The Art of Clinical Neuropsychology

Nathaniel William Nelson
University of Minnesota

Marcel O. Pontón
Harbor-UCLA Medical Center

Good science is good art. It is elegant, simple, replicable, and sustained for the sake of culture. Good science challenges the observer to view the world in new and transformative ways and serves in turn to enrich society. Karl Popper (1982) suggested that “science may be described as the art of systematic over-simplification—the art of discerning what we may with advantage omit” (p. 44). When science successfully describes the universe in a parsimonious yet cogent manner, it becomes an artful endeavor.

Clinical neuropsychology is grounded in a unique form of “systematic oversimplification”; with reliable and valid measures, it describes individual human behavior and compares it to culturally relevant normative groups. Describing the complexities of human behavior in a concise fashion is itself a daunting task; all the more so in our ever-increasingly diverse society. To the extent that neuropsychologists succeed in describing brain–behavior relationships amidst the world’s present cultural diversity, they will succeed as both scientists and as artists.

The present chapter discusses a number of topics pertinent to the practice of clinical neuropsychology in diverse cultural settings. First, a brief discussion of the epistemological assumptions that underlie the practice of clinical neuropsychology is made, with special attention given to two
epistemological approaches (idiographic and nomothetic) that have prevailed over the last century. Second, we suggest that clinicians should have an awareness of the general issues that relate to test performances in all cultures. Third, we discuss the limitations of traditional measures in culturally diverse settings. Finally, through a brief review of the recent cross-cultural literature, we suggest that neuropsychologists’ cultural sensitivity will be maintained only when measures and norms are made appropriate to the individual patient’s cultural background. We conclude by suggesting that the progress of neuropsychology in the years to come will be highly dependent on supervisory relationships, and the need to expose clinicians-in-training to a variety of assessment techniques that are not limited to a single approach to the neuropsychological evaluation.

**NEUROPSYCHOLOGY AS AN EPISTEMIC TASK**

Neuropsychology, as practiced today, represents an epistemic task. Neuropsychologists seek to know and understand basic “truths” about cognitive functioning in individuals, and the conclusions we reach from our assessments provide the basis for diagnostic and treatment recommendations. Because we come to “know” the nature of a patient’s condition as a function of obtained test results, neuropsychology may be regarded as an epistemic discipline.

Neuropsychology is also an epistemic discipline because it creates and warrants knowledge through research. It is a field requiring expertise and specialization. In the words of Lezak (1995), “Clinical Neuropsychology is an applied science concerned with the behavioral expression of brain dysfunction” (p. 7). There are specific principles that inform and guide the field’s knowledge system and procedures. It is entrenched in knowledge institutions for its validation as a science, and it has a sanctioned machinery of knowledge (e.g., use of technology and tools, dissemination channels, alliance with capital sources, codes of practice) that furthers its epistemic base (Cetina, 1999). The dynamic relationship between the different branches of neuroscience and neuropsychology purport to contribute to society through the integration of knowledge into better diagnostic and treatment benefits to patients.

However, this knowledge is predicated on a number of assumptions and methodologies (chief among which is the use of norm-referenced tests) that may differ in relevance across cultures. The question then becomes: What is true about cognition across cultures? Seasoned clinicians will readily admit that they are limited by their training, their methodology, their school of thought (i.e., philosophical biases), and by the economics of service delivery in coming to conclusions that reflect what they know about patients. Patients, on the other hand, pose a variety of limitations to our task. Well-doc-
umented variables such as age and education affect test performance, but so do less understood variables such as cultural background, bilingualism, language mastery, acquiescence, motivation, and behavioral scripts for ethnic relations (Ponton & Ardila, 1999). The current *sitz em lieben*, which involves large migration patterns from East to West and South to North, makes the possibility of our clinical interaction with culturally different patients highly likely and at times equivocal. We don’t need to travel far away to encounter clinical situations with groups from different ethnic and language backgrounds than the majority cultures of where we live. The world is next door.

To interact clinically across cultures with patients whose backgrounds may be dissimilar from the groups on which many tests are normed, poses an epistemological challenge to our task: What is the quality of the “knowledge” I have derived through these tests? Such challenge places a direct burden on our ethical mandates to do well for our clients and faces us with the imperative of obtaining more appropriate (ecologically valid, culturally relevant, functionally based) data. The “how” of this approach, however, may be farther away from the marketing urge permeating our profession in the United States. That is to say, we may not be able to package it, but we need to buy the notion (by virtue of its intellectual integrity) that modified, more culturally appropriate approaches are necessary for neuropsychology to remain relevant in a cross-cultural world where North American tests and norms may not apply. The prospect of such a transition is not a new one, and as is reviewed later in this chapter, recent studies have attempted to observe patients’ performances through use of modified measures and norms. We encourage clinicians to recognize that our test results invariably dictate how we “know” our patients, and to appreciate that this represents only one way of understanding how our patients think, feel, and behave.

Throughout the history of psychology, a tension has existed between two epistemological sources: the nomothetic (law-based) and the idiographic (individual-based; Franck, 1982). As regards the nomothetic approach, psychology has emphasized the importance of what is shown to be “lawful” through theoretical predictions and their respective confirmatory observations, with replicability being the main objective (Gorsuch, 2002). Those theories that demonstrate especially consistent findings over time and testing become cornerstones on which future exploratory studies may build. Levav, Mirsky, French, and Bartko (1998) noted that “the quest for universal similarities of behavioral manifestations or performance continues to be a major theme in cross-cultural psychology” (p. 658). Clearly, this appeal to “universal similarities” is a notion representative of a nomothetic approach, and the theory behind this approach is that the construct of interest can be measured in a replicable and universal way. In neuropsychology, predominant emphasis on the quantitative method is a *sine qua non*, and it allows neuropsychologists to re-
tain “objective” approaches to understanding human behavior. As Ivnik et al. (2001) stated, “Neuropsychological assessments are, by their nature quantitative. They move beyond potentially idiosyncratic judgments of patient features (symptoms) or crude estimates of important abilities, such as non-standardized clinical rating schemes” (p. 123).

Differently, idiographic emphases may include a description of the patient through behavioral observations or how the patient experienced the neuropsychological evaluation (e.g., was it tiring? what tests did the patient find especially difficult or easy?). Clinicians whose specialization in neuropsychology comes as a part of a more general training in clinical psychology develop psychotherapeutic skills that prove to be essential when interviewing a patient for the first time. Through self-directed questions (e.g., “what impression did the patient make on me”) during the clinical interview, many clinicians rely heavily on the impressions they receive even before testing begins. The clinician may become aware that a patient “feels” a bit “frontal.” As another example, the patient’s description of his or her social history may cause the examiner to wonder to what extent the patient’s Axis II characteristics might be the result of an underlying cognitive compromise. The patient’s history and observed behaviors are as pertinent as formal test scores. This is because the latter, quantitative descriptor, while a necessary and valuable way of understanding the patient, can never definitively account for the patient’s functioning or describe how the patient’s culture interacts with the patient’s presentation. Data derived from a quantitative approach and data taken on an idiographic, case-sensitive basis are essential if we are to understand the patient’s functioning both in terms of the individual culture, and how he or she compares to others with similar conditions of similar cultural backgrounds. To the extent that either of these approaches is minimized, an accurate and culture-sensitive assessment of the individual patient is compromised.

Historically, some have expressed concern that the field of psychology has emphasized the nomothetic approach to patients over and against the idiographic. Gordon Allport, for example, understood more than most the limitations of the nomothetic method. As Franck (1982, p. 1) said, “It was Allport’s oft-repeated complaint that psychology has given its attention only to universals, has neglected to study the individual, and has therefore been guilty of a serious failure in the fulfillment of its scientific task.” Furthermore, Allport (1961) recognized that every individual life is in some ways like every other life, is in some ways like some other lives, and is in some ways like no other life. A staunchly nomothetic approach to an understanding of human behavior will not account for those times when the individual patient is in some ways like no one else. In other words, the nomothetic approach may or may not be congruent with the individual patient’s unique experiences (Haynes, Kaholokula, & Nelson, 1999).
Some neuropsychologists have also expressed their concern that the field may have a limited ability to recognize individual differences in cognition. Ardila (1995, p. 143), for instance, stated that “we barely have dealt with individual differences in neuropsychological performance; and our understanding of cultural differences is, to be optimistic, very insufficient.” Although Ardila does not deny the notion of certain universals in basic human cognition, he argued that “… different cultural environments lead to the development of different patterns of abilities” (p. 145). Thus, individuals whose cultures vary to a great extent from traditional normative samples will not necessarily demonstrate the same sorts of behaviors on present standardized tests. What is needed is an “anthropological neuropsychology” that attempts to improve on our knowledge of culture in the assessment setting, especially as it relates to the individual patient.

An artful, culturally sensitive approach to clinical neuropsychology entails striking a balance between the nomothetic and idiographic perspectives, a notion that Franck (1982, p. 3) has previously described as an “idiographic-nomothetic symbiosis.” Or, as Allport (1960, p. 147) aptly stated: “Unless … idiographic (particular) knowledge is fused with nomothetic (universal) knowledge, we shall not achieve the aims of science….” We suggest that a fusion between the particular and the universal characteristics of human behavior represents the task with which neuropsychology as a culturally sensitive science should be concerned. Arriving at this fusion, at a minimum, will include: (1) an awareness of the general issues that relate to test performances across all cultures; (2) a recognition of how culture may influence cognition and related test performances; and (3) the appropriate modification of neuropsychological measures or norms when they do not adequately represent the cultural background(s) of the individual patient.

**Use of Neuropsychological Measures: General Considerations**

There are a number of issues that invariably influence the clinician’s interpretation of a patient’s test performance, regardless of his or her cultural background. These include, but are not limited to, construct validity, one’s conception of “normal” test performance, and basic underlying demographic variables.

Tests with questionable construct validity cannot be expected to be valid in diverse settings. Dodrill (1997, 1999) suggested that it is a “myth” that neuropsychologists “have a good knowledge of the constructs that our tests measure” (1997, p. 3). He found that neuropsychological measures drawn from within the same cognitive domains demonstrated only slightly greater correlational magnitudes than measures observed between differing cognitive domains, with similar findings observed in both control participants.
and clinical patients. These findings challenge the assumption that current neuropsychological measures adequately represent the constructs they purport to measure.

We are not suggesting that Dodrill’s (1997) findings are necessarily representative of how well current neuropsychological measures embody intended constructs. Indeed, Bell and Roper (1998) presented literature to suggest otherwise. We only wish to emphasize that an awareness of measures’ construct validity will lead to the improvement of test quality, and the minimization of harm to patients of all cultural backgrounds. As an example of how construct validity may relate to minimizing harm, consider the findings of Dulay et al. (2002). They examined the Family Pictures subtest of the Wechsler Memory Scale-III (WMS-III; Wechsler, 1997) in a sample of patients evaluated for epilepsy surgery. Although this subtest was originally designed as a contributor to the visual memory indices, the authors found the test to correlate highly with another measure that is typically understood to be verbal in nature (Logical Memory). In response to their findings, the authors concluded that Family Pictures may not be an appropriate predictor of visual memory ability. Neuropsychological measures such as these often play an important role in determining treatment of neurological conditions (e.g., epilepsy), and treatment of such conditions may involve very invasive procedures (e.g., temporal lobectomy). As such, the importance of construct validity becomes all the more essential to proper treatment of the individual patient, regardless of his or her cultural background.

Another general consideration relates to the clinician’s understanding of “normal” versus “abnormal” test performances. Neuropsychologists are sometimes confronted with the challenging task of deciding whether “impaired” scores represent the individual patient’s typical ability, or whether “normal” scores may represent relative impairments for the patient. Additionally, test performances that are not uniformly extreme (i.e., all within the “normal” or “severely impaired” ranges) may be especially difficult to interpret. Recognition of how healthy individuals commonly perform on neuropsychological measures will aid the clinician’s ability to interpret individual test performances.

For instance, Palmer, Boone, Lesser, and Wohl (1998) observed frequencies of “impaired” performances in 132 healthy older adults who did not exhibit evidence of neurological disorder. Through administration of a number of commonly used neuropsychological measures, they found that nearly three-quarters (73%) of the sample showed at least one score that was within the borderline range (< 1.3 SD), and more than one third (37%) of the sample showed at least one score in the impaired range (< 2.0 SD). More recently, Schretlen, Munro, Anthony, and Pearlson (2003) observed the extent of “intraindividual” variability that healthy adults exhibited across a number of neuropsychological measures. They observed differ-
ences between each participant’s highest and lowest scores to calculate a “maximum discrepancy” in each individual’s performance. They found that the majority (66%) of their 197 healthy adults showed discrepancies of three or more standard deviations between their highest and lowest scores. Studies such as these highlight the importance of recognizing that even healthy or “normal” individuals can exhibit substandard performances and great variability on neuropsychological measures. Foreknowledge of “normal” test performances in mainstream samples will aid the clinician’s ability to interpret individual patients’ performances within diverse settings.

Demographic variables (e.g., age, education, gender) are often related to individual test performances, and numerous studies have previously described the nature of these relationships (e.g., Ardila & Rosselli, 1989; Gontkovsky, Mold, & Beatty, 2002; Heaton, Grant, & Matthews, 1986; Reitan & Wolfson, 1995). Although it is necessary for clinicians to continue examining these commonly studied variables, consideration of other, less commonly reported variables that can influence test performances should also be examined. O’Bryant, O’jile, and McCaffrey (2004) reviewed literature from five of the most frequently read neuropsychology journals from the years 1995 to 2000. They found that whereas age, education, and gender are often included in studies, demographics such as race, ethnicity, level of acculturation, and primary language are reported infrequently, if at all. The authors argued that failing to report these demographics limits neuropsychologists’ ability to apply research to their everyday practices; “…how can one know if the findings of a study are applicable to his/her practice if they do not know if the sample utilized in the study resembled what they see everyday in practice?” (p. 231). In short, although the field of neuropsychology has documented the relationships between demographics and neuropsychological tests, research that considers other culturally specific demographics (e.g., ethnicity) remains to be conducted with satisfactory frequency.

Generally, the current literature attests to the merit of neuropsychological tests and their role in describing cognition, and test limitations may sometimes be independent of culture. Consideration of these limitations, as well as of how culture may influence cognition, is especially important when neuropsychological measures are used with culturally diverse patients. In addition to obtaining an awareness of the general issues that relate to test performance across cultures, clinicians should be aware of how the patient’s individual cultural background may influence cognition and related test performances.

Cognition and Culture

Numerous recent studies have explored the influence that culture may have over cognition (e.g., Benet-Martinez, Leu, Lee, & Morris, 2002; Norenzayan,
Smith, Kim, & Nisbett, 2002; Tavassoli, 2002). Benet-Martinez et al. (2002), for instance, found that attributional styles varied at different levels of perceived “bicultural identity integration” (BII). Chinese Americans with high levels of BII made more external attributions when presented with Chinese cultural primes (e.g., The Great Wall of China), and more internal attributions when exposed to American cultural primes (e.g., The White House). The reverse process was observed in Chinese American participants with low perceived BII, suggesting that one’s perception of individual identity may be related to how he or she interprets the environment. Norenzayan et al. (2002) found that European Americans tend to prefer formal or “rule-based” styles of cognitive reasoning, whereas Chinese and Korean participants tend to prefer intuitive or experience-based styles of reasoning.

Other recent studies have suggested that environmental factors such as reading acquisition, language characteristics, and literacy may play a role in cognition (e.g., Conant et al., 2003; Folia & Kosmidis, 2003; Gonzalez da Silva, Petersson, Faisca, Ingvar, & Reis, 2004; Hedden et al., 2002; Levinson, Kita, Haun, & Rasch, 2002; McBride-Chang & Kail, 2002). Regarding reading acquisition, McBride-Chang and Kail (2002) found that while reading development itself was similar in participants from Hong Kong and the United States, the strongest predictor of reading acquisition was “phonological awareness” (in contrast to other constructs such as visual processing) in both cultures. Hedden et al. (2002) addressed how language differences may relate to differences in working memory (visual and verbal) and processing speed (visual and verbal). They found relatively similar visual working memory and processing speed performances in Chinese and American participants, regardless of their ages. However, younger Chinese participants outperformed the American participants on a verbal working memory test. The authors suggested that this finding may have been related to “linguistic differences,” such as differences in the number of syllables used to represent digits, between the Chinese languages and English.

Regarding literacy and cognition, Gonzalez da Silva et al. (2004) found that although literate and illiterate groups performed comparably on a verbal fluency task involving naming of supermarket items, the illiterate group performed significantly worse on an animal naming task. Folia and Kosmidis (2003) observed verbal and visual list learning performances in a group of literate, semiliterate, and illiterate Greek women. The illiterate group performed significantly worse than the other two groups on most verbal learning indices, and showed worse performances in delayed visual free and cued recall. The authors suggested that the observed differences in the illiterate group may have been related to relatively less developed encoding abilities compared to the other two groups. However, differences between groups might also be related to the nature of the tasks themselves,
and the authors emphasized the importance of developing ecologically valid measures when assessing illiterate individuals.

The results of the latter two studies speak to the importance of ecological validity in neuropsychological assessment, and it can be assumed that variations in test performances may be associated with variation in cultural relevance of tests. In other words, individuals from various cultures may experience the testing relationship in dissimilar ways, and not all who take these tests necessarily agree on the tests’ relevance to their lives. Shepherd and Leathem (1999) observed the Maori population of New Zealand (which represents 12% of the total population in that region), a group who has previously shown especial difficulty in academic success. This cohort speaks English, and attends the same educational facilities as New Zealanders of European descent. However, the group’s children consistently performed more poorly on standard measures of cognition. In order to explore possible reasons why the group showed declined scores relative to the majority culture, the authors were interested in Maori patients who suffered traumatic brain injuries and their personal experiences during their assessments. The authors administered questionnaires that solicited information regarding patients’ experiences of the neuropsychological examination itself. Results showed that the “Maori were less satisfied … with the service than the non-Maori respondents, especially in the areas concerning current Maori cultural practices, physical surroundings, type of service, and quality of service” (Shepherd & Leathem, 1999, p. 84). Others “found the clinic difficult to travel to as well as uncomfortable and intimidating” (p. 84). The authors concluded that cultural expectation differences between ethnic minorities and majority group examiners can adversely affect the patients’ perceptions of the testing and their performance on tests. The authors recommended more effort be made to accommodate test-takers from minority groups by paying attention to “situational, procedural, and interpersonal variables,” and these efforts might yield more valid results.

As an example of a group for whom Western measures may be particularly inappropriate or irrelevant, consider the findings of Ardila and Moreno (2001) who observed neuropsychological performances in an indigenous South American tribe, the Aruaco Indian culture in Colombia. The authors found Western tests to have limited usefulness within the cohort. Three of the participants were unable to draw simple or complex designs, and these participants “had never used a pencil before, nor had they engaged in drawing or copying anything before” (p. 513). Furthermore, although the authors anticipated that nonverbal measures would be more appropriate relative to verbal measures, results suggested this was not the case; in fact, they noted, “nonverbal tests are not necessarily more appropriate for cross-cultural testing than verbal tests.” The authors conclude that “tests tapping abilities related to the everyday life (meaningful func-
tional movements used in the everyday life, naming of animals, etc.) seem to be valid for every human group” (p. 514).

How others, such as family members, perceive a patient’s cognitive impairment in daily living may also vary from culture to culture. For instance, in diagnosing dementia, Teng (2002) suggested that factors of language, education, ecological relevance of test items, and cultural attitudes be taken into account if neuropsychologists are to arrive at accurate descriptions of how impairments may relate to everyday living. The author noted that peoples from various ethnic or cultural groups may have different understandings of how cognition affects tasks related to everyday living. For instance, “for an older white couple who live by themselves in a modern city, many complex skills are needed in their daily life, such as cooking, driving or using public transportation, banking, shopping, using the telephone, and operating a variety of appliances. Impairment in any of these skills will draw attention and cause concern” (p. 578). In contrast, for an older couple living with extended family, perhaps others manage many of the chores. In this case, “mild or even moderate deteriorations in cognitive abilities or social behavior are either unnoticed, or simply accepted as signs of normal aging” (p. 578). Thus, an individual patient’s symptom-related behaviors can only be regarded in light of cultural perceptions of the same.

The studies reviewed here are only a small representation of the literature that has recently addressed relationships between culture and cognition. We refer the reader to the APA Web site (www.apa.org/science/testclearinghs.html) for a more comprehensive review. A common theme of the present cross-cultural literature is that the growth of neuropsychology is dependent on its ability to make psychometric alterations that adequately correspond to the ever-changing international community. As van de Vijver (2002) noted, “Western societies continue to be multicultural and the issue of valid assessment in culturally heterogeneous groups will only become more prominent” (p. 559). Numerous efforts are being made in this regard currently, with some studies yielding more success than others. In response to these changes, modifications to traditional measures and norms will need to be made, and qualitative measures will need to be administered when the former endeavor does not live up to expectations.

Modifying Current Neuropsychological Measures and Norms for Cross-Cultural Use

The fusion between individual and universal understandings of human behavior involves modifying traditional measures or developing new measures to match the cultural backgrounds of individual patients. As Lezak (2002, p. 343) stated, “It should now be common knowledge among psychologists that some test norms developed for the dominant culture so skew their application to persons from other cultures that we cannot use them to
evaluate ability levels in intact participants ...” To modify measures and norms, or to develop new ways of describing cognition, is both a scientific and an ethical responsibility. The APA Ethics Code (2002) Standard 9.06 (Interpreting Assessment Results) states that when psychologists make test interpretations, they should “take into account the purpose of the assessment as well as the various test factors, test-taking abilities, and other characteristics of the person being assessed, such as situational, personal, linguistic, and cultural differences [emphasis added], that might affect psychologists’ judgments or reduce the accuracy of their interpretations.” A respect for cultural differences in interpreting test results is a necessary step in avoiding harm and respecting the patient’s autonomy (Harris, 2002). Clearly, then, use of traditional norms that do not adequately match the cultural background(s) of an individual patient would represent an ethical violation, as cognitive function may be described as “normal” or “impaired” when indeed this may not the case. Thus, if neuropsychologists are to retain a respectful, scientific approach to describing individual behavior in cross-cultural settings, measures and norms will need to be modified appropriately, or qualitative approaches should be employed when the former methods do not suffice.

In light of the changing nature of Western cultures, appropriate modifications to measures and norms to meet these changes in the dominant culture are necessary. Among the most laudable examples of research that has appropriately modified norms to meet fluctuations in aging are the Mayo Older Americans Normative Studies (MOANS; Harris, Ivnik, & Smith, 2002; Ivnik et al., 1992a, b, c, d; Ivnik, 1996; Ivnik et al., 1997; Lucas et al., 1998; Malec et al., 1992; Schretlen & Ivnik, 1996; Smith et al., 1992). It is hoped that this line of research will continue in the future, with added modifications to normative data inclusive of the most recent revisions of standardized measures (e.g., WMS-III, 1997).

Further, the changing nature of Western culture’s ethnic base makes development of ethnically appropriate norms a necessity, even for those who practice solely within the United States (e.g., Friedman, M. A., Schinka, J. A., Mortimer, J. A., & Graves, A. B., 2002; Moering, Schinka, Mortimer, & Graves, 2004; Patton et al., 2003). For instance, Patton et al. (2003) found group differences between African American and Caucasian participants on 10 of the 12 subtests of the Repeatable Battery for the Assessment of Neuropsychological Status (RBANS; Randolph, 1998). The authors provided normative data for the African American participants for each subtest of this measure. Moering et al. (2004) recently provided normative data for elderly African Americans on the Stroop Color and Word Test (Golden, 1978), a step that had not previously been taken.

Outside of Western culture, a plethora of studies have recently provided support for the use of modified versions of Western neuropsychological
measures and norms in other cultural settings (e.g., Chan, Choi, Chiu, & Lam, 2003; Chan & Manly, 2002; Holding et al., 2004; Kojima et al., 2002; Kosmidis, Vlahou, Panagiotaki, & Kiosseoglou, 2004; Lee et al., 2002, 2004; Lee, Yuen, & Chan, 2002). Lee et al. (2002) translated the original Consortium to Establish a Registry for Alzheimer’s Disease (CERAD) battery from English to Korean (CERAD-K), and Lee et al. (2004) provided norms for the CERAD-K. Chan, Lee, Fong, Lee, and Wong (2002) demonstrated the cross-cultural validity of a Chinese version of the Cognistat (Chan et al., 1999) in a sample of Chinese patients with stroke. Chan and Manly (2002) demonstrated the usefulness of Cantonese versions of the Dysexecutive Questionnaire (DEX; Wilson, Alderman, Burgess, Emsley, & Evans, 1996), the Cognitive Failures Questionnaire (CFQ; Broadbent, Cooper, FitzGerald, & Parkes, 1982), The Modified Six Elements Test (Wilson et al., 1996), and The Tower of Hanoi (Humes, Welsh, Retzlaff, & Cookson, 1997) in a group of TBI patients from Hong Kong. Results from this study suggested that executive symptoms in the Chinese sample did not differ markedly from those that had been obtained from a like sample in the United Kingdom. Kojima et al. (2002) found a Japanese version of the Beck Depression Inventory-II (BDI-II; Beck, Steer, & Brown, 1996) to be sensitive to symptoms of depression in a large Japanese sample. Chan et al. (2003) found a Chinese version of the Mattis Dementia Rating Scale (DRS; Mattis, 1988) to effectively discriminate Chinese elderly patients with Alzheimer’s disease from normal controls. Lee et al. (2002) provided normative data across a number of commonly used neuropsychological measures in a Hong Kong Chinese sample. These studies provide only a sample of the many new cross-cultural studies that are coming to the fore, and judging from the results of most of these studies, it appears that use of traditional measures cross culturally is oftentimes warranted.

Despite recent progress, Western measures are sometimes limited for use in non-Western cultures (e.g., Almagor & Koren, 2001; Azocar, Arean, Miranda, & Munoz, 2001; Dugbartey, Townes, & Mahurin, 2000). Dugbartey et al. (2000) were interested in observing the Color Trails Test (D’Elia, Satz, Uchiyama, & White, 1996) and Trail Making Test in a sample of 64 bilingual Turkish university students. The authors were interested in identifying the extent to which the Color Trails is “culture-fair,” a claim that has previously been suggested. The authors found that participants’ performances on Color Trails 1 and Trails A were virtually the same, indicating that these measures represent functionally equivalent tasks. In contrast, Color Trails 2 and Trails B (and their interference indices) showed significant differences. The authors concluded that the Color Trails 2 task, “may not necessarily be the ‘culture reduced’ equivalent” of Trails B (as suggested by D’Elia et al., 1996), “but that they measure different underlying cognitive skills” (Dugbartey et al., p. 428). The authors further suggested that
simply substituting the obviously verbally mediated alphabetical elements with colors may not necessarily be sufficient to ensure the universality of a test” (p. 429).

In times when normative data are either unavailable or inappropriate for particular cultural groups, neuropsychologists may need to identify other qualitative methods of describing individual behavior. As one example, Christensen’s (1975) Luria Neuropsychological Investigation (LNI) has shown diagnostic merit in the past, and may be a viable option when quantitative measures are unavailable. Christensen and Caetano (1999) provided a number of case studies that elucidate the method’s effectiveness with individual patients. They suggested that the method is particularly useful in rehabilitation settings. In response to the criticism that the LNI lack normative data, the authors argued that its qualitative approach is the method’s strength. Further, the qualitative method is “no less scientific than the prevalent psychometric tradition; it just follows traditions evolved in neurology and medicine more closely than traditions evolved in experimental psychology” (Christensen & Caetano, 1999, p. 76). Lurian methods still afford a place in describing brain–behavior relationships when quantitative approaches are not readily available. Luria continues to be “honored as a founder of neuropsychology” (Cole, 2002, p. 7), and a revival of qualitative methods (Lurian or otherwise) seems in order amidst the current cultural landscape.

IN CLOSING

We argue that the task of cultural neuropsychology involves striking a balance between individual and universal understandings of human cognition and behavior. This fusion will be attained most efficiently when neuropsychologists educate themselves on the limitations of current measures and norms, and remain flexible in describing cognition through the use of alternative measures and norms when necessary. A scientific, artful approach to patients’ behavior should contextualize the behavior in light of his or her culture. Alasdair MacIntyre stated that, “It is only when theories are located in history, when we view the demands for justification in highly particular contexts of a historical kind, that we are freed from either dogmatism or capitulation to skepticism” (MacIntyre, 1989, p. 157). Neuropsychologists can avoid “dogmatism” by remaining open to new approaches to the patient’s immediate cultural context. We can avoid “capitulation” by acknowledging the remarkable contributions our tradition has yielded and continue to access those practices that have proved to be useful in the past. Achieving this freedom involves the successful integration of traditional approaches with newly developing, culturally relevant approaches to neuropsychological assessment.
The future of clinical neuropsychology depends significantly on collaborative relationships. Among the “myths” proposed by Dodrill (1997) was the assumption that “relationships among our neuropsychological colleagues are not sufficiently important that they require our attention” (p. 15). In contrast to this myth, he stated that relationships between professionals “are of the greatest importance, and I urge us all to spend the effort that is needed to advance our profession …” (p. 16). His advice cannot be ignored. None are as critical as training relationships. Behind every great neuropsychologist there has been an equally important supervisor. Indeed, how would anyone become a successful clinician without the guidance of an experienced mentor?

In his essay, *The Essential Tension*, Thomas Kuhn (1977) described the importance of both convergent and divergent thinking within a scientific field. The tendency for educators in the sciences is to emphasize what is convergent, often at the expense of those divergent thinkers who might be inclined to discover new and revolutionary ideas and practices within their respective fields. Students, in Kuhn’s words, need to be provided with “an arsenal of techniques for approaching these future problems; and they must learn to judge the relevance of these techniques and to evaluate the possibly partial solutions which they can provide” (p. 229). Culturally diverse students and young faculty will grapple with a vastly different world from that of their predecessors. This new world requires relevant answers to the age-old question of how brain–behavior relationships are accurately assessed.

As neuropsychologists, it is our responsibility to give meaning to Luria’s desire for a “psychology that [is] relevant, that would give some substance to our discussions about building a new life” for the patient (Luria, 1979, p. 29). To do so will require an eclectic approach that is good science as much as it is good art.

**REFERENCES**


