why ability assessments do not cross cultures: (1) Values and meanings, (2) modes of knowing, (3) and conventions of communication.

*Values and meanings* refer to a lack of general agreement on the value or merit of particular responses to particular questions. For example, some people may consider that in the Raven's Progressive Matrices test it is a better

response to focus on following an aesthetic principle (i.e., the figure that looks better in that position) rather than the one sequenced according to a conceptual principle (i.e., the figure that continues the sequence; Nell, 2000). Heath (1989) found that many African American children do not believe that authority figures (parents, teachers, test designers, etc.) reward obvious answers, but rather that they do reward creative or expansive answers. If this is true, then they may prefer to select no obvious answers. Furthermore, the same items do not necessarily have the same meaning in different cultures, regardless of how appropriate and accurate the translation is. An item referring to the protection of animals may have a rather different meaning in Europe than in a hunting society.

*Knowing* may be a collective endeavor, not an individual task. Many members of collective societies are distressed by testing situations that require individual responses without the participation of the social group; usual activities, such as farming, building houses, etc., are carried out collectively. If most activities are carried out in a collective way, why should answering a test be the exception? Many cultures, on the other hand, do not make a distinction between the process of knowing and the object of knowing. In consequence, questions such as “why do *you* think?,” or “Why do *you* consider?” may be incomprehensible. The point is not what *I* think or *I* consider; the point is how *it is*. The personal interpretation is not the point; “*How do you consider that this sequence should be continued?*” may be a question that does not make too much sense. The real question is “*How does this sequence continue?*” and obviously others’ participation may be required to find out the correct answer.

*Conventions of communication* are highly culture-dependent. Test questions assume that a questioner who already has a given piece of information can sensibly ask a listener for the same information. To ask or to answer questions can be highly variable among cultures. American children, for example, learn that they should not talk to strangers, but they also learn that they should answer questions to “the doctor,” regardless of the doctor being a stranger. Furthermore, relevant information is not always the same in every culture. Many types of questions can be difficult to understand. To copy nonsense figures (e.g., Rey-Osterrieth Complex Figure) can be a cause for suspicion for many people. Heath (1989) proposed a distinction between societies in which children are thought to “grow up” and those in which children are “raised” or “brought up.” She noted that parents who believe that children must be “raised” engage in a distinct set of verbalizations with their children involving highly specific verbal communication about events, requests for children to recount step-by-step features of their own actions, and so forth.

In contrast, parents who believe that children “grow up” tend to make fewer attempts at dialogue with their young child, and are less likely to prompt their child to recount events to practice verbal communication.

Finally, in many societies it can be frankly inappropriate to question a stranger in an impersonal manner. In Latin societies, for example, it is expected that before testing, some interpersonal relationship will be established between the examiner and the examinee (Dingfelder, 2005). Talking and interchanging ideas for a while before beginning testing can be a prerequisite for a successful testing. Without this previous personal contact, testing can be aversive and culturally disconcerting.

### CULTURAL VALUES IN PSYCHOMETRIC COGNITIVE TESTING

Culture dictates what is and what is not relevant and significant in a particular context or situation (Berry, 1979; Berry et al., 1992; Irvine and Berry, 1988). What is relevant and worth learning or doing for an Eskimo does not necessarily coincide with what is relevant and worth learning or doing for an inhabitant of the Amazonian jungle. A culture provides specific models for ways of thinking, acting and feeling, and culture variations in cognitive test scores are evident (Anastasi, 1988; Heath, 1989, 1997; Wong et al., 2002).

Current neuropsychological testing uses specific conditions and strategies that may be not only unfamiliar to many people, but may also violate some accepted cultural norms. As mentioned above, interpersonal relations can be interpreted according to three dimensions: affiliation, dominance and intimacy-formality (Triandis, 1978, 1994). Cultural variations in the characteristics of each one can be anticipated.

At least the following cultural values underlie psychometrically oriented cognitive testing:

#### One-to-One Relationship

It refers to a specific way to relate with other people (association dimension) (Triandis, 1978, 1994). There is an examiner and there is an examinee. Hence, it is a one-to-one relationship between two people that very likely never met before, are aliens, and will not meet ever again in the future. In many cultures, activities are carried out in a societal way. This style of behavior can be perceived as contradicting the usual cultural way of living (i.e., different people collaborate in diverse activities). This is particularly true in communities relying heavily in social collaboration for the different daily life activities.

In “individual-oriented” (versus “social-group”-oriented) societies, this condition may be easier to accept (Johnson-Powell et al., 1997). Heath (1983) suggested that each community has specific ways of socializing members and helping them function in the community. There are several features in social and linguistic environments which vary strikingly from one community to the other, including the boundaries of the physical and social communities in which communication is possible; and the limits and features of the situations in which talk occurs.

### Background Authority

It implies a subordinate relationship (dominance dimension; Triandis, 1978, 1994). Background or situational authority refers to the authority associated with a particular role (Berry et al., 1992). Thus, the bank clerk has the background authority to ask for our ID; the dentist has the background authority to request opening and closing our mouth (but not to ask for our ID); and the barber has the authority to place a razor on our neck (but not to ask for our ID or to ask for opening and closing the mouth!). In a standard testing situation, the examinee has to follow (obey) the instructions given by the examiner, and hence, the examiner is supposed to have a background or situational authority. It may be not so easy, however, to understand by whom and why this authority was conferred. Why should the examinee obey the examiner? This reluctance to obey may be especially evident if the examiner has certain personal characteristics; for example, age, gender, ethnicity, class or caste relative to the examinee.

### Best Performance

To do “one’s best” may be most significant in a culture highly valuing competition, but not in a less competitive society. Psychometrically oriented cognitive testing has flourished in highly competitive societies, often to the disadvantage of those who do not value or understand the process and outcome applications as is the case with current “high stakes testing” in American educational settings. The examinee will perform at their optimal level. Performance “*at best*” is only done in those endeavors that are perceived and regarded as extremely important and significant. It is assumed that the examinee has to perceive the testing as a most important and significant endeavor. It may not be clear why it is so important and relevant to repeat a series of nonsense digits or to draw an absurd figure. Why can it be so important to do well in a memory test recalling every detail of the silly story of a truck driver who had an accident? In a certain sense,

requesting “best performance” in testing supposes that the examinee knows the theoretical foundation of psychometric testing. Quite frequently, obviously this is not the case.

### Isolated Environment

It also refers to a specific way to relate with other people (association dimension; Triandis, 1978, 1994). Testing is often done in an isolated room. Doors are often closed and even locked. Usually, no one else is allowed to be present, and in this regard it is a private and intimate situation. Private appointments with aliens may be quite inappropriate in many cultures. The examinee has to understand and accept this type of unusual social relationship.

### Special Type of Communication

It refers to the intimacy-formality dimension in interpersonal behavior (Triandis, 1978, 1994). Examiner and examinee do not maintain a normal everyday life conversation or social rapport. Examiner uses stereotyped utterances in a rather formal language. Examinees are not allowed to talk about themselves in an informal way. This is a type of formal communication relationship that can be different from any previous type of relationship in the participant’s past experience. Heath (1983) pointed out that the different ways children learned to use language were dependent on the ways in which members of each community structured their families, defined the roles that community members could assume, and played out their concepts of childhood that guided child socialization. She found that for children to get along with people and to accomplish social goals, they need to learn their community’s ways of language use, and they also acquire those ways of using language through experiences in various community activities and interactions.

### Speed

Time is understood differently across different cultures (Adam, 1990; Hughes and Trautmann, 1995). Some anthropological studies have approached time perception in different cultural contexts (Adam, 1990; Munn, 1992; Hughes and Trautmann, 1995). Time has frequently been interpreted as a social and cultural construct rather than a natural phenomenon (Goody, 1991). The main elements of time occur in all human societies, yet with different emphases: sequence and duration, cyclical and linear patterns, and systems of time reckoning. Perception of time,

its conceptualization and the representation of concepts across cultures are, however, culture-dependent, reflecting specific cultural experience (Lebedko, 2001). Speed supposes a particular type of time orientation (Kluckhohn and Strodtbeck, 1961). For many cultural groups speed tests are frankly inappropriate. Speed and quality may be contradictory, and good products are the results of a slow and careful process. Significant differences in attitudes to timed procedures are found across different cultures (Puenta and Agranovich, 2003; Perez-Arce and Puenta, 1996). For instance, American children are used to be tested since elementary school using timed tests, and in general, American school reinforces the value that faster the performance, the better the result (Nell, 2000).

### Internal or Subjective Issues

It refers to the Intimacy-Formality dimension of interpersonal behavior (Triandis, 1978, 1994). What does “privacy” mean, and hence, what does it mean to disrespect one’s privacy, is a question that has to be considered within the culture framework. Dingfelder (2005) suggests that when dealing with Latin clients “*Therapists might consider sharing some minor details of their lives with these clients, to make the clients feel more comfortable and welcome*” (p. 59). This type of intimacy is considered to be culturally appropriate. But asking the patient “*Are you feeling depressed?*” may be regarded as an inappropriate and invasive question. Questions about cognitive issues (e.g., *How is your memory?*) may be questions about internal subjective representations, the most personal private sphere in some cultures.

### Use of Specific Testing Elements and Testing Strategies

Physical elements (figure, blocks, pictures, etc.) are culture-dependent elements (Geertz, 2000; Harris, 1983; Hofstede, 1997). In a standard neuropsychological evaluation, the examiner uses figures, blocks, pictures, etc., as part of the test materials. These physical elements may be unfamiliar to the client, or at least, not equally familiar for clients with different cultural backgrounds.

In summary, the rationale and the procedures used in cognitive testing rely on a whole array of cultural values cannot be regarded as universal values. “*When examiners use tests developed in their own culture to test members of a different culture, examinees often do not share the presumptions implicitly assumed by the test*” (Greenfield, 1997, p. 1115). It is not surprising that the members of

the culture where the test was developed usually obtain the highest scores.

Many of the presumptions implicitly assumed by current cognitive tests that were mentioned above (e.g., “best performance,” “background authority,” etc) simply mean that the testee has to have certain background knowledge about psychometric testing instruments. To some extent, s/he has to share the values of the culture where these instruments were developed.

### DISTANCE BETWEEN THE EXAMINER AND THE EXAMINEE

The demographic characteristics of the examiner may play a crucial role in neuropsychological assessment. Variables such as the examiner’s age, gender, and ethnicity may be easily overlooked.

In many societies worldwide age is associated with social status. Elders are supposed to be “wiser” and to have significant background knowledge. This cultural assumption has a simple consequence: older examiners deserve confidence; younger ones, not as much or to the same extent. It is easier to accept some authority and follow instructions given by older examiners; there may be more suspicion of younger examiners. On the other hand, in a society emphasizing progress and technology,—such as the American society—to be older does not necessarily mean to be wiser. The opposite pattern can even be true: younger members may have a better knowledge of science and technological issues. Age differences between the tester and the testee do not seem to be a significant barrier for Americans. But, it may be in many worldwide cultures.

The impact of gender in neuropsychological testing can be twofold: (1) the gender of the examiner; (2) the gender match or mismatch between the examinee and examiner. “Doctors” may more frequently be males in some cultures but there are also cultures in which “doctors” are more frequently females. For instance, the ratio of “men/women” for medical doctors in the United States favors males (positive) but in Russia it favors females. By the same token, the ratio “men/woman” psychologists is variable across different countries. It may be assumed that when attending cognitive testing, the examinee might have certain expectations about the gender of the examiner. It is not yet clear if and how these expectations may affect the testing situation.

Gender matching or mismatching between the examiner and the examinee has not been frequently analyzed. We simply do not know if it has any significance or for whom, as findings in certain areas of psychology (e.g.,

family therapy, sex therapy, etc.) indicate, it may be significant. Politeness (and willing to collaborate) may be higher when there is a gender mismatch between examiner and examinee. For certain specific populations (e.g., people with specific sex attitudes) gender match or mismatch potentially may have some impact.

Ethnic matching may be a powerful variable in cognitive testing. By definition, people from other cultures are aliens (exogroup). People sharing the same culture are endogroup. Exogroup people raise suspicions to endogroup people; endogroup people deserve confidence (Harris, 1983). Communication flows easily with someone else who shares in the same culture values and attitudes. Communication appears artificial and distancing with someone belonging to a different cultural group. It can be anticipated that the cultural mismatch between the examinee and the examiner may result in a decreased cognitive test performance. Different studies support this assumption (e.g., Miller and Rotatori, 1990; Mishra, 1980; Torrell and Torrell, 1983). By the same token, “acculturation” (usually understood in United States as assimilation of the American culture values) has been observed to result in increased scores in cognitive testing (e.g., Manly et al., 1998).

### THE FUNCTION OF INSTRUCTIONS IN COGNITIVE TESTS

Regardless of the long tradition in psychometric testing, literature gives the impression that in cognitive testing there is a lack of agreement about what the function of test instructions and what impact they have on the examinee. Or rather, there are implicit cultural values in the interpretation of test instructions.

Test instructions can be interpreted in two different ways:

1. A standard set of statements that have to be presented to the examinee every time in exactly the same way. The examiner must tell the instructions verbatim as they are written; instructions may or may not be repeated according to the test manual. Otherwise, the testing would not be standard.
2. The function of the instructions is to understand what the test is about; what it is that the examinee must do. Hence, test instructions are just a guideline for the examiner. Instructions can be worded and adapted according to the specific situation. Further, you can add emphasis, pauses, specific prosody, etc.

In my clinical experience I have found that most neuropsychologists in the United States interpret instruc-

tions in the first way, while most Latin American (and European?) neuropsychologists interpret test instructions in the second way. This is an issue that is rarely overtly analyzed in testing. If the first interpretation is correct, obviously there is a language problem. Language usage differs according to cultural (and subcultural) background and strongly correlates with the subject’s educational level. Sometimes, test instructions (and in general, the language used in testing) are given in a formal language—not in an everyday normal language, which may be very difficult for individuals with limited education to understand. Formal language represents a sort of academic language, most often found in a written form that many people neither use nor completely understand. If the second interpretation is correct (“instructions are just a guideline”), there is an issue with regard to the examiner’s verbal ability to communicate the test instructions in a clear manner. The examiner also has a cultural background, biasing his/her understanding and interpretation of the testing situation and instructions. The interpretation of the instructions may be biased depending on the examiner’s cultural background. As an example, the WAIS-III (Wechsler, 1997) is frequently regarded as the most reliable elaborated cognitive test. The test’s Administration and Scoring Manual (p. 63) states

Before beginning the first subtest, introduce the WAIS-III by saying ‘I will be asking you to do a number of things . . .

The following paragraph continues this instruction with

Examinees will differ in the amount of explanation that they need before testing begins. Use your judgment to decide if elaboration is needed . . .

Up to this point, it seems that the correct interpretation of the test instructions in the WAIS-III is the second one (i.e., the function of the instructions is to understand what the test is about and what the examinee must do).

Nonetheless, when the description of the different subtests is presented, no indication to “*using judgment to decide if elaboration is needed*” is readily found. Does it mean that the correct interpretation of instructions is, beginning at this point, the first one? (i.e., a standard set of statements that has to be presented to the examinee all the times in exactly the same way)?

For instance, in describing the first subtest of the WAIS-III (Picture Completion), the Manual (p. 64) states “*Before presenting any items, say ‘I am going to show you . . .’*” No indication to “*using judgment to decide if elaboration is needed*” is mentioned. It is not even mentioned if the statements made by the examiner can be



or not repeated. Or, what to do if the examinee asks for additional explanation or makes some comments. Does the guideline presented at the beginning hold or not (“*Examinees will differ in the amount of explanation that they need before testing begins. Use your judgment to decide if elaboration is needed. . .*”)? It is not clear. Obviously, there are some implicit assumptions. My point is that there is an ambiguity. It is usually assumed that the Administration and Scoring Manual is perfectly understandable for any psychologist. As it is written, however, interpretation may depend on the examiner’s cultural background. There are implicit cultural values in understanding the test instructions.

Does this difference in interpretation of the test instructions impact test performance? We cannot be sure, but it may be conjectured that it will impact the test performance in two different ways: (1) additional instructions may further help to understand the test; examinees not receiving additional instructions and explanations may be penalized. (2) A rigid and stereotyped language may be acceptable for a person sufficiently familiar with psychometric testing. But it can be distancing, artificial, and even distasteful for a person not sufficiently familiar with psychometric testing. Ultimately, the function of language in the everyday life is to talk. This is a basic understanding of language that most people have.

### WHAT COULD BE DONE?

There is not a simple answer to this question. Several potential answers could be proposed:

1. Psychometric cognitive testing is only appropriate in those societies with a solid psychometric tradition, basically, Western societies. In other societies, behavioral scales and more qualitative approaches should be preferred.
2. Culturally most appropriate strategies should be selected in every society. Interpretations, values, and behaviors present variations according to the cultural context. These interpretations, values and behaviors should be integrated in testing, and testing performed considering cultural idiosyncrasies. For instance, it has been pointed out that the following cultural values can affect a psychologist–client relationship in Hispanic patients: *familismo* (family may have a significant role in Latin cultures), *simpatía* (Latino cultures tend to place greater value on interpersonal harmony), *respeto* (Latino cultures tend to give greater respect to individuals in position of authority), *personalismo* (Latinos adhere to the value

of close interpersonal relationships; Dingfelder, 2005). These values are obvious if the examiner belongs to the same culture that the examinee. But, they may seem strange when there is a mismatch in culture. The consequence is obviously that the examiner and examinee should share the same cultural background. Or the examiner should be familiar enough with the cultural background of the examinee.

3. Pinpointing cultural bias in neuropsychological tests. Selected statistical procedures can be used in detecting cultural bias. Some attempts in this direction are currently available (e.g. Reynolds, 2000).
4. Re-developing cognitive tests according to the cultural conditions. Simply speaking, making tests more culturally and ecologically relevant. For instance, Da Silva et al. (2004) investigated semantic verbal fluency tasks in illiterates and literate participants. The performance on a food criterion (supermarket fluency task), considered more ecologically relevant for the two literacy groups, and an animal criterion (animal fluency task) were compared. The quantitative analysis indicated that the two literacy groups performed equally well on the supermarket fluency task. The overall results suggested that there is not a substantial difference between literate and illiterate subjects related to the fundamental workings of semantic memory. However, there is indication that the content of semantic memory reflects differences in shared cultural background—in other words, formal education—as indicated by the significant interaction between level of literacy and semantic criterion.
5. Obtaining appropriate norms for different cultural groups. A significant effort during the last years has been observed in this direction. Just as an example, different normative data are currently available for verbal fluency tests using the category ANIMALS (for a review, see Lezak, 2004; Mitrushina et al., 1999; Spreen and Strauss, 1998). Cross-cultural studies have found validity for verbal fluency tests in speakers of languages other than English; for example, Spanish (Ardila and Rosselli, 1994), Finnish (Klenberg et al., 2001), Hebrew (Axelrod et al., 2001), Greek (Kosmidis et al., 2004), and Chinese (Chan and Poon, 1999). Results are also available in Amerindian groups (Aruaco, Pame, and Maya Indians; Ardila and Moreno, 2001; Ostrosky-Solis et al., 2004a, 2004b).

6. New test interpretation strategies—in addition to/instead of, the traditional psychometric strategies, could be developed. For example, Ardila (A cross-linguistic naming test, unpublished data) suggested to use the word frequency as a scoring criterion in naming tests.
7. Some tests are strongly culture-dependent (e.g., interpreting a proverb), whereas other tests may be more “cross-cultural” (e.g., telling animal names). Hence, some tests can be regarded as “more universal” (e.g., mimicking everyday life movements in testing for apraxia) whereas others can be useful just in some specific cultural contexts (e.g., spelling words aloud—that is frequent in languages with irregular writing systems, but unusual in other languages). This simply means the test should be selected considering the specific cultural idiosyncrasies.

There is not a perfect solution, but all the points mentioned above may contribute to reach a better and fairer cognitive testing in different cultural contexts.

## CONCLUSION

Cognitive testing represents a social situation that—as any social situation, it is one governed by implicit cultural rules. The relationship between the examiner and examinee, the type of environment, the style of communication that is maintained, and the activities carried out in a standard testing situation are embedded in a cultural context. Psychometric tests have been developed in some specific cultures, and are strongly biased by the modal culture values observed in these cultures. Nonetheless, these specific values and behavioral styles do not necessarily represent universal values and behaviors. Understanding these cultural assumptions, and developing assessment procedures correctly tailored to other cultures, represents a major endeavor for twenty-first century neuropsychology.

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