

Chapter 9

Neuropsychological Test Selection with Clients Who Are Asian

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Abstract This chapter discusses the various issues that need to be considered when selecting measures to be used in the neuropsychological assessment of Asian Americans. The standards in the field as related to cultural considerations and testing are highlighted. The major issue in considering test selection for this group, is the heterogeneity of what constitutes ‘Asian American’ and the differing languages and cultures of the Asian population as a whole. The second major issue in test selection is that the normative samples for tests, in Asian languages or in English, are not specific to Asian Americans. As a result of these concerns, issues of language, culture, and acculturation are then highlighted. Some examples of measures that can be used to assess language proficiency are provided. In some cases, where English is not proficient, it may be appropriate to use nonverbal measures or interpreters. The potential constraints and concerns with these options are discussed. Some measures that can be used, depending on the first language of the client, that may be part of a neuropsychological battery, are also identified. The need for careful consideration of language proficiency and level of acculturation, regardless of whether the norms reflect English speakers or Asian-language speakers, is highlighted.

9.1 Test Selection Issues for Neuropsychological Assessment

The underlying rationale behind neuropsychological assessment is the need to evaluate various behavioral domains in order to make inferences about the overall integrity of the corresponding functional systems of the brain (Luria, 1980). The domains

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Table 9.1 Specific standards^a in relation to testing of individuals of diverse linguistic backgrounds

Standard	Practical application
Standard 9.1	Test selection for use with Asian Americans should take into consider potential threats to reliability and validity based on best available information; test selection should be designed to reduce these threats
Standard 9.2	When research indicates that scores are not equivalent across groups, there is a need to provide evidence of validity for each linguistic subgroup to provide
Standard 9.3	For the Asian American who is proficient in two or more languages, it is imperative that the relative language proficiency be established; test selection should then be in accordance with the individual's most proficient language
Standard 9.4	An linguistic modifications, as well as the rational for the modifications should be identified
Standard 9.5	If there is no credible evidence of score comparability across regular and modified administrations, the scores obtained should be flagged
Standard 9.6	When test developers recommend that a test be used with linguistically diverse clients, information should be made available for appropriate use and interpretation of that test
Standard 9.7	For translated versions of a test, methods used for establishing the adequacy of the translation should be provided; empirical evidence should be provided for score reliability and validity to support the inferences for which the test was selected
Standard 9.8	For employment and credential tests, the proficiency level of the test should not exceed the language proficiency needed in the relevant occupation or profession
Standard 9.9	Test developers should provide evidence or comparability when there are multiple language versions of a tests
Standard 9.10	Inferences about language proficiency should be based on tests that measure a range of language abilities, not a single skill (e.g., naming)
Standard 9.11	An interpreter should be fluent in both the language of the test and client's native language, should have expertise in interpretation, and should be cognizant of the assessment process

^aAdapted from AERA et al. (1999)

considered include cognition, achievement, and behavior/personality, as well as language, perceptual, sensory, attention, executive, learning/memory, and motor skills (Riccio, 2008, Riccio & Reynolds, 1998, 2013). The task facing the practitioner is then to select and combine various measures to ensure coverage of these domains such that the results reflect the functioning of all four brain quadrants – anterior, posterior, left and right hemispheres.

In recent years, there has been increased emphasis on the use of measures that are more actuarial in nature and rely on standardized procedures (Lezak, Howieson, & Loring, 2004). The reason behind this shift is to maximize the use of objective methods with accepted levels of psychometrics. Thus, the practitioner must ensure not only that the measures selected provide for comprehensive assessment of brain integrity, but also that the measures meet current standards for testing (American Educational Research Association [AERA], American Psychological Association [APA], & National Council on Measurement in Education [NCME], 1999). These standards are intended to ensure that there is appropriateness and fairness in testing and should be considered in the selection of tests used in any assessment; the relevant standards are summarized in Table 9.1. Consideration of 'fairness' is not a

simple task. It requires attention to the goals for the assessment and associated potential impacts on opportunity in society, the technical properties of the measures being used, the interpretation and reporting of the results, as well as a range of factors that may (or may not) affect test performance (AERA et al., 1999).

With Asian Americans comprising up to 5 % of the United States population (U.S. Census Bureau, 2000), the ability to identify and address the needs of this growing population is critical. At the same time, it is important to keep in mind that Asian Americans represent at least 24 different ethnic groups (U.S. Census, 2000) with Chinese, Filipino, Asian Indians, Vietnamese, and Korean, the five largest groups. Although there are stereotypes associated with the term “Asian American”, these stereotypes (i.e., as a model minority, high socioeconomic status) do not hold true for all the ethnic groups subsumed in this more global category (Fujii, 2011a). Important considerations in test selection include consideration of cultural and language factors, while at the same time maintaining and attending to measurement standards (i.e., fairness), as well as the desire to be sure that all functional systems and four quadrants of the brain are assessed.

Particularly in regard to cultural and linguistic differences, there has been increased attention to bias associated with test content and the response process (AERA et al., 1999; Carey, Mannell, & Dunn, 2011; Reynolds, 2000; Reynolds & Ramsay, 2003). The level of content bias and response bias are established by systematically examining the extent of differential performance by distinct groups on the same items or differential item functioning (DIF). Content bias is usually specific to those items that include content that specific groups may not have been exposed to and is related to level of acculturation. Response process bias is more evident in the output required for completing the task, and in the case of individuals with English as a second language, requirements for more elaborative verbal responses may represent a process bias due to limited English proficiency or not being comfortable expressing themselves in English. In cases of content or process bias, the test results may not accurately reflect the constructs or functional system intended when the test was selected (AERA et al., 1999). Notably, while most of the research on test bias focuses on DIF, Carey et al.’s study suggests that it is not just the items, but that examiner familiarity with the pronunciation and language use can affect ratings, particularly in relation to language. This possibility has not been explored in conjunction with responses to most standardized measures used in neuropsychology, but may be worth consideration.

With increasing concern for cross-cultural considerations in neuropsychology, it has been proposed that specific marker or core tests be used in conjunction with whatever additional tests or measures are implemented (Nell, 2000). For adults, the recommended core includes six of the seven tests from the World Health Organization Neurobehavioral Core Test Battery (WHO-NTB; Maj et al., 1994), as well as the Wechsler scales including the memory scales. The six tasks of the WHO-NTB cover simple reaction time, targeting, attention/memory (as measured by Digit Span and Digit Symbol/Coding), and visual retention. Of note, studies conducted in Korea and China that have included one or more of these tasks consistently indicate that on simple reaction time tasks, Asian samples are about one standard deviation lower than the European samples (Nell). Similarly, on the manual dexterity task, the Asian

groups were about one standard deviation lower than the Europeans. In contrast, on the aiming task (a typical dotting or targeting test), the Asian mean is consistently higher than the European mean. No differences emerged for Digit Span or Digit Symbol/Coding. These findings indicate that the 'recommended' core may not be appropriate for Asian groups; depending on other factors, it may not be appropriate for Asian Americans either.

In his discussion of neuropsychological assessment of Asian Americans, Fujii (2011a) suggested that an assessment that relies on norm-referenced testing may not be appropriate for Asian Americans. He indicated that norm-referenced testing be used only if the client obtained a college education with courses taught predominantly in English, has lived in the country for a long time, is proficient in English, or has performed in the average or above range on some nationally standardized test (in English). When these conditions are not met, Fujii suggested a hypothesis testing approach or the use of the WHO-NTB due to the lack of validation to demonstrate equivalence for most standardized measures for Asian American groups. As noted above, the WHO-NTB is limited in scope; however, it seems to have inherent biases specific to Asians, and is insufficient even for a hypothesis testing approach. Thus, selection of tests for inclusion in a neuropsychological assessment, and following a hypothesis testing approach, needs to be given careful consideration. Two major issues that need to be addressed and considered in the selection process include language proficiency and acculturation.

9.2 Language

A starting point in the selection of appropriate tests is the determination of the most appropriate language for testing and interactions. For Asian Americans, the level of English language proficiency and comfort in use of English is seen as a key component of acculturation status. The individual may be monolingual English or bilingual, but their level of comfort with English may vary depending on other circumstances such as exposure to English, social value placed on fluency in English and familial/social pressures. In a study of Cambodian American children, for example, results indicated that Cambodian was spoken in over 90 % of the homes (Reeves & Bennett, 2004). Similarly, English as the only language of the home occurs in only about 4.4 % of Hmong households (Reeves & Bennett), with 41 % of Hmong families described as linguistically isolated (Yang, 2004). In contrast, among Asian groups, Filipinos generally have good command of the English language (Nadal & Monzones, 2011). These findings suggest that although Asian Americans are exposed to English at least in schools, their proficiency and level of comfort varies significantly and should be considered carefully when selecting instruments and measures.

9.2.1 Language Proficiency

Establishing English language proficiency is the first step in an assessment of any bilingual or English Language learner. English language proficiency among Asian Americans groups varies significantly. One factor that may affect the English language proficiency is related to whether the country of origin has English as its official language (e.g., South Asia and Philippines). It is likely then that even recent immigrants from these countries will show greater English proficiency and will demonstrate faster acculturation. Similarly, members of countries with an early history of immigration into the US, such as Chinese and Japanese, are likely to show less limited English proficiency, than recent immigrants from countries such as Vietnam and Korea who are likely to have the lowest proficiency (Gee & Ponce, 2010).

To determine proficiency it is critical to evaluate both English and native language proficiency. The Bilingual Verbal Ability Test (BVAT; Munoz-Sandoval, Cummins, Alvarado, & Ruef, 1998) is an example of an instrument that measures not only English proficiency, but native verbal proficiency as well. This test assesses an individual's English fluency compared to his/her native language fluency and takes approximately 30 min to administer. It can be used for individuals from age 5 years to adulthood. It is unique because it is based on the concept that bilingual individuals complement their knowledge by using both languages. Thus, the instrument is used to obtain first proficiency in the native language and then the incremental proficiency added by their knowledge of English, thus offering an overall language proficiency score as well (Munoz-Sandoval et al., 1998). Although it can be administered by one examiner if they are fluent in both languages, it has been standardized to be administered using an interpreter as well. The BVAT has been standardized to be used with five Asian languages in addition to English: Chinese (traditional and simplified), Korean, Japanese, Vietnamese, and Hindi. One significant drawback of the BVAT is its age and outdated norms, which have to be interpreted with caution. Even when used informally, this measure can provide an estimate of a person's proficiency. It can provide information on individuals who have been exposed to formal English education and aid in the determination of English as a second Language (ESL) status. In addition, when exploring the English language proficiency of Asian Americans and their achievement in schools, it is important to explore whether their performance in math and science is remarkably better than in language arts or English (Fujii, Yee, Eap, Kuoch, & Scully, 2011).

9.2.2 Language Minimized/Nonverbal Tests

Background information about the clients' education and school based training in English, as well as the length of time exposed to formal English, may be critical in determining the appropriateness of using Western based, language-loaded, normative data for more fluent and seemingly more acculturated Asian American clients. This is true even for those Asian Americans who seem to have conversational

English. Conversational fluency does not always translate into higher-level verbal skills as tested by traditional cognitive scales.

Although there are a number of instruments that measure cognitive abilities utilizing non-verbal methods there is very little research that has explored their use with Asian or Asian American populations with limited English proficiency. These instruments vary in their oral language demands and also in the breadth of cognitive areas measured. Some, like the Universal Nonverbal Intelligence Test (UNIT) have no oral communication demands for both examiner and examinee, and measure several areas of cognitive functioning such as memory and problem solving. Others, such as the Wechsler Nonverbal Scale (WNV), can be administered totally nonverbally using pictures and demonstration items, or can administered utilizing the standardized instructions provided in several languages such as Korean and Chinese. Finally, some measures such as the Test of Nonverbal Intelligence-4 (TONI-4) focus on nonverbal reasoning and require no oral language communication from the examinee and only minimum receptive language. Even though these nonverbal cognitive measures would be ideally suited to be used with Asian and Asian American populations who have limited English proficiency, little research has been conducted exploring their validity with this population. On the Universal Nonverbal Intelligence Test (UNIT) it was found that Asians obtained a mean of 112.69 ($SD=11.81$) as compared to the White sample who obtained a mean of 103.29 ($SD=14.31$) (UNIT; Bracken & McCallum, 1998). Although this difference exceeds standard error, it is not significant.

Many tests that are used as part neuropsychological assessment have minimal English language demands and are described as relying on nonverbal abilities or using only internal language. These would include measures of executive function (e.g., Tower or Stockings of Cambridge tasks, Rey Complex Figure Drawing Test, WCST), sensory function (e.g., Tactual Performance Test, Tactile Form Recognition Test, visual form discrimination tasks), attention/concentration (e.g., cancellation tasks, trail making tests, continuous performance tests, and Rapid Visual Information Processing), Memory (e.g., Spatial Span/Corsi Blocks, Rey Recall & Recognition) and Motor skills (e.g., finger tapping, grooved pegboard). The extent to which Asians or Asian Americans perform similarly to those in the normative samples for these measures is unknown. Although the use of 'nonverbal' measures may reflect both anterior and posterior functioning, there is the obvious omission of the language dominant hemisphere. Further, in terms of functional impairment in school or the work place, language may be a more critical consideration.

9.2.3 Adaptation of Existing Tests with Language Loading

Given the concerns that language proficiency, or even the individual's comfort level in using a second language, can affect the validity and reliability of the results obtained, language modification (i.e., translation) may be a consideration. Unfortunately, it is not necessarily the case that a translation will produce a measure

that is equivalent in terms of constructs being measured, difficulty level, reliability, or validity of the original test/task (AERA et al., 1999; see Table 9.1). For example, the frequency rates for words at various age levels of difficulty may differ by language; the nature of the content translated may not be relevant, and meaning can easily vary across translations. If translation is used, it is important to note that the most frequently used approach (back translation) is generally not recommended particularly for cognitive instruments due to the changes in meaning and item difficulty; rather, an iterative process similar to that used in initial test development and validation is recommended (AERA et al.). Finally, when considering a translation, three essential issues should be taken into account: (a) the translation should be completed by native speakers, (b) the native language speakers should understand the construct being measured, and (c) translators should have an understanding of test development.

Other adaptations that might be made include modification of the test administration procedure by altering the presentation format, the response format, time allotments, and restriction of tasks to those appropriate for the language proficiency levels of the individual being tested. If modifications are made in administration (i.e., time, presentation, format), AERA et al. (1999) suggestion is that the modified format be 'field tested with an adequate population sample prior to use with its intended population' (p. 92). Regardless of the modification or adaptation, it is important to consider the level to which the modified/translated/adapted measure is equivalent in terms of the extent to which comparable inferences regarding brain integrity can be made.

9.2.4 Use of Interpreters as a Modification

An alternative to translation, adaptation of existing measures, or limiting the assessment to nonverbal measures, is to complete the assessment in the examinee's primary language using standardized measures. Based on professional directories, however, there are few neuropsychologists who report proficiency in Asian languages or who can provide services to this population (Fujii, 2011a). As such, the only means of administering even some parts of the assessment in the primary language of the examinee may be through the use of interpreters. Frequently, interpreters are recruited for convenience and it is important that the interpreter not have any other relationship with the client (Wong, 2011).

When engaging bona fide interpreters, there continues to be certain concerns about their use in assessment procedures. One such problem is the frequent lack of training in standardized testing. The level of expertise of interpreters can lead to errors in translation, substitutions of content, and undesired help to the examinee (Li, Walton, & Vázquez-Nuttal, 1999). Currently, there are no accepted standards for the appropriate use of interpreters for assessment purposes; therefore, there can be a significant variation in the assessment procedures. As a result, the validity of the results is threatened (Lopez, 2002). Also, there are large variations in the way that languages

are spoken, which can limit the communication even among groups that ostensibly use the same language. This is particularly important in languages that have many dialectical differences, such as Chinese. An additional difficulty associated with the use of interpreters is the lack of training that examiners receive on the advantages and disadvantages of using interpreters, and the appropriate ways of collaborating with and training them. In sum, although the use of interpreters is sometimes the only viable way of administering standardized measures in the individual's primary language, this practice is a deviation of the standardization of most instruments and potentially will call into question the validity of the results obtained. In order to address this concern, when using interpreters, examiners have to make every effort to ensure that the interpreters are trained in standard assessment procedures. Examiners also need to be aware of the implications this process has on the validity of the results.

9.3 Acculturation

Although, studies indicate high correlations between English fluency and acculturation level (Wong, Strickland, Fletcher-Janzen, Ardila, & Reynolds, 2000), it is also important to consider the level of acculturation of the examinee. Approximately 69 % of Asian Americans are born outside the United States; oftentimes, even while living in the United States, they choose to reside in communities that are somewhat insular and homogeneous, slowing down their acculturation process. Acculturation level, as with English proficiency, potentially contributes to identified deficits based on assessment, and limitations of the validity of results obtained from testing (Fujii et al., 2011).

Given the implications of one's acculturation level in selecting applicable tests, the clinical use of acculturation scales may help the data collecting process in assessment. Acculturation measures developed in the early 1970s and 1980s were aligned with the unidirectional model that described acculturation as an irreversible process that involved renouncing the culture of origin and adapting to the dominant culture as exposure to it increased (Szapocznik, Scopetta, Kurtines, & Aranalde, 1978). Recent studies, however, indicate the multidimensional/bidirectional model proposed by Berry and other scholars (Berry & Kim, 1998; Berry, Kim, Minde, & Mok, 1987; Lee, Sobal, & Frongillo, 2000) is a more valid model to explain the psychological acculturation phenomenon at the individual level.

A measure developed by Cortes, Rogler, and Malgady (1994) is aligned with Berry's bidirectional acculturation model. This Bicultural Scale assesses the degree of identification with both the original and the host culture in a parallel manner (Cortes, Rogler, and Malgady Bicultural Scale [CRM-BS]; Cortes et al., 1994). The CRM-BS is a short and easy self-report form, which Mezzich and colleagues validated in three languages recently (Chinese, Korean, and Spanish) with evidence of adequate validity and reliability (Mezzich, Ruiperez, Yoon, Liu, & Zapata-Vega, 2009). Additionally, there are acculturation measures for other Asian groups such as the Acculturation Scale for Vietnamese Adolescents (Nguyen, Messé, & Stollak, 1999;

Table 9.2 Measures of acculturation level for Asian Americans

Measure	Group(s)
Khmer Acculturation Scale [KAS] (Lim, Heiby, Brislin, & Griffin, 2002)	Cambodian
Acculturation Scale for Vietnamese Adolescents [ASVA] (Nguyen, Messé, & Stollak, 1999; Nguyen & von Eye, 2002)	Vietnamese
The Suinn-Lew Asian Self-Identity Acculturation Scale [SL-ASIA] (Suinn, Rickard-Figueroa, Lew, & Vigil, 1987)	Asian Americans
Taiwan Aboriginal Acculturation Scale [TAAS] (Cheng & Hsu, 1995)	Taiwanese Aborigines
Asian Value Scale [AVS] (Kim, Atkinson, & Yang, 1999)	Asian Americans
A Short Acculturation Scale for Filipino Americans [ASASFA] (De la Cruz, Padilla, & Agustin, 2000)	Filipino Americans
Brief Acculturation Scale (Meredith, Wenger, Lie, Harada, & Kahn, 2000)	Japanese Americans
Asian American Acculturation Inventory (Flannery, Reise, & Yu, 2001)	Asian Americans
European American Value Scale for Asian Americans [EAVS-AA] (Wolfe, Yang, Wong, & Atkinson, 2001)	Asian American
Asian American Multidimensional Acculturation Scale [AAMAS] (Chung, Kim, & Abreu, 2004)	Asian American
Acculturation Scales for Southeast Asians (Anderson et al., 1993)	Cambodian, Laotian, and Vietnamese

Nguyen & von Eye, 2002), the Khmer acculturation scale (Lim, Heiby, Brislin, & Griffin, 2002), and the Asian Value Scale (Kim, Atkinson, & Yang, 1999). More acculturation scales developed for Asian Americans are presented in Table 9.2.

Bidimensional scales embrace both overt and covert psychological domains, thus are more informative when evaluating a client’s general psychological acculturation status (Matsudaira, 2006). The validity of these acculturation scales should be studied through both, actual exposure to and involvement in each culture (Matsudaira). In assessing one’s acculturation level, the role of sociocultural context in the pattern of acculturation should be accounted for – one may be an immigrant, refugee, guest worker, or international student. The sociocultural contextual factors are likely to yield a wide variety of individual acculturation trajectories. Scales that are brief, non-threatening, and independent of interviewer’s subjectivity are useful in test data interpretation and provision of test feedback to clients (Roysircar-Sodowsky & Maestas, 2002). Roysircar-Sodowsky and Maestas reported that, in 98 % of instrument-development studies, language use or language preference explained the largest amount of variance with the mean contribution of 48.7 %.

9.3.1 Culture Specific Issues

Neuropsychological testing aims at gathering information about a client’s brain functioning not only through the pattern of one’s cognitive, emotional, and behavioral domains, but also one’s worldview, interpersonal perception and orientation, and

social cognition. In other words, the whole person approach is more desirable. Given that, it is critical to understand the differentiating cultural factors that may influence a client's behavioral and interpersonal domain (Zane & Yeh, 2002). These same cultural characteristics also may have an impact on the clients' perception of physiological/psychological disorders, etiology, and their approach to treatment methodology. The Cultural Systems Approach (Fabrega, 1987; Kagawa-Singer, & Chung, 2002; Kirmayer, 1989; Kleinman, 1980) emphasizes that variables assessed in isolation and out of cultural context are prone to lose their salience, integrity, and uniqueness in their cultural configuration. From this perspective, the expression of symptoms of a neuropsychological disorder among Asian Americans can be interpreted as influenced by the complex cultural interactions of numerous nested variables. In fact, people are socialized to channel basic emotions in culturally prescribed ways in terms of social norms. The expressive patterns of emotional distress, psychological problems, and pattern of help-seeking behavior are culturally related constructs, which are used within a social context to control one's thought and behaviors.

9.3.1.1 Interpersonal Attitude and Orientation; “Loss of Face” or “Face Saving”

The conceptual schemata, including an individual's worldviews, interpersonal dynamics, coping style, and problem solving strategies, are the essential components in capturing a client's experiences and responses to his/her cultural environments (Zane & Yeh, 2002). When considering a client's experience within his/her cultural context, a clinician can bring up an adequate case conceptualization that can enhance the formulation of appropriate treatment strategies and goals (Zane & Yeh). Assessing the client's interpersonal attitude and cultural orientation is important because not only is it associated with psychological problems that the client presents, but it also plays a critical role in helping the client manage and cope with interpersonal problems (Horowitz, 1979; Zane & Yeh, 2002). Moreover, examining certain interpersonal constructs that may be culturally salient is indispensable in the formulation of culturally sensitive case conceptualizations and developing appropriate intervention plans (Zane & Yeh).

Given this premise, a predominant Asian cultural phenomenon that is called “loss of face” provides a conceptual frame to understand Asian Americans' behavioral and interpersonal orientation (Zane & Yeh, 2002). The notion of “face” in social relations is salient in East Asian cultural contexts while it has less social significance in individualistic societies, such as the U.S. Ho (1991) defined this same cultural phenomenon using the reversed term, “face saving.” The shame oriented emotionality and “loss of face/face saving” in Asian Americans may encourage a greater vigilance to situational appropriateness during a clinical interview, reluctance to seek help from outside sources, a reticence to reporting one's psychological symptoms, and limited or little openness towards the clinician. Sue and Morishima (1982) identified the notion of face in Eastern Asian culture as a key and often dominant interpersonal dynamic. Thus, use of “loss of face” as a conceptual

tool can help the neuropsychological assessment process by reconstructing the life circumstances and worldviews of the Asian American clients (Zane & Yeh, 2002).

The fear of “loss of face” is rooted in Asian American’s underutilization of mental health services, pattern of family access to information, and the caretaking role of the family. Asian American’s reticence in seeking psychological or neuropsychological services results in an increased possibility of social stigmatization, which is one of the biggest obstacles for clinicians in dealing with Asian American populations (Sue, Zane, & Yang, 1994; Zane & Yeh, 2002). In the Asian cultures, it is often considered that revealing emotional or psychological problems, or dealing with problems by seeking professional help are signs of personal immaturity, weakness, and a lack of self-discipline (Ho, 1991). People who adhere to the traditional East or South Asian culture tend to deny the existence of their mental health problems. According to the Eastern Asian philosophy, an individual is viewed as a microcosm of the universe and the unimpeded flow of one’s mind and spirit ensures well-being. The western duality of mind and body does not prevail in the Asian views on health problems or overall functioning. One reason for the underutilization of psychological assistance comes from the belief that an individual’s mental health problems reflect hereditary flaws that are embarrassing to the family. Thus, individuals feel guilty when a family member has mental or psychological problems (Kagawa-Singer & Chung, 2002).

9.3.1.2 Asian’s Perception of Health and Illness

Within the current Western medical perspective, illness and disorders are perceived to have identifiable causes, such as alterations in neurotransmitter functions or dysfunction of neural circuits. The identified disorders are perceived as separate from the self and amenable to specific biomedical interventions, consistent with the duality mentioned earlier. Western biomedicine does not account for spiritual or metaphysical causes for diseases. This omission negates the significant cultural constructs of distress, and may threaten the credibility of the neuropsychologist or health provider (Kagawa-Singer & Chung, 2002). Asians’ views on the etiology of disease/disorder tends to be more physical, metaphysical or supernatural (Eisenberg et al., 1993), with intervention approaches dependent on the etiologic factor. Both health and illness are considered as a part of human life, and perfect health may not be attainable (Ohnuki-Tierney, 1984). From the traditional Asian perspective, illness is perceived as a unique and changing constellation of imbalances in life forces. Thus, medical interventions tend to be directed towards pragmatic symptom relief, but not a cure (Kagawa-Singer & Chung, 2002). Asian belief systems deem that health and psychological well-being can be obtained through perseverance and endurance of the person’s will in conjunction with the facilitation and support of medical intervention (Kagawa-Singer & Chung). These beliefs need to be considered in neuropsychological assessment and, particularly, in the use of unstructured, open-ended versus more structured clinical interviews; open-ended questions on functioning or concerns may be less helpful than directed questions about specific behaviors.

9.3.1.3 Behavioral Characteristics During Clinical Interview

Yeh and Yeh (2002) indicated that the clinical presentation of Asian American clients, especially among youth, may require consideration of their cultural context. Behavioral standards in social relationships that encourage social desirability may influence the clients' appearance and behavior during a clinical interview. Culturally congruent deferential behavior may include limited eye contact with the clinician, a restraint of emotions, and limited initiation of interaction (Yeh & Yeh). Another consideration is that Asian American youth are prone to respond in a polite and compliant way with authority figures, not often volunteering information. Based on this orientation, Asian clients may be perceived as nonverbal, nonresponsive, or unexpressive. Overall, Asian American clients' presentation of themselves during the clinical interview may reflect social desirability and a lack of willingness to inform the clinician about their psychological problems and symptoms (Yeh & Yeh). Asian parenting style prefers indirect, nonverbal, and subtle communication styles, in order to preserve interpersonal harmony (Chan, 1998; Sue, 1990). In addition, when a clinician examines the cognitive functioning of Asian American clients, they may show modesty in answering questions and tend to avoid answering in a way that may be perceived as self-displaying or flaunting such as telling elaborate stories or giving multiple responses for definitions (Yeh & Yeh, 2002). This appearance and behavior may mislead the clinicians in their diagnostic impression, if clinicians fail to consider the cultural characteristics that may be in play. Observation of the clients' appearance and behavior in multiple settings, with input from others who know the client, is encouraged to obtain additional information.

9.3.1.4 Emotional Functioning

Within the Asian culture, there is sensitivity to the feeling of shame than is apparent in Western culture (Cheung, 1986; Ha, 1995; Okano, 1994). Even in parenting, "shame" often is used as a negative consequence, and affective manipulation that may be used as a primary socialization tool (Lumsden & Wilson, 1981). A clear understanding of Asian's view of "shame" is important in the assessment of Asian American clients. Cultural factors may underlie an apparent incongruity between affect and verbalization. For example, a teen-age girl may smile or laugh when talking about painful experiences because the girl she feels she is burdening the interviewer and feels apologetic for doing so. This ostensible inappropriate affect needs to be noticed and interpreted in a cultural context. Additionally, the traditional Asian cultural values encourage the restraint of emotional expressions in public; for Asians, restraint is regarded as a sign of maturity. When Asian Americans present, in a clinical context, as having flat affect, this aspect of their culture needs to at least be considered. Cross-cultural studies indicate systematic group differences between Asian and non-Asian's cognitive, emotional, and behavioral profiles. For example, a comparison across Asian cultures/languages on the Achenbach System of Empirically Based Assessment (ASEBA), scores revealed gender differences in

some cultures, effect of SES primarily in the Chinese sample, and differences in developmental trajectory across cultures (Achenbach & Rescorla, 2007). The extent to which the individual has acculturated will affect the need to consider these concerns in the inferential and interpretation process.

9.4 Tests Standardized with or Developed for Asian Populations

Precise understanding of a client's acculturation level is the prerequisite in determining the appropriateness of applying any normative data set, whether it is the original version or Asian translation (Fujii, 2011b). Depending on the client's acculturation levels and language proficiency as determined in the initial interviews, the Asian versions of standardized tests can be selected and used in neuropsychological assessments. There are no neuropsychological or psychological tests specifically developed for Asian Americans in the U.S.; however, some of the major neuropsychological and psychological tests developed in the U.S. have been translated into various Asian languages and normed in Asian countries (e.g., Chinese, India, Japanese, Korean, Thai, Vietnamese). The most widely translated and Asian-normed tests are in the following areas: (1) global intelligence/cognition, (2) overall mental functioning and status, (3) language proficiency/functioning, 4) the fixed batteries for neuropsychological assessments, (5) executive functioning, (6) visual-perceptual/visual-spatial, (7) attention and concentration, and (8) memory and working memory. Examples of these measures and the available languages are presented in Table 9.3.

Often an initial screener in neuropsychological assessment, with regard to measures of overall mental functioning and mental status, China, Japan, Korean, and India use the translated Mini-Mental Status Examination; the Montreal Cognitive Assessment is also commonly used in these Asian countries. For cognitive testing, the Wechsler Adult Intelligence Scale (WAIS, any version) and the Wechsler Intelligence Scale for Children (WISC) have been most widely translated in Asian countries and are available in Chinese, Japanese, Korean, and Thai versions. Empirical studies found similar factorial structures and mean raw scores between the standardized sample of the original Wechsler Intelligence Scale for Children-III (Wechsler, 1991) and the Asian translated versions (Chen, Chen, & Zhu, 2003; Kwak, 2003; Ueno & Nakatani, 2003). Further, several studies indicate equivalent levels of performance on the general intelligence and visual-spatial tasks among many East Asian groups (Kwak, 2003; Lynn & Song, 1994). Other cognitive tests, such as the Kaufman-Assessment Battery for Children (K-ABC), Stanford-Binet, and Cognitive Assessment System are also available in Asian languages with Asian normative data. At the same time, cognitive profiles on the intelligence test of Asian children and adolescents showed higher quantitative and visual-spatial abilities in comparison to verbal abilities (Jensen & Inouye, 1980; Suzuki & Gutkin, 1993). Specific to neuropsychological measures, of the fixed batteries, the

Table 9.3 Examples of measures normed and available in Asian languages

Test/Battery	Availability				
	Chinese	Japanese	Korean	Indian	Others
Overall functioning/Mental status					
Consortium to Establish a Registry for Alzheimer's Disease (CERAD; Lee et al., 2005; Ganguli et al., 1996; McCurry et al., 2001)			♦	♦	
Informant Questionnaire on Cognitive Decline in the Elderly (IQCODE; Jorm, 2004; Lee et al., 2005; Siri, Okanurak, Chansirikanjana, Kitayaporn, & Jorm, 2006; Williams, 1991)			♦		♦ Thai
Mini Mental Status Examination (MMSE; Folstein, Folstein, & McHugh, 1975; Ganguli et al., 1995; Ideno, Takayama, Hayashi, Takagi, & Sugai, 2012; Katzman et al., 1998; Kwon & Park, 1998)	♦	♦	♦	♦	
Montreal Cognitive Assessment (MoCA; Fujiwara et al., 2010; Lee, Lee, & Cho, 2008; Nasreddine et al., 2005; Wen et al., 2008; Wong et al., 2009)	♦	♦	♦		♦ Hong Kong
Neurobehavioral Cognitive Status Examination (Cognistat; Kiernan, Mueller, Langston, & Van Dyke, 2010)	♦	♦			
Global ability/Cognition/Developmental status					
Bayley Scale for Infant Development –II (Bayley, 1993; BSID-II in Chinese and Korean; Huang, Chuang, Jong, Yu, & Shieh, 2000; Park, Cho, & Choi, 2003)	♦		♦		
Cognitive Abilities Screening Instrument (CASI; Teng et al., 1994)		♦			♦ Vietnamese
Kaufman Assessment Battery for Children (KABC; Kaufman & Kaufman, 1983; Moon & Byun, 1997)			♦		♦ Laotian
Stanford Binet (Jeon, 1970; Roid, 2003; Terman & Merrill, 1960)		♦			♦ Thai
Wechsler Adult Intelligence Scales (Chen & Chen, 2002; Izawa, Urakami, Kojima, & Ohama, 2009; Yum, Park, Oh, Kim, & Lee, 1992)	♦	♦	♦		♦ Thai
Wechsler Intelligence Scales for Children-IV (K-WISC-IV; Kwak, Park, & Kim, 2011)			♦		
Wechsler Preschool and Primary Scale of Intelligence (Chen & Chen, 2000; Park, Kwak, & Park, 1996)	♦		♦		

(continued)

Table 9.3 (continued)

Test/Battery	Availability				
	Chinese	Japanese	Korean	Indian	Others
Language proficiency/Functioning					
Bilingual Verbal Abilities Test (BVAT; Munoz-Sandoval et al., 1998)	♦	♦	♦	♦	♦ Vietnamese Hmong
Boston Naming Test (BNT; Kaplan, Goodglass, & Weintraub, 1983; Kim & Na, 1999)			♦		
Mantis Dementia Rating Scale (DRS; Chan, Choi, Chiu, & Lam, 2003; Chey, 1988; Mattis, 1976, 1988)	♦		♦		
Western Aphasia Battery (WAB, C-WAB, Paradise K-WAB; Kertesz, 1982; Yiu, 1992; Kim & Na, 2004)	♦		♦		
Reitan-Indiana Aphasia Screening Test – Thai version (RIAST; Tantilipikon, 2003)					♦ Thai
Fixed batteries for neuropsychological assessment					
Halstead-Reitan Neuropsychological Test Battery (Gong, 1986; Reitan & Wolfson, 1985; 1993)	♦	♦			♦ Laotian
Luria-Nebraska Neuropsychological Battery (Goldren, Hammeke, & Purisch, 1980; Kang, 1992; Yun, Xian, & Mathews, 1987)	♦		♦		
Neuropsychiatric Inventory (NPI; Cummings, 1997; Wang et al., 2012)	♦				
World Health Organization Neurobehavioral Core Test Battery (WHO-NTB; Kang, 2000; Zhou, Liang, & Christiani, 2002)	♦		♦		
Visual perceptual/Visual spatial					
Bender Gestalt (Bender, 1946; Brannigan & Decker, 2003)	♦	♦	♦		
Executive Function					
Children’s Color Trails Test [CCTT] (Koo & Shin, 2008)	♦		♦		
Stroop Test (Kim et al., 2004; Lee & Chan, 2000)	♦		♦		
Trail Making Test (Lu & Bigler, 2000; Seo et al., 2006)	♦		♦		♦ Vietnamese
Wisconsin Card Sorting Test (Heaton, 1981; Ryeowon, Kang, Lee, Oh, & Shin, 1999; Tsuchiya, Oki, Yahara, & Fujieda, 2005)		♦	♦		
Attention/Concentration					
CogState Battery (Mollica, Maruff, Collie, & Vance, 2005)		♦			

(continued)

Table 9.3 (continued)

Test/Battery	Availability				
	Chinese	Japanese	Korean	Indian	Others
Random Chinese Word Cancellation Test (Chen Sea, Cermack, & Henderson, 1993)	♦				
Memory/Working memory					
California Verbal Learning Test (CVLT; (Delis, Kramer, Kaplan, & Ober, 1987; Kim & Kang, 1999)			♦		
Clinical Memory Test (Xu & Wu, 1986)	♦				
Memory Assessment Scale (K-MAS; Lee, & Jung, 1999; Williams, 1991)			♦		
Rey-Kim Memory Test – Adult (Kim, 1999)			♦		
Rey-Kim Memory Test – Children (Kim, 2006)			♦		
Academic/Learning disability					
Learning Disability Evaluation Scale (LDS; McCarney, 1996; Shin, Hong, Kim, & Cho, 1998)			♦		
Personality/Behavior					
Achenbach System of Empirically Based Assessment (ASEBA; Achenbach, 2009)	♦	♦	♦		
Minnesota Multiphasic Personality Assessment, second edition (MMPI-2; Tsushima & Tsushima, 2002; Ideno et al., 2012)	♦	♦	♦		

Note: Citations provided are not necessarily for the English versions, but for the translated or adapted versions where appropriate

Halstead-Reitan Neuropsychological Test Battery and the Luria Nebraska Neuropsychological Battery have translated versions used in China, Korea, and Laos. Additionally, the Stroop test, Trail Making test, and Wisconsin Card Sorting test are the most commonly used executive functioning tests have been used with Asians (Jo & Dawson, 2011).

Although many of these tests specifically normed for the use in Asian countries can be utilized with Asian American populations, primarily among recent immigrants, it should be noted that there are slight modifications to these translated tests and their test directions. Thus, the clinicians should be aware that the translated Asian versions of these tests are not always directly equivalent forms to the original English version (Kim & Na, 1999). The conundrum is that there is little research on the equivalence of either the standardized (English) measures for Asian Americans or the measures in another language specifically for Asian Americans of that language group.

9.5 Discussion and Conclusion

The various professional organizations have established standards for tests in order to maximize fairness (AERA et al., 1999), and these standards should be considered in the selection of tests for neuropsychological assessment of Asian Americans. Notably, there is no normative sample for measures originating in Western cultures for individuals who are Asian American, and that considers language proficiency and level of acculturation. Of particular concern is the emphasis that may be placed on speeded or timed tasks, as well as the likelihood that Asian Americans will be less likely to provide verbal elaboration, regardless of the language of administration. So few tests that have available psychometric evidence for this population, some additional caveats have been discussed (i.e., use of nonverbal measures, adaptation of measures, use of interpreters). Understanding these limitations, and supplementing a standard neuropsychological battery with measures of language proficiency (regardless of perceived conversational fluency), as well as an appropriate measure of level of acculturation, is essential in the test selection process. When all is said and done, as with any neuropsychological assessment, the test selection is only the first step. Starting with the clinical interview to guide the test selection process, the neuropsychological evaluation needs to be hypothesis driven (Riccio & Reynolds, 2013). With Asian Americans, the interpretation and inferential aspects need to be informed not only by the information obtained on brain function through traditional formats, but also by what is known about the individual's level of acculturation, their willingness to respond honestly and openly to questions about difficulties they are encountering, and the increased potential to respond as they think is appropriate in order to save face. Obtaining additional information from sources other than family members may help to put the results in perspective.

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