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## Introduction

It is estimated that 17.3 million Asian-Americans live in the USA, according to the 2010 US Census bureau (Hoeffel, Rastogi, Kim, & Shahid, 2012). The majority identified as Asian alone, 14.7 million, while the remaining 2.6 million identified as Asian in combination with one or more ethnic groups. Asian is a diverse group, being defined as “a person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent, including, for example, Cambodia, China, India, Japan, Korea, Malaysia, Pakistan, the Philippine Islands, Thailand, and Vietnam” by the US Census Bureau (Hoeffel et al., 2012, p. 2). The largest Asian-American groups, alone or in any combination, were Chinese, Filipino, Asian Indian, Vietnamese, Korean, and Japanese. Asian-Americans were also found to be the fastest growing racial group from 2000 to 2010, growing by 43 % as compared to 9.7 % for the total population. The assessment and treatment of health and behavioral problems within this large and growing population within the USA is an important consideration.

A once common theory regarding health and behavioral problems in Asian-American populations was that of the model minority (Choi & Lahey, 2006; Evans, Pierce, Li, Rawson, & Hser, 2012; Fong & Tsuang, 2007). The model minority theory suggests that Asian-Americans have lower levels of health problems, are higher achieving, and maintain more self-sufficient family units than other ethnic groups (Choi & Lahey, 2006). Research has been mixed with regard to this theory, however, with some studies finding equal or higher rates of health and behavioral problems in Asian-Americans compared to other ethnic groups and others finding lower rates. Choi and Lahey (2006) found that Asian American Pacific Islanders (AAPI) in grades 7–12 were less likely to smoke, consume alcohol, get drunk, or use substances than White youth. They did find some effect for immigration factors, such that first-generation immigrant children reported less problem behaviors than second-generation or nonimmigrant children. The differences found in substance use behavior between White and Asian Pacific Islander youth were greater for immigrant than nonimmigrant children. This highlights the fact that immigration status and acculturation may be a factor in the differing results of health problems in Asian-American populations. AAPI may experience more tension between their culture of origin and Western cultural values, particularly when the acculturation level between themselves and their families is discrepant. This tension, as well as a desire for acceptance by peer groups, may

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increase the propensity for drug use as a coping mechanism (Rastogi & Wadhwa, 2006). Biracial Asian-American individuals likely feel similar tension between multiple cultural identities (Clark, Doyle, & Clincy, 2013). Clark and colleagues (2013) found biracial White-Asian-American children to begin drinking alcohol and smoking marijuana at earlier ages than White children and to use all substances at earlier ages than Asian-American children. Another factor that may account for differing results in health and problem behaviors is the use of different Asian subpopulations considering there are approximately 50 subgroups of AAPIs (Office of Minority and National Affairs, 2010). The National Survey on Drug Health and Use (NSDUH, 2011) found lower levels of alcohol, cigarette, and marijuana use in the past month in Asian-American youth ages 12–17 as compared to the national average. When specific subgroups were compared they found a high of 9.7 % in Filipino youth for past month alcohol use and a low of 5.1 % among Asian Indians. With regard to past month marijuana use, a high of 5.2 % in Korean youth and a low of 1.0 % among Asian Indians was found. Similar to Choi and Lahey (2006), there was an effect for immigration status, such that Asian-American youth born in the USA had higher rates of past month alcohol use than foreign-born Asian-American youth; however, foreign-born Asian-Americans had slightly higher rates of nonmedical prescription drug use.

Regardless of differences in prevalence rates among ethnic groups, substance abuse and dependence in Asian American Pacific Islanders does occur and warrants attention to ensure accurate assessment and treatment. Research has found that Asian-American populations may be underutilizing mental health and addiction treatment services (Fong & Tsuang, 2007; Office of Minority and National Affairs, 2010). This may be due to shame associated with or unwillingness to disclose one's problems (Fong & Tsuang, 2007; Office of Minority and National Affairs, 2010), particularly outside of the family (Rastogi & Wadhwa, 2006). This fact may also contribute to the lower levels of mental health problems found in AAPI. Additionally, AAPI individuals

that do seek or present for treatment tend to have more severe mental health problems, which may be a result of delayed treatment seeking (Fong & Tsuang, 2007; Office of Minority and National Affairs, 2010). AAPIs also tend to manifest mental health problems through physical symptoms (Office of Minority and National Affairs, 2010).

Additional cultural considerations when assessing AAPI clients include considerations of language, cultural values, and religion. It is estimated that one-third of Asian-Americans speak English "less than well" (Office of Minority and National Affairs, 2010). Cultural or religious values may increase the prevalence of substance use and clash with disclosure of and treatment seeking for mental health problems. For example, women tend to have fewer freedoms and to be disciplined more sternly (Rastogi & Wadhwa, 2006). This may increase the tendency to use substances or inhibit the afflicted person or her family from seeking resolution outside the family.

When working with AAPI subgroups, the availability of culturally specific assessment measures is an important consideration. Research, particularly for some Asian-American subgroups may be lacking. This chapter will focus on cultural considerations when assessing Asian-American clients and will describe substance use assessment instruments available for use (Table 14.1). In this chapter, substance use disorder assessment instruments will be reviewed. This chapter is divided into two primary sections. The first section discusses general alcohol and substance abuse and dependence measures that have evidence for their effective use in AAPIs. Some measures assess only one drug class while others assess general drug and alcohol misuse. The second section reviews alcohol abuse and dependence assessment measures that have been researched for use in AAPI subgroups. The psychometric evidence of each assessment instrument will be discussed when available in addition to specific AAPI subgroups and ages the instruments have support in. For psychometric evidence, published reports often include estimates of reliability/precision (e.g., internal consistency, test-retest reliability), as well as sensitivity (the true positive classification rate) and specificity

**Table 14.1** Substance-related assessment instruments for use in Asian-Americans

Instrument	Type of assessment	Age range	Languages
Addiction Severity Index (ASI)	<ul style="list-style-type: none"> <li>• Semi-structured interview</li> <li>• Computer administration</li> </ul>	Adults	Chinese, Japanese, Korean
Drug Abuse Screening Test (DAST)	<ul style="list-style-type: none"> <li>• Self-report</li> <li>• Structured interview</li> </ul>	Adults	India—exact language unknown
Drug Abuse Screening Test-Adolescent (DAST-A)	<ul style="list-style-type: none"> <li>• Self-report</li> <li>• Structured interview</li> </ul>	Adolescents: (13–17)	None
Severity of Dependence Scale (SDS)	<ul style="list-style-type: none"> <li>• Self-report</li> <li>• Interview</li> </ul>	Adults	Chinese, Japanese
CRAFFT	<ul style="list-style-type: none"> <li>• Self-report</li> </ul>	Adolescents and young adults: (16–26)	Chinese
Alcohol Use Disorders Identification Test (AUDIT)	<ul style="list-style-type: none"> <li>• Interview</li> <li>• Self-report</li> <li>• Computer-assisted</li> </ul>	Adults	Chinese, Hindi, Japanese, Nepali, Vietnamese
Michigan Alcoholism Screening Test (MAST)	<ul style="list-style-type: none"> <li>• Self-report</li> <li>• Structured interview</li> </ul>	Adults	Chinese, India, Korean
CAGE Questionnaire	<ul style="list-style-type: none"> <li>• Self-report</li> </ul>	Adults	Chinese, Korean

(the true negative classification rate) estimates. A number of studies have also used receiver operating characteristics (ROC) analyses, to determine sensitivity, specificity and a variety of other psychometric properties of the substance abuse instruments. Briefly, in ROC analyses, the area under the ROC curve (AUC) indicates the ability of a test score to distinguish between two groups, for example substance use and non-substance use groups. An AUC of 1.00 indicates perfect classification while an AUC of 0.50 indicates classification rate at chance levels. AUCs between 0.80 and 0.90 indicate good classification accuracy (Hosmer & Lemeshow, 2000).

## General Substance Use Assessment Instruments

### Addiction Severity Index (ASI)

The Addiction Severity Index (ASI; McLellan, Luborsky, Woody, & O'Brien, 1980) is a semi-structured interview that assesses alcohol and substance use problems. The interview takes approximately 50 min to 1 h to complete and assesses both current (within the last 30 days) and lifetime alcohol and substance use. The ASI assesses not only actual extent of alcohol and

substance use, but areas typically affected by substance use and treatment considerations. The seven areas commonly affected by substance use that are assessed by the ASI are: alcohol use, drug use, medical, psychological, legal, family/social, and employment/support (Denis, Cacciola, & Alterman, 2013; McLellan et al., 1980). A composite score (CS) and a severity rating (SR) are calculated for each problem area. The ASI underwent slight changes since 1980 with the most significant revision occurring in its sixth edition (Denis et al., 2013; McLellan, Cacciola, Alterman, Rikoon, & Carise, 2006). By its sixth edition, the ASI had been translated into 20 different languages (McLellan et al., 2006) and may be the most widely used addiction assessment in different settings and populations (Denis et al., 2013). Manuals and some paper-and-pencil versions of the ASI are freely accessible online at <http://triweb.tresearch.org/index.php/tools/download-asi-instruments-manuals/>, although at this time the Web site contains only the fifth version and does not contain AAPI-relevant versions.

### AAPI-Relevant Versions of the ASI

The ASI has been translated into Chinese, Japanese, and Korean. The following is a review of the available research on those translations.

### Chinese

A Chinese version, based on the fifth version of the ASI, has been assessed in Chinese patients in methadone maintenance treatment (Luo, Wu, & Wei, 2010). Luo and colleagues (2010) found acceptable internal consistency for six of the seven problem areas, with Cronbach's alphas ranging from 0.63 to 0.79. The legal area, however, had a Cronbach's alpha of 0.44. Notably, the authors deleted two questions in the legal scale for sociocultural reasons, which may have negatively impacted the internal consistency of the legal portion. One-week test-retest reliability for the composite scores was good, with significant correlations ranging from 0.68 to 0.84. The psychiatric and family/social areas showed good criterion validity, significantly correlating with the SCL-90 and the Family Adaptability and Cohesion Evaluation Scale  $\alpha$ -Chinese Version (FACES  $\alpha$ -CV), respectively.

### Japanese

A Japanese version, modeled after the fifth version of the ASI, has been assessed in Japanese substance users (ASI-J; Senoo et al., 2006). Senoo and colleagues (2006) found the inter-rater reliability in each area to range from 0.68 to 0.99. Cronbach's alpha for each composite score ranged from 0.57 to 0.86, supporting the reliability of most areas with the exception of the drug use and employment/support areas. Also, the composite scores were significantly correlated with drug craving levels, length of abstinence, mental health, and/or relapse, supporting their concurrent and predictive validity.

The same Japanese version has also been evaluated in male inpatients with a history of alcohol use disorders (Haraguchi et al., 2009). Haraguchi and colleagues (2009) found the internal consistency of six of the seven problem areas to be acceptable with Cronbach's alphas ranging from 0.67 to 0.84. The family/social scale, however, had the lowest Cronbach's alpha at 0.53. The family/social CS was significantly higher in individuals that relapsed than those that remained abstinent, however, suggesting this scale may provide some relapse predictive validity. The alcohol use composite scale and severity rating

were also significantly correlated with some biochemical markers, such as glutamic-oxaloacetic transaminase, a measure of liver function.

### Korean

A Korean version has also been developed and assessed in patients with alcoholism (Lee et al., 1997). This article is also not available in English, so the summary information is provided here. Lee and colleagues (1997) found significant inter-rater reliability. A "reasonable level" of item consistency was found in the medical, alcohol, family/social and psychiatric sections. Correlations between composite scores and severity ratings of corresponding section were significant for all sections. The severity ratings in the psychiatric section were significantly correlated with the Michigan Alcohol Screening Test (MAST) and Symptom Checklist-90-Revised (SCL-90-R), supporting concurrent validity.

### Summary

The original ASI authors have encouraged the modification of the ASI for specific interests or populations. They recommend clinicians maintain the original questions within the versions of the ASI, as eliminating or modifying some questions may alter the reliability and validity research has established (McLellan et al., 1992). However, an entire section, or problem area, can be eliminated if it is not considered necessary. Also, additional questions addressing special interest, such as culturally specific questions, can be added to the interview (McLellan et al., 1992) as deemed appropriate.

The research on the ASI in Asian populations just discussed has all been conducted in their respective countries. This may limit the generalizability of the instrument to Asian-Americans as they may be omitting important considerations unique to Asian-Americans, such as acculturation issues. Also, the populations examined are limited. For example, Haraguchi examined only male inmates. A clinician using the ASI or an Asian population-specific ASI should consider adding culturally relevant questions or assessment measures, such as the impact acculturation stress, traumas, or gender roles may have on substance use.

### Application with Younger Populations

Four versions of the ASI have been adapted from the adult version to be used with younger populations (McLellan et al., 1992). These versions are the Teen Addiction Severity Index (T-ASI; Kaminer, Bukstein, & Tarter, 1991), The Adolescent Drug Abuse Diagnosis (ADAD; Friedman & Utada, 1989), Adolescent Problem Severity Index (APSI; Metzger, Kushner, & McLellan, 1991), and the Comprehensive Addiction Severity Index for Adolescents (CASI-A; Meyers, McLellan, Jaeger, & Pettinati, 1995).

Of the adolescent versions of the ASI, the T-ASI has been researched the most extensively. The T-ASI has been translated into multiple languages and its psychometric properties have been assessed in a number of populations (Kaminer, 2008); however, the languages and populations covered to date do not include Asian subgroups.

### Drug Abuse Screening Test (DAST)

The Drug Abuse Screening Test (DAST; Skinner, 1982) is a brief abuse and dependence screening measure for a wide variety of substances. The DAST can be found in 28- 20- and 10-item versions (Yudko, Lozhkina, & Fouts, 2007). The DAST was modeled after the Michigan Alcohol Screening Test (MAST, discussed below).

#### AAPI-Relevant Versions

The short version of the Drug Abuse Screening Test (DAST-10) was evaluated in psychiatric inpatients in India (Carey, Carey, & Chandra, 2003). The items were completed in interview format “using the language most comfortable for the patient” (p. 3). Exploratory factor analyses of the DAST-10 determined one factor to be the best fit for all items. Internal consistency was excellent, with a Cronbach’s alpha of 0.94. Of the patients that were discharged with a drug use disorder diagnosis, 6 (35 %) had not exceeded the DAST-10 cut score of  $\geq 3$ . Notably, these six patients had lifetime use but had not used in the past year. Because the DAST assesses drug use during the past year these patients were not detected. Of those patients that exceeded the

same cut-score and were considered high-risk, 16 (59 %) did not receive a diagnosis of a drug use disorder at discharge. There was no significant difference in DAST-10 scores between the high-risk patients that did and did not receive a discharge diagnosis of a drug use disorder.

### Application with Younger Populations

The Drug Abuse Screening Test for Adolescents (DAST-A; Martino, Grilo, & Fehon, 2000) is a 27-item self-report measure modeled after the adult version. It takes approximately 5 min to administer and results in scores ranging from 0 to 27. Martino and colleagues (2000) found the scale to have excellent internal consistency (0.91), and good 1-week test–retest reliability ( $r=0.89$ ) in a sample of 15–19 year-olds. A cut-off score of  $\geq 6$  was considered optimal to indicate a drug-related disorder. The DAST-A has not been evaluated in Asian subgroups.

### Severity of Dependence Scale

The Severity of Dependence Scale (SDS; Gossop et al., 1995) is a five-item screening measure assessing psychological components of dependence. It can be used to assess dependence in different kinds of drugs, and its use has been examined with respect to some drug categories. The five-items are rated on a scale of 0–3 with regard to frequency and the last item referring to difficulty, resulting in a total score ranging from 0 to 15. In its general version, the SDS does not name any specific drug, but instead inserts [named drug] when necessary in the questions. The SDS can be modified for any specific drug class and the name of the drug class of interest inserted as appropriate (Gossop et al., 1995).

#### AAPI-Relevant Versions

##### Chinese

A Chinese version of the SDS has been evaluated in non-institutionalized heroin users in China (Gu et al., 2008). Gu and colleagues (2008) found a two-factor structure for the Chinese version, accounting for 69.59 % of the variance. The first factor consisted of items 1, 2, and 5 and was

named the “Impact” factor, while items 3 and 4 loaded on a separate “Perception.” Item-total correlations ranged from 0.36 to 0.75, with items 4 and 3 having the lowest correlations, respectively. The authors recommend a shortened three-item version of the SDS consisting of the first factor items (SDS-R). Internal consistency for the SDS was 0.61, while the SDS-R had a Cronbach’s alpha of 0.78. The two versions had comparable test–retest reliability (0.63 and 0.64). The SDS was also significantly correlated with the Opiate Addiction Severity Index and the Quality of Life-Drug Addiction. The SDS-R was more highly correlated with these measures.

The Chinese version has also been evaluated in heroin users in Taiwan (Chen et al., 2008). A single factor was found for the five-items, accounting for 50.2 % of the variance. Internal consistency was 0.75 and test–retest reliability was 0.88 for the total score. For individual items, test–retest reliability ranged from 0.59 to 0.93 with items 4 and 3 having the lowest correlations (0.59 and 0.66, respectively). While they did not find a second factor for these two items, results are consistent with the previous study (Gu et al., 2008) finding lower reliability for items 3 and 4.

### Japanese

A Japanese version has also been evaluated in a nationwide mental hospital survey (Ozaki & Wada, 2005). The article is written in Japanese so the following information is based upon the English abstract. The SDS-J was found to have a Cronbach’s alpha of 0.76. A single factor was found for the five-items, accounting for 50.8 % of the variance. Item-total correlations ranged from 0.68 to 0.76.

### Application with Younger Populations

The SDS has been evaluated with regard to cannabis use in adolescents ages 14–18 (Martin, Copeland, Gates, & Gilmour, 2006). They found an internal consistency of 0.83 and a test–retest reliability of 0.88. A single factor was found, accounting for 60 % of the variance. Using ROC analysis a cut-off score of 4 was found to be the best at determining cannabis dependence with a sensitivity of 65.1 and a specificity of 94.3. The SDS has not been evaluated in AAPI adolescent populations.

## CRAFFT

The CRAFFT is a six-item alcohol and other drug screening instrument developed for use in adolescents (Knight et al., 1999). Its name is an acronym to represent the questions that are contained within the measure. The acronym represents the problem areas car, relax, alone, forget, and family/friends (Knight et al., 1999). The CRAFFT has been found to have a sensitivity of 92.3 and specificity of 82.1 using a cut-off score of  $\geq 2$  in adolescents ages 14–18 (Knight et al., 1999). It has also been found to have sensitivity ranging from 0.76 to 0.92 and specificity from 0.80 to 0.94 in identifying problem use, abuse, or dependence using a cut-off score of  $\geq 2$  (Knight, Sherritt, Shrier, Harris, & Chang, 2002).

### Applications with Asian Populations

The CRAFFT has been evaluated in a multiethnic Asian population of adolescents and young adults ages 16–26 years in Singapore (Subramaniam, Cheok, Verma, Wong, & Chong, 2010). The internal consistency was acceptable at 0.73. The optimal cut-off score for drug or alcohol abuse or dependence was  $\geq 1$ .

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## Alcohol Use Assessment Instruments

### Alcohol Use Disorders Identification Test (AUDIT)

The Alcohol Use Disorders Identification Test (AUDIT; Babor, de la Fuente, Saunders, & Marcus, 1992; Babor, Higgins-Biddle, Saunders, & Monteiro, 2001) is a ten-item screening instrument for alcohol-related problems consistent with International Statistical Classification of Diseases and Related Health Problems revision 10 (ICD-10) diagnostic criteria. The first eight items address alcohol use in the last year, with scores ranging from 0 to 4 based on amount consumed or frequency of problem behaviors, while the last two items address lifetime alcohol use, with higher scores given to occurrences in the last year. The AUDIT takes approximately 2–4 min to complete and can be administered as an inter-

view, self-report, or computer assisted (Babor et al., 2001). The AUDIT is intended to identify drinking patterns that qualify as “hazardous,” drinking that is at risk to become harmful; “harmful,” drinking that results in negative consequences; and “dependence,” drinking resulting in behavioral, cognitive, and physiological problems (Babor et al., 2001). Briefer versions of the AUDIT have been used and both the original and briefer versions have been researched extensively (Reinert & Allen, 2007).

### **AAPI-Relevant Versions**

AAPI-relevant translations of the AUDIT include Chinese, Japanese, Hindi (Babor et al., 2001), Nepali (Pradhan et al., 2012), and Vietnamese (Giang, Spak, Dzung, & Allebeck, 2005) versions. Most of these translated versions can be obtained by writing to the Department of Mental Health and Substance Dependence, World Health Organization. Babor and colleagues (2001) also suggest contacting the World Health Organization to inquire about more recent translations or the procedure of translating before attempting to do so.

### **Chinese**

Li and colleagues (2011) reviewed articles from 1980 to 2009 referring to Chinese versions of the AUDIT published in both English and Chinese. They found 21 relevant articles, 9 of which examined the psychometric properties of Chinese versions of the AUDIT and the remaining used Chinese versions of the AUDIT for clinical purposes. With regard to the 9 psychometric studies, translations include Mandarin, Cantonese, and Tibetan, and versions include the full AUDIT, AUDIT-C (items 1–3), AUDIT-4 (items 1–3 and 10), and AUDIT-3 (item 3). The Cantonese translation resulted in an 18-item measure that addresses culturally relevant drinking practices. Overall, all versions and translations demonstrated good sensitivity and specificity, ranging from 0.88 to 0.997 and 0.71 to 0.93, respectively. However, lower specificity for alcohol dependence was found among Min-Nan Taiwanese at 0.58.

### **India**

The AUDIT was evaluated in 297 individuals recruited from treatment centers in North India in

interview format (Pal, Jena, & Yadav, 2004). There are 845 major languages spoken in India, with Hindi being the official language and English being the associate official language (Ramanathan, 2008). A Hindi AUDIT has been created (Babor et al., 2001), however, the authors did not indicate a translation process or specific language used so it seems the English version was used in this study. They found the AUDIT to have good internal consistency, with a Cronbach’s alpha of 0.92. Using the traditional cut-off of  $\geq 8$ , receiver operating characteristic (ROC) analyses found a sensitivity of 93.0 and specificity of 66.7 in identifying individuals qualifying for harmful use or alcohol dependence based on ICD-10 criteria. Using a cut-off of  $\geq 16$ , the sensitivity was 85.3 and specificity 89.4. ROC analyses were also conducted to determine the sensitivity and specificity of distinguishing ICD-10 harmful users and alcohol dependence. The cut-off score and corresponding sensitivity and specificity were as follows:  $\geq 8$ , 96.2, 28.6;  $\geq 10$ , 95.2, 42.9;  $\geq 24$ , 81.0, 85.7.

Carey and colleagues (2003) also examined the AUDIT in psychiatric inpatients in India in interview format “using the language most comfortable for the patient” (p. 3). This study was mentioned previously for the DAST-10. Exploratory factor analyses of the AUDIT determined one factor to be the best fit for all ten items. Internal consistency was excellent, with a Cronbach’s alpha of 0.94. Of the patients that were discharged with an alcohol use disorder diagnosis, 2 (10 %) had not exceeded the AUDIT cut score of  $\geq 8$ . Of those patients that exceeded the same cut-score and were considered high-risk, 65 (77 %) did not receive a diagnosis of alcohol use disorder at discharge. Because no standard diagnostic interview was used, these individuals may represent false positives or actual alcohol abusers that were not detected by standard psychiatric interview.

### **Japanese**

The AUDIT has been translated to Japanese using a method approved by the World Health Organization. Cut scores  $\geq 11$  have been found to indicate substance abuse in Japan (Hiro & Shima, 1996). Using the same cut-score, the reliability of

the Japanese version was evaluated in 113 male workers in a car manufacturing company in Japan (Kawada, Inagaki, & Kuratomi, 2011). The internal consistency was 0.67 for the full version of the AUDIT and 0.51 for the AUDIT-C.

Gender difference for the AUDIT were evaluated by national surveys in 15 countries as part of the Gender, Alcohol, and Culture: An International Study (GACAIS; Peng, Wilsnack, Kristjanson, Benson, & Wilsnack, 2012). Japan is the only AAPI-relevant country surveyed. Cronbach's alpha was calculated for the total score and each subscale. The total score had the highest internal consistency at 0.68 for men and 0.70 for woman. Confirmatory factor analysis was conducted for men and women in each country. Both two- and three-factor models were a good fit in Japanese men. None of the models were good fit for Japanese women. For the pooled sample of all countries data, AUDIT total scores and subscale scores were significantly correlated with measures of alcohol-related problems, withdrawal, intoxication, expectancy, and intimacy.

### Korean

The AUDIT and briefer versions have been evaluated in several Korean samples (Kim et al., 2013; Kwon et al., 2013; Ryou, Kim, Jung, Kim, & Choi, 2012; So & Sung, 2013). In Korean men 65 years and older, the AUDIT had better sensitivity and specificity than a four-item alcohol screening instrument (CAGE, reviewed later in this chapter) and a geriatric version of the MAST (MAST-G) in detecting at-risk drinking and alcohol use disorders (Ryou et al., 2012). The optimal AUDIT cut-off for at-risk drinking was  $\geq 7$ , and  $\geq 11$  for alcohol use disorders.

The AUDIT, AUDIT-C, and CAGE were compared in Korean college students (Kwon et al., 2013). The area under the receiver operating characteristic curve (AUC) was the largest for the AUDIT-C in detecting at-risk drinking, but not significantly different than the AUDIT. The AUC was largest for the AUDIT in detecting alcohol use disorders, but again not significantly different from the AUDIT-C. Both AUDIT and AUDIT-C had significantly larger AUC than the CAGE in detecting at-risk drinking and alcohol use disor-

ders. The optimal AUDIT cut-off score for at-risk drinking was  $\geq 8$  for males and  $\geq 5$  for females and  $\geq 10$  for alcohol use disorders in males and  $\geq 8$  in females. The optimal AUDIT-C cut-off score for at-risk drinking was  $\geq 6$  for males and  $\geq 4$  for females and  $\geq 7$  for alcohol use disorders in males and  $\geq 6$  in females.

So and Sung (2013) derived a brief AUDIT, consisting of items 3, 4, 5 and 9, using factor analysis in Korean males in an outpatient hospital and psychiatric ward. The brief AUDIT was then compared to the CAGE and the National Alcoholism Screening Test (NAST). They found good internal consistency for the AUDIT and the brief AUDIT, at 0.87 and 0.82, respectively, which was equivalent to the NAST and superior to the CAGE. Using ROC analysis, the optimal brief AUDIT cut-off score for alcohol use disorders was  $\geq 5$  and  $\geq 10$  for alcohol dependence. The authors' chose to maximize sensitivity, resulting in recommended cut-off scores of  $\geq 6$  for alcohol use disorders and  $\geq 9$  for alcohol dependence. Additionally, the brief AUDIT had greater AUC than the NAST and CAGE for alcohol abuse (0.87) and dependence (0.97).

Finally, Kim and colleagues (2013) developed the five-item AUDIT (AUDIT-5) consisting of items 2, 4, 5, 9, and 10 using regression analysis. This version was then compared to other brief versions of the AUDIT and the CAGE. They found good internal consistency for all AUDIT versions evaluated, ranging from 0.82 to 0.92, with the AUDIT being the highest and the AUDIT-5 the lowest. AUC for problem drinking screening for all versions of the AUDIT ranged from 0.94 to 0.99, with the AUDIT-5, AUDIT-C, and AUDIT having the highest values. The AUDIT, AUDIT-5, AUDIT-PC, and CAGE had high AUCs, ranging from 0.91 to 0.95 for alcohol use disorder screening. The same measures had high AUCs, ranging from 0.92 to 0.96 for alcohol dependence screening.

### Nepali

Pradhan and colleagues (2012) translated the AUDIT to Nepali and examined its validity in 1,068 hospital outpatients in Nepal. They found good internal consistency with a Cronbach's



alpha of 0.82. They examined the diagnostic validity using DSM-IV (APA, 2000) alcohol abuse and dependence criteria. ROC curves indicated optimal cut-off scores  $\geq 11$  for alcohol dependence in men and women, cut-off scores  $\geq 9$  for both alcohol dependence and abuse in men and women, and cut-off scores  $\geq 5$  for men and  $\geq 4$  for women to indicate hazardous drinking.

### Vietnamese

Giang and colleagues (2005) translated the AUDIT to Vietnamese and evaluated it in a rural district in Vietnam. Due to the low occurrence of alcohol problems found in female in the study, analyses were conducted with only male data. They found an optimal cut-off score of 7/8 for at-risk screenings in the general population. At this cut-off the sensitivity was 81.8 and specificity 76.1 for detecting at-risk drinking. Using ICD-10 criteria, for Harmful Use the sensitivity was 100 and specificity 69.9 and for alcohol dependence the sensitivity was 93.8 and specificity 87.4. The AUC was 0.91 for Harmful Use and 0.84 for alcohol dependence.

### Application with Younger Populations

The AUDIT has been found to be superior to other alcohol screening measures at identify alcohol use problems in adolescents using a cut-off score of  $\geq 10$  (Kelly, Donovan, Chung, Cook, & Delbridge, 2004) and  $\geq 9$  (Cook, Chung, Kelly, & Clark, 2005). The AUDIT has not been evaluated in adolescent Asian subgroups.

### Michigan Alcoholism Screening Test (MAST)

Another commonly used and extensively researched alcohol screening instrument is the Michigan Alcoholism Screening Test (MAST; Selzer, 1971). The MAST is 25-items, with briefer versions available, such as the 10-item brief MAST (B-MAST; Pokorny, Miller, & Kaplan, 1972), and the 13-item short MAST (SMAST; Selzer, Vinokur, & Rooijen, 1975).

### AAPI-Relevant Versions

#### Chinese

A Mandarin Chinese version of the short MAST (SMAST) has been evaluated in hospitalized patients in Taiwan (Wu et al., 2008). The AUC was 0.87 for the entire sample and 0.81 for men only. The AUDIT and three briefer versions were significantly better than the SMAST, while the SMAST was equivalent to the CAGE.

#### India

The SMAST was evaluated in the same study mentioned previously for the AUDIT in North India (Pal et al., 2004). The internal consistency was 0.80. Using the cut-off of  $\geq 4$ , ROC analyses found a sensitivity of 87.4 and specificity of 83.3 in identifying individuals qualifying for harmful use or alcohol dependence based on ICD-10 criteria. Using a cut-off of  $\geq 6$ , the sensitivity was 85.7 and specificity 87.9. ROC analyses were also conducted to determine the sensitivity and specificity of distinguishing ICD-10 harmful users and alcohol dependence. The cut-off score and corresponding sensitivity and specificity were as follows:  $\geq 5$ , 91.9, 66.7;  $\geq 10$ , 81.0, 90.5.

#### Korean

The geriatric version of the MAST (MAST-G) was evaluated in Korean men aged 65 years and older in the same study discussed previously for the AUDIT (Ryou et al., 2012). The AUDIT was found to have greater sensitivity and specificity than the MAST-G and CAGE. The optimal MAST-G cut-off for at-risk drinking was  $\geq 2$ , and  $\geq 4$  for alcohol use disorders.

### Cutting Down, Annoyed, Guilty, Eye-Opener (CAGE)

The CAGE is a four-item alcohol screening instrument (Mayfield, McLeod, & Hall, 1974). Its name is an acronym for the four questions contained in the measure, specifically the patients' need to cut down on drinking, becoming annoyed by criticism, feeling guilty about drinking

and taking a drink as an eye-opener first thing in the morning. Each question has a value of one point, with scores  $\geq 2$  indicative of alcoholism.

### **AAPI-Relevant Versions**

Much of the research conducted in Asian subgroups on the CAGE has been in the examination of the psychometric properties of another screening instrument. The results of those studies are summarized below.

#### **Chinese**

A Mandarin Chinese version of the CAGE has been evaluated in hospitalized patients in Taiwan (Wu et al., 2008). The AUC was 0.85 for the entire sample and 0.78 for men only. The AUDIT and three briefer versions were significantly better than the CAGE, while the CAGE was equivalent to the SMAST.

#### **Korean**

The CAGE was evaluated in several studies previously mentioned in the AUDIT (Kwon et al., 2013; Ryou et al., 2012; So & Sung, 2013). In Korean men aged 65 years and older the AUDIT was found to have greater sensitivity and specificity than the CAGE and MAST-G, with no significant differences found between CAGE and MAST-G (Ryou et al., 2012). The optimal CAGE cut-off for at-risk drinking and alcohol use disorders was  $\geq 2$ .

The AUDIT and AUDIT-C were found to be superior to the CAGE in detecting both at-risk drinking and alcohol abuse disorders in Korean college students (Kwon et al., 2013). The optimal cut-off scores for at-risk drinking and alcohol use disorders in both males and females was  $\geq 1$ . In Korean males in an outpatient hospital and psychiatric ward the internal consistency of the CAGE was found to be 0.69 (So & Sung, 2013). The AUC was  $0.76 \pm 0.05$  for alcohol abuse and  $0.93 \pm 0.03$  for alcohol dependence. Kim and colleagues (2012) found the internal consistency of the CAGE to be 0.70. The AUC for problem drinking was 0.76, 0.91 for alcohol use disorders, and 0.92 for alcohol dependence. Four versions of the AUDIT were found to be superior in screening for problem drinking, however, the

CAGE was found to be superior to two brief versions of the AUDIT (AUDIT-3 and AUDIT-C) in screening for alcohol use disorders and alcohol dependence.

### **Application with Younger Populations**

ROC analyses were conducted on the CAGE and other screening measures in adolescents in the USA (Cook et al., 2005; Kelly et al., 2004). Kelly and colleagues (2004) found the AUC to be 0.68, which was the lowest of the screening measures assessed. Cook and colleagues (2005) found an AUC of 0.70, which was also the lowest of the screening measures assessed. Both studies found  $\geq 1$  to be the optimal cut-off score. An additional study found a sensitivity of 0.37 and specificity of 0.96 (Knight, Sherritt, Harris, Gates, & Chang, 2003). The CAGE has not been evaluated in adolescent Asian subgroups.

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## **Summary and Recommendations**

Assessment measures for alcohol and substance use disorders have received some attention in the literature in Asian American Pacific Islander (AAPI) populations. Many of the cultural considerations discussed in this chapter are general guidelines. As mentioned, there are more than 50 subgroups of AAPIs and adequate coverage of each group's cultural considerations is beyond the scope of this chapter. It is important for a health professional working with a specific Asian-American population to familiarize him/herself with the cultural and religious beliefs of that group, and how those beliefs may promote or inhibit disclosure and treatment of problem behaviors.

Much of the AAPI research on psychometric properties of alcohol and drug assessment measures just discussed has been conducted in their respective countries. Modifications were made to some instruments in some languages to address sociocultural and dialectical differences. However, the modifications do not address important considerations unique to Asian-Americans, such as acculturation issues. Clinician should consider adding culturally relevant questions or additional

assessment measures to address these missing items, such as the impact acculturation stress, traumas, or gender roles may have on substance use. Another consideration is that the same instrument may have been translated to a specific language by separate research groups, making its comparability across studies difficult. Finally, the samples were limited, with research into these instruments conducted primarily in males and in hospital settings. Further research into additional Asian subgroups, females, and adolescents are warranted.

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