

4-23-2019

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Kevin Charles Hynes, Ph.D.

University of Connecticut, 2019

The field of Marriage and Family Therapy has attempted to engage with ethnic and racial minority clients by taking steps to be multiculturally competent and understand the unique experiences and needs each client population has. One under-researched and underserved population is Asian Americans and the current study specifically examines East Asian Americans. Previous research has established the importance of cultural values in their association with professional psychological help-seeking attitudes and behaviors for East Asian Americans. East Asian American cultural values are manifested through the processes of acculturation and enculturation. The field can test the association between acculturation or enculturation with other constructs such as help-seeking attitudes. To date, however, the field has assumed that the measurement of acculturation and enculturation processes are invariant. This means that the field assumes that different East Asian ethnic groups: Chinese, Japanese, and Korean, have the same cultural values and that the constructs of acculturation and enculturation are manifested in equivalent ways. This study addresses this assumption by investigating measurement invariance in three acculturation and enculturation measures: The Acculturation Rating Scale for Mexican Americans adapted for Asian Americans; the Asian Values Scale – Revised; and the European American Values Scale for Asian Americans – Revised. Data were collected from 138 Chinese Americans, 134 Japanese Americans, and 138 Korean Americans on the above acculturation and enculturation measures. Results revealed that all three measures were not strong invariant and thus their means cannot be compared across groups. In addition, the results revealed the factor model limitations of the measures used. The findings are discussed

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in the context of measurement and what this means for how the field can understand the experiences of East Asian Americans in terms of therapy.

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A Dissertation

Submitted in Partial Fulfillment of the

Requirements for the Degree of

Doctor of Philosophy

at the

University of Connecticut

2019

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APPROVAL PAGE

Doctor of Philosophy Dissertation

Measurement Invariance of Acculturation and Enculturation Measures in East Asian Americans

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CHAPTER 1: INTRODUCTION

As one of the fastest growing minority groups in the United States (López, Ruiz, & Patten, 2017), Asian Americans¹ are an important, and growing, population. However, the term Asian American is broad and encompasses disparate ethnic groups and nationalities that share very little except for geography. Because of these limitations, this review focuses specifically on East Asian Americans (EAA; Chinese, Japanese, and Korean) to narrow the scope. Asian Americans are dramatically underserved by conventional mental health services, including Marriage and Family Therapy.

Due to the diversity and complexity of the Asian American experience and with respect to all Asian cultures, this paper will focus on East Asian Americans (EAAs: Chinese, Japanese, and Korean²) to focus the scope of the paper and utilize the broader width of research on this population, which composes most of the extant literature on Asian American clients. Presently, the literature on East Asian Americans assumes that these ethnic groups are similar in cultural values and interpret processes such as acculturation and enculturation similarly (Abe-Kim, Okazaki, & Goto, 2001). As a result, researchers have tested the associations between acculturation/enculturation and help-seeking attitudes/behaviors (B. Kim, 2007; Leong, H. Kim, & Gupta, 2011; Liao, Rounds, & Klein, 2005; Miller et al., 2011). For example, Leong, H. Kim, and Gupta (2011) found that high enculturation is associated with low belief in needing professional psychological help. Other researchers have tested the association between acculturation/enculturation and therapeutic alliance (B. Kim, Li, & Liang, 2002). East Asian Americans go therapy, but at lower rates than their minority or white counterparts (U.S. Department of Health & Human Services, 2001; 2013). These researchers found Asian American clients with high enculturated Asian values perceived their therapists as having greater empathic

understanding and a strong therapeutic alliance than did clients with low enculturation.

Unfortunately, the assumption that East Asian American ethnic groups have similar cultural values and interpret processes such as acculturation and enculturation similarly has not been tested statistically. Before the field can examine how cultural values, manifested through acculturation and enculturation processes, relate to important therapeutic factors such as the therapeutic alliance or motivation to change, there needs to be a pause for researchers to first establish that the assessments used for this population are invariant. Not only is it problematic that the field assumes equivalency with acculturation and enculturation measures for EAAs, but this assumption of equivalency extends to other therapy related constructs and assessments. To imagine that EAAs experience depression, anxiety, or the process of therapy the same way as other ethnic groups is problematic for researchers, clinicians, and the clients they hope to serve.

The purpose of the current research is to test measurement invariance (configural, weak, and strong) of acculturation and enculturation measures in East Asian Americans. An assessment is invariant (equivalent) when the same construct is being measured equally and similarly across groups. In this instance, the researcher is interested in whether acculturation and enculturation are being interpreted in a similar manner by Chinese Americans vs. Japanese Americans vs. Korean Americans. Testing measurement invariance involves placing increasingly more stringent constraints on a factor model and comparing if the model fit becomes worse with the increasing constraints. Before research can test the association of acculturation/enculturation with other constructs, it is important to know whether the measures are invariant, or the associations are meaningless because we do not know if acculturation/enculturation manifests differently for these ethnic groups. This study will contribute to the field by addressing the research objective: test measurement invariance of three acculturation/enculturation measures.

In the following chapter, the extant literature is presented and reviewed, in particular what is currently known about how acculturation and enculturation are associated with help-seeking behaviors and attitudes in East Asian Americans. In addition, the theoretical background of why the present study is needed is provided. The third chapter presents the methodological design. The fourth chapter presents the results and analyses of the current study. Finally, the fifth chapter presents a discussion of the results, clinical implications, and future directions for research.

CHAPTER 2: LITERATURE REVIEW

Asian Americans are the third-largest minority group in the United States (U.S. Census Bureau, 2016) and this group has grown 72% from 2000 to 2015 (López, Ruiz, & Patten, 2017). Asian Americans are the fastest growing ethnic group in the United States, and the trend is expected to continue, as the population is expected to triple or quadruple by 2050 (Humes, Jones, & Ramirez, 2011). Due to the predicted growth of this population, researchers and clinicians in the field of Marriage and Family Therapy (MFT) need to increase their understanding of the unique needs of Asian Americans. Asian Americans have the lowest prevalence rates of past-year diagnosed mental disorders (15.8%) of any racial group (SAMHSA, 2012). Despite low occurrence rates for diagnosis of mental disorders, Asian Americans are likely to experience problems with mental health and wellness. Low diagnostic occurrences may be related to Asian Americans' perceptions of mental illness. Alternatively, there may be fewer diagnoses because the field's standards of mental health are based on a western conceptualization of mental illness. Compounding the problem, the Asian American population is also underserved and under-researched in the area of mental health services compared to their White peers and even other minority peers (U.S. Department of Health & Human Services, 2013), which is a failure on the part of field to engage with this population.

Research has clearly established that Asian Americans utilize mental health services less than their White and other minority counterparts (Abe-Kim et al., 2007; U.S. Department of Health & Human Services, 2001; Wang & Kim, 2010) and have a less positive attitude toward seeking psychological help (Masuda et al., 2009), even in programs specifically designed for Asian Americans (Akutsu, Tsuru, & Chu, 2004). These disparities also extend to retention, with Asian Americans less likely to stay in therapy (D. W. Sue & D. Sue, 1990), which may be

because they perceive their therapists as not understanding them, or culturally insensitive. The disparities in engagement means Asian Americans are experiencing mental health issues without professional help at greater rates than other populations, despite the lower prevalence rates. In addition, because Asian Americans rarely attend therapy, they are also rarely included in research on treatments for mental illness (Miranda et al., 2005; U.S. Department of Health & Human Services, 2001, 2013). This combination of less engagement in therapy and less research on this populations means the field knows little about how to engage and work with this large and growing population.

For EAAs it appears that mental health is tied to cultural values (Kramer et al., 2002). Past research suggests that cultural values are manifested through acculturation and enculturation. Acculturation is the process in which an individual of a different culture adapts to and adopts the values and behaviors of the dominant culture in which they reside (Miller et al., 2011). While the original conceptualization of acculturation was a unilinear model in which individuals were on a single spectrum in terms of the level of acculturation, more recently a bilinear model was proposed that has adherence to the dominant culture on a continuum and adherence to the original culture on another continuum (Miller et al., 2011). This second continuum is referred to as enculturation, the process in which an individual of a different culture maintains and is socialized in their original cultural norms despite living in a different dominant culture. The bilinear model demonstrates that an individual can have an increase in acculturation on one hand while also allowing the individual to not necessarily have a decrease in enculturation on the other. The current study seeks to address whether or not the measurement of acculturation and enculturation is the same across the three major East Asian American ethnic groups, Chinese, Japanese, and Korean.

Help-Seeking Attitudes and Behaviors

The MFT field, and mental health field broadly, has struggled to produce a unified definition of help-seeking attitudes and behaviors. For the purpose of this paper, help-seeking is defined as an active behavior directed toward obtaining help through a formal social process as a means of coping with a problem or distress (Rickwood, Deane, Wilson, & Ciarrochi, 2005). Help-seeking attitude is defined as the belief and mindset that professional or formal help for a problem or distress would alleviate said problem or distress. These constructs are important for the field to understand how or why EAAs engage or not engage in therapy.

Understanding how EAAs experience acculturation and enculturation may help researchers and clinicians in the field of MFT understand how cultural values of EAA clients impact their attitudes toward therapy. In this section, the writer will present an overview of cultural values associated with East Asian Americans. In particular, the writer will outline how these cultural values may affect EAA help-seeking attitudes and behaviors and describe how cultural values are exhibited through the processes of acculturation and enculturation. The writer will also present current measures used to assess acculturation/enculturation and how they have been used to describe the relationship between acculturation/enculturation and help-seeking attitudes and behaviors. The writer will argue that while the field has established the importance of acculturation/enculturation, the field has not established measurement invariance of the measures used to assess acculturation/enculturation. The lack of support for measurement invariance of assessments used to measure acculturation/enculturation renders the conclusions in the extant literature problematic and possibly invalid. Given these shortcomings, additional research is needed to better understand acculturation/enculturation among EAAs. This need informed the research questions that guided the current study.

East Asian American Assimilation

Cultural Values

Cultural values and their retention seem to be an integral part of the East Asian American experience (D. Sue & S. Sue, 2003). These constructs are the core principles that the EAA community hold and strive towards. D. Sue and S. Sue (2003) proposed the Asian cultural values consist of avoidance of shame, hierarchical relationships, and collectivistic orientation. Building upon these, B. Kim, Atkinson, and Yang (1999) and B. Kim (2007) identified emotional self-control, conformity to norms, family recognition through achievement, filial piety, and humility as additional cultural values. These cultural values may influence why or why not EAAs engage in therapy.

Two specific values -- emotional self-control and conformity to norms, which are associated with individuals showing restraint when experiencing strong emotions and avoiding deviating from the norm -- may influence EAA clients' views of what therapy will be like. Clients who value emotional self-control and who are exposed to therapy that emphasizes the expression of emotion may rate the sessions more poorly than clients who hold less value on emotional self-control (B. Kim, Atkinson, & Umemoto, 2001; Wang & B. Kim, 2010). However, it may be that while clients are uncomfortable about the prospect of discussing emotions, they are socialized to expect it to be a task of therapy and have been able to suppress their anxiety to do so (B. Kim et al., 2002). This may be explained by the EAA cultural values of deference to authority and striving for interpersonal harmony in which clients defer to their therapists to maintain harmony. These clients who are enculturated to believe that they need to listen to authority figures and maintain harmony with others may defer to their therapists' directives in session, which may be problematic still if the clients do not agree with this goal. This may also

mean that if EAA expect to talk about emotions, they may not engage in therapy. However, the previous researchers did not test for invariance with the measures they used. This means these conclusions may not be valid because the measures used have not been shown to equivalently assess across Asian American ethnic groups.

Another important cultural factor to examine for EAA is the model minority myth. The internalized model minority myth may be associated with intrapersonal values such as emotional self-control which is dependent on EAAs' acculturation and enculturation levels. EAA who have a strong sense of being a model minority and high need to show emotional self-control may be less likely to seek therapy. The model minority myth stems from the idea that Asian Americans do well financially and academically, and thus Asian Americans are an exemplary minority group in comparison to their minority peers. While some Asians do well, others do poorly (Gloria & Ho, 2003; Leong et al., 2011), and perpetuation of the model minority myth can be damaging to EAAs. The model minority myth often does not encapsulate the experiences of many EAAs and prevents the mental health community and society in general from seeing the needs EAAs have. In addition, the model minority myth places a higher standard on EAAs and pressures EAAs to live up to those high standards (S. Lee, Wong, & Alvarez, 2009). The limited research on the internalized model minority myth suggests that EAAs with stronger internalized model minority beliefs also have less positive help-seeking attitudes (P. Kim & D. Lee, 2014).

If an EAA individual cannot meet the high expectations associated with the model minority myth, then they may start to have self-doubts and feelings of inadequacy (Gupta, Szymanski, & Leong, 2011). The pressure to live up to the myth may encourage EAAs to ignore or minimize their mental health needs (S. Lee, Wong, & Alvarez, 2009) and avoid seeking help, since EAAs are perceived as not having those "types of issues" (S. Lee, 1994). EAAs with high

emotional self-control value do not want to express feelings or recognize them, and accordingly, EAAs may not agree to therapeutic tasks or goals in which the expression of emotion is expected or may rate the sessions more poorly than clients who hold less value on emotional self-control (Wang & B. Kim, 2010).

Based on the above findings, the field does not know if EAAs conceptualize mental illness in the same way or would endorse similar symptoms as their Western counterparts. In addition, the field does not know if even different EAA ethnic groups or Asian American ethnic groups conceptualize mental illness in the same ways. Furthermore, measurement invariance of assessments that examine saving face or emotional self-control, through the processes such as enculturation, have not been tested either. The field cannot draw meaningful conclusions about EAA's mental health without testing if the measures used with this population are equivalent across ethnic groups.

East Asian American individuals may be concerned with another Asian value -- shame and stigmatization within the community and family. Loss of face is connected to the loss of respect from others. Loss of face may be detrimental to the perceived standing within the community for the individual and their family. Higher levels of perceived stigma for seeking help is associated with less positive views of help-seeking attitudes in EAA college students (Shea & Yeh, 2008) due to the possibility of losing of face. However, high acculturation and high levels of loss of face may be associated with a recognition of need for professional help, tolerance of stigma with getting psychological help, and openness to discussing one's problems (Leong et al. 2011). It may be that when problems become so intolerable, the perceived potential for loss of face is worth it to resolve the difficulty. Unfortunately, by that time, the clients' symptoms may have become so severe that typical out-patient services may not be enough to

help them (W. Li, Wong, & Toth, 2013; Tsui & Schultz, 1985). Systemically, it may be advantageous for an EAA to seek counseling from outside of the system in which they reside. A therapist outside of the client's system is less likely to associate with individuals within the client's environment, thus potentially exposing the client's participation in therapy. However, the shame and stigmatization of mental illness may still be a barrier to engagement for EAAs. Models specifically designed for this population or therapists specifically attempt to gain entry with the population through participation in cultural activities may still not be effective because the cultural values of shame and stigma are too powerful. In addition, by entering into the cultural system or enclave the therapist(s) make themselves too well-known to the community and thus EAA who choose to interact with these providers may lose face through their association with them.

Another Asian value, collectivism, may contribute to disagreement with the goals and tasks of therapy. Collectivism is a cultural value that emphasizes cohesion among a group and prioritizes the group over the individuals that comprise the group. Some traditional therapeutic models emphasize open verbal communication, insight into internal conflict, meaning, emotion, and a focus on the individual. These processes encourage clients to focus on their own individual goals ahead of the collective (D. Sue & S. Sue, 1990). Relatedly, the Asian value of humility may contribute to EAAs feeling uncomfortable about self-exploration as a goal or task of therapy (B. Kim, 2007). Typically, EAA individuals prefer to keep information within their family sphere and sharing emotions outside of the family may go against fitting into norms or bring shame upon the family.

Cultural values may also increase EAA's favorable attitudes toward therapy, in particular humility, deference to authority figures, and hierarchical relationships. All of these values may

influence clients' willingness to work the goals and tasks of therapy set forth by the therapist(s). Power differentiation requires those with lower status to show deference to those with higher status, which for EAAs would mean the therapist holds a higher status. EAA values hold positive beliefs about power and authority and social hierarchy. Thus, EAAs may be more likely to trust and view therapists as credible if the therapists are directive and behave as knowledgeable authority figures (Atkinson & Matsushita, 1991; Li & B. Kim, 2004; Pan, Huey, & Heflin, 2017). A directive therapy style consists of giving information, asking for information, prescribing behavior, and interpreting clients' thoughts, feelings, and behaviors (Li & B. Kim, 2004). A non-directive style consists of reflecting or restating feelings and thoughts for the client (Li & B. Kim, 2004). In comparison of styles, European American directive counselors were reported to be more empathic, cross-culturally competent, have greater session depth, and have built a stronger working alliance in one session compared to their European American non-directive peers with EAAs (Li & B. Kim, 2004). These directive approaches may be more culturally congruent with a client's expectations of therapy (Tambling, 2012), and EAAs may agree with directives as a task of therapy. It is important for the field of MFT to know if different EAA ethnic groups have similar cultural values and if current measures of acculturation and enculturation can capture these cultural values equivalently. By testing this assumption, the field can have more confidence moving forward about the association between cultural values, through the process of acculturation and enculturation, with constructs such as help-seeking attitudes and behaviors.

Acculturation and Enculturation

Two distinct factors, values and behaviors, compose acculturation and enculturation. Examples of behaviors are language, social interactions, and daily living habits. Values are made

up of belief systems and world views. Research has shown that behaviors are faster to change than values (B. Kim, Atkinson, & Yang, 1999), so measuring only one would not fully encompass the acculturation and enculturation process of EAAs. Acculturation and enculturation permeate each system of an EAA individual's environment and impact the individual in their help-seeking attitudes. The findings on the relationship of acculturation and enculturation on professional help-seeking are mixed and reflect the field's growing understanding of the EAA population. Unfortunately, presently no research has investigated if the measures used to assess acculturation and enculturation are invariant, or do the measures assess acculturation and enculturation equally across EAA ethnic groups.

One consideration is that subsequent generations after first-generation EAAs may not have been socialized in their East Asian culture and must be socialized into the culture of origin as well. An Asian identity, specifically East Asian or East Asian American identity, is dependent on an individual's conscious awareness and decision of how to identify. A recent immigrant from Korea versus a third-generation individual of Korean ancestry may identify differently and have different processes of acculturation and enculturation. Each generation following first-generation East Asian immigrants are more likely to seek counseling than the last (Abe-Kim et al., 2007). EAAs, no matter the length of time spent in the U.S., make conscious and unconscious choices on their acculturation/enculturation processes. Most saliently, the EAA individual exists within two macrosystems, operating in opposition at times. They may have to balance the distal influence of the macrosystem of the culture of origin with the proximal influence of the macrosystem of the United States. The balance between acculturating into the new culture and staying enculturated in the culture of origin is evident in the extant research.

Currently, the field assumes that this process and balance is similar for different EAA ethnic groups and there are no studies that test this assumption.

Originally, researchers focused on a unilinear model of acculturation and did not include enculturation as part of the measurement for studies. In addition, early literature used behavioral acculturation models for the association between acculturation and help-seeking attitudes. Using a unilinear model and only measuring behavioral acculturation may have resulted in the mixed findings of the early extant literature. When measuring behavioral acculturation in Chinese American college students (Tata & Leong, 1994) and EAA college students (Atkinson & Gim, 1989), higher behavioral acculturation was associated with more positive attitudes toward seeking professional help. Leong, H. Kim, and Gupta (2011) expanded these findings and found that higher behavioral acculturation levels were associated with more positive conceptions of mental health and more favorable attitudes toward help-seeking.

In contrast to the previous findings, a study of primarily East Asian college students found that lower behaviorally acculturated participants were more likely to be willing to seek professional psychological help (Gim, Atkinson, & Whiteley, 1990). Attitudes toward professional help and willingness to seek professional help is an important distinction, and researchers have found them to be separate constructs (Fischer & Farina, 1995). While an individual may hold positive attitudes toward professional psychological help, they may not be willing themselves to seek help. Though EAAs may have less positive attitudes toward seeking professional psychological help, a less acculturated EAA may be willing to see a counselor because of cultural values that suggest that they ascribe credibility to trained professionals (Gim, Atkinson, & Whiteley, 1990). Asian Americans who adhere to traditional values may be more willing because of their deference to authority and hierarchical relationships.

In a study of EAA college students, those with high values enculturation were associated with less positive attitudes toward seeking professional psychological help (B. Kim & Omizo, 2003). The specific EAA cultural values that seem to be related to attitudes toward seeking help are emotional self-control and conformity to norms. Those are the cultural values that are associated with individuals showing restraint when experiencing strong emotions and that deviating from the norm by admitting psychological problems would be a violation of Asian cultural values and norms. Deviating from expected norms may result in shame on the family and the associated stigma connected with poor mental health.

More recent findings suggest that a loss of Asian values rather than a gain of European American values influences help-seeking attitudes and behaviors (B. Kim, 2007; Liao, Rounds, & Klein, 2005; Miller et al., 2011). Only values enculturation was related to attitudes toward seeking professional psychological help in EAA undergraduate and graduate students (Miller et al., 2011), with lower enculturation related to more positive attitudes. Similarly, values enculturation, while controlling for European American values (acculturation), are inversely related to attitudes toward help-seeking of professional psychological help (B. Kim, 2007).

The help-seeking path model suggests that individuals are more likely to seek counseling when their distress is high and their attitudes toward help-seeking are positive (Cramer, 1999). Indirectly, distress may be high when social supports are impaired, and individuals have high rates of concealing their personal distress from others. Individuals who conceal their personal distress are more likely to have negative attitudes toward counseling and impaired social networks. Liao, Rounds, and Klein's (2005) path analysis recreated Cramer's (1999) help-seeking model and confirmed its fit with EAAs. Adding acculturation and enculturation to the model improved model fit with EAAs compared to the original model as well (Liao et al., 2005).

There was no evidence of acculturation having a direct effect on willingness to seek counseling; instead enculturation seems to mediate the relationship between attitudes toward counseling and willingness to seek counseling. Therefore, it is essential that the field knows whether or not at the very least enculturation is measured equivalently across EAA ethnic groups.

Experiences of Therapy. One of the major criticisms of many of the studies on the relationship between acculturation/enculturation and engagement in therapy is that the studies surveyed participants' thoughts and attitudes toward therapy rather than their actual behaviors or their experiences of therapy. Attempts to rectify this limitation have focused on using quasi-experimental studies asking volunteer East Asian students to be clients receiving one session of therapy to rate counselors on their empathy, credibility, and the therapeutic alliance (B. Kim & R. Atkinson, 2002; B. Kim et al., 2003; B. Kim, Li, & Liang, 2002; B. Kim, Ng, & Ahn, 2005, 2009; Wang & B. Kim, 2010). East Asian American clients with high enculturation matched with either European American or East Asian American counselors rated their counselors to be more credible and empathic when the counselors were ethnically similar (B. Kim & Atkinson, 2002). However, if the clients had low enculturation, the clients rated their European American counselors as more empathic (B. Kim & Atkinson, 2002). Another analogue study using only European American counselors found that primarily EAA clients with high enculturation saw their counselors as more empathic and had a greater therapeutic alliance than clients with low enculturation (B. Kim, Li, & Liang, 2002). These results may be possible because EAA clients who adhere to EAA values may be more invested in achieving a strong therapeutic alliance because they do not want to disrupt interpersonal harmony, an important value in EAA culture.

Unexpectedly, highly enculturated clients perceived counselors who emphasized the expression of emotion as more cross-culturally competent than those who emphasized cognition

(B. Kim et al., 2002). Therapy that focuses on cognition emphasizes clients' thoughts and thinking process rather than the expression of feelings, and the client derives new insight from this expression. Past theories of cultural values suggests that EAAs who adhere to Asian values would not want to express strong emotions because of the possibility of losing face (B. Kim, Atkinson, & Umemoto, 2001). It may be that while clients are uncomfortable about the prospect of discussing emotions, they are socialized to expect it to be a task of therapy and have been able to suppress their anxiety to do so. These findings may also be explained by the EAA cultural values of deference to authority and striving for interpersonal harmony in which clients with high value enculturation deferred to their therapists to maintain harmony.

The pull between remaining enculturated and having possible protective factors within the family system and becoming acculturated and developing protective factors within the dominant culture further demonstrates the difficulty in untangling the nuances of EAA's engagement in therapy. It bears repeating, however, that the previous findings relied on measures of acculturation and enculturation that have not been established as invariant. That is statistically, the researchers did not know if the measures of acculturation and enculturation were assessing same construct across EAA ethnic groups or if the measures captured the constructs of acculturation/enculturation equivalently. Without having tested this assumption, the validity of the prior studies is in question and as a result the limited research on this population may be more about the differences in ethnic groups on engagement rather than the EAA population as a whole.

Acculturation and Enculturation Measures

Measuring acculturation and enculturation is important because it is the processes by which cultural values and behaviors are manifested for EAAs. Understanding acculturation and

enculturation, and measuring them well, assists clinicians and researchers in meeting the needs of EAA clients. The majority of measures of acculturation and enculturation utilize participant self-report. This may be problematic because acculturation/enculturation processes may not always be apparent from self-report because of the unconscious and implicit characteristics that attitude and identities are made up of and thus individuals may show distinct levels of identity between implicit and explicit measures (D. Kim, Sarason, & Sarason, 2006). In addition, the measures have relied on specific examples of acculturation or enculturation rather than a global assessment of values and behaviors. Most importantly, these measures have not been tested for measurement invariance, and there may be distinct differences in how different EAA ethnic groups conceptualize the constructs of acculturation and enculturation. These measures are important because East Asian Americans, and Asian Americans broadly, are not engaging in therapy on the same level as their minority counterparts (Abe-Kim et al., 2007; U.S. Department of Health & Human Services, 2001; Wang & Kim, 2010). The field of Marriage and Family Therapy is not engaging with these clients. One reason may be because the field does not understand how acculturation and enculturation impact help-seeking attitudes/behaviors and currently conceptualizes these constructs as the same across Asian American ethnic groups. This assumption has not been tested with these measures. The field needs the present study to confirm or contradict the assumption that EAA ethnic groups conceptualize acculturation and enculturation similarly. By confirming the assumption, the field can have more confidence in using these constructs with associations with constructs such as help-seeking attitudes/behaviors. Alternatively, by contradicting the assumption, the field then must be specific with ethnic groups when studying EAAs and cannot aggregate them as one group when examining associations.

AVS-R. The Asian Values Scale - Revised (B. Kim & Hong, 2004) is a value enculturation scale that measures adherence to Asian cultural values revised from the original scale (B. S. K. Kim, Atkinson, & Yang, 1999). The exploratory and confirmatory factor analyses of the original identified a six-factor solution. However, due to low coefficient alphas, the authors recommend that only the whole score be used and not to use the six factors as subscales (B. Kim, 2007). Structural equation modeling procedures found that EAA college students perceived and defined the values similarly and were observed across EAA ethnic groups (B. S. K. Kim et al., 2001). The AVS-R has 25 items on a 4-point Likert scale (1- strongly disagree, to 4 - strongly agree). The original AVS had $\alpha > .81$. The developers of the AVS-R reasoned that because they removed items and did not add related information to the scale, the reliability should be similar (B. S. K. Kim & Wong, 2004). Finally, concurrent validity between the original AVS and revised was equal to .93. Studies have examined value enculturation using the Asian Values Scale (B. Kim, Atkinson, & Yang, 1999) or the AVS-R, and its relationship with help-seeking attitudes and behaviors (Gloria, Castellanos, Park, & Kim, 2008; B. Kim & Omizo, 2003; B. Kim, 2007; Miller et al., 2011; Shea & Yeh, 2008).

EAVS-AA-R. The European American Values Scale for Asian Americans – Revised (Hong, B. Kim, & Wolfe, 2005) is a revised version of the EAVS-AA (Wolfe, Yang, Wong, & Atkinson, 2001), which was developed to measure values acculturation in Asian Americans. Combined with the use of the AVS, the EAVS-AA can be used to measure the bilinear model of values acculturation/enculturation. Unfortunately, the measure has low reliability, the factor structure is unclear, and the items do not fully represent the range of the construct (B. S. K. Kim, 2007). The revised version of the EAVS-AA (EAVS-AA-R) improved upon these limitations, but the measure still suffers from low internal reliability and no established factor structure

(Wang & B. S. K. Kim, 2010). The EAVS-AA-R is a 25-item scale and is composed of items on a 4-pt Likert scale (1- strongly disagree, to 4 - strongly agree). Its internal consistency alpha was equal to .77.

ARMSA-II. Acculturation Rating Scale for Mexican Americans (ARSMA-II) adapted for Asian Americans (R. Lee, Yoon, & Liu-Tom, 2006) follows the bilinear model of acculturation and enculturation. However, the ARMSA-II adapted for Asian Americans is limited to measuring almost solely the behavioral dimension, with only two items out of thirty measuring values. The 30 items operate on a 5-pt Likert scale (1 – not at all, to 5 – extremely often or almost always). The ARSMA-II adapted for Asian Americans has good reliability ($\alpha > .70$) and adequate construct validity (Lee, Yoon, Liu-Tom, 2006).

Taken together, these measures assess value and behavioral acculturation and enculturation. However, the field does not know how they relate to constructs such as help-seeking or therapeutic alliance because the measures have been shown to be equivalent for different EAA ethnic groups. This is problematic because without knowing if the measures assess the constructs of acculturation and enculturation equivalently across ethnic groups, the associations that may be found are not valid. Testing for measurement invariance of these assessments would solve this problem.

Measurement Invariance

Constructs or measures demonstrate invariance, or equivalence, across groups when specific constraints are placed on a factor model of a construct, and each successive restrictive model demonstrates no loss of model fit. This provides evidence that the increasingly constrained model has the same structure, nature, and meaning across groups. Researchers must be sure of measurement invariance when using measures and constructs when building theory or

testing relationships. Researchers examining EAAs, however, have not tested the assumption that different East Asian ethnic groups view acculturation and enculturation the same.

Researchers must know if they are measuring acculturation and enculturation accurately when working with EAAs, given the importance of both in understanding how cultural values associate with the therapeutic alliance and help-seeking attitudes and behaviors. However, the current measures of acculturation and enculturation assume that the measures are invariant, or the same across EAA ethnic groups. The assumption that the assessments measure the same construct or that the constructs manifest in equivalent ways has been an underlying belief in the literature. Presently, no research has tested this assumption, which appears to be a crucial factor in understanding acculturation and enculturation.

SUMMARY

Asian Americans are not engaging in therapy at the same rates as their minority peers (Abe-Kim et al., 2007; U.S. Department of Health & Human Services, 2001; Wang & Kim, 2010), despite prevalence rates of past-year mental disorders of 15.8% (SAMHSA, 2012). Currently, the field of Marriage and Family Therapy, and the broader mental health field, understands that cultural values are an important part of understanding the East Asian American experience. Cultural values play some part in EAAs' attitudes toward professional psychological help, their behaviors, and how they might prefer therapy to be conducted. Cultural values are manifested through the acculturation and enculturation processes each EAA individual and family experiences living in the United States. Three common measures of acculturation and/or enculturation are: The Acculturation Rating Scale for Mexican Americans (ARSMA-II) adapted for Asian Americans; the Asian Values Scale – Revised; and the European American Values Scale for Asian Americans – Revised. These measures, while shown to be reliable, may have

some factor structural issues and have not been shown to be invariant. Finding that these measures equally capture acculturation/enculturation is important because presently this assumption drives how the field understands how cultural values impact help-seeking attitudes and behaviors. Before future research can be conducted with this population, it is important to establish that the measures the field uses are actually assessing the same constructs across ethnic groups and that the groups view the constructs in a similar manner. The following chapters will outline the methods used to test measurement invariance in three commonly used acculturation/enculturation measures with EAAs. It will also detail the results of the testing. The final chapter will discuss the results of the previous chapter and discuss the clinical and theoretical implications of the findings.

CHAPTER 3: RESEARCH METHODS

East Asian Americans (EAAs) hold unique cultural values and these cultural values may play some part in understanding how EAAs view seeking professional psychological help. Presently, cultural values are understood to be manifested through the processes of acculturation and enculturation. That is how individuals assimilate into the dominant culture (acculturation) or maintain their native culture while living in a different dominant culture (enculturation). The processes occur on two separate dimensions, but both may play some part in how EAAs think about therapy and help-seeking behaviors. The field of MFT needs to understand EAA help-seeking attitudes and behaviors, especially the loss of enculturated values in order to engage with this population more effectively and meet the needs of EAA clients.

This study examines the measurement invariance of three assessments of acculturation/enculturation: the Acculturation Rating Scale for Mexican Americans adapted for Asian Americans (R. Lee, Yoon, & Liu-Tom, 2006); the Asian Values Scale – Revised (B. Kim & Hong, 2004); and the European American Values Scale for Asian Americans – Revised (Wolfe, Yang, Wong, & Atkinson, 2001). It outlines how EAA participants were recruited, the measures used in the survey distributed to participants, and the statistical procedures used to test for invariance. Finding invariance for these measures is important because acculturation and enculturation is how the field currently understands how EAAs engage or do not engage in therapy. The assumption of equivalence has not been tested, which is problematic because researchers and clinicians in the field of MFT do not know if Chinese, Japanese, and Korean Americans really do view the processes of acculturation/enculturation the same way or that acculturation/enculturation manifests the same way for these ethnic groups. Without knowing if

the measures are equivalent, it renders conclusions drawn by acculturation/enculturation measures in association with other constructs as possibly invalid.

Sample

Procedures. Participants were drawn using Qualtrics via nationwide panels of EAA individuals. Qualtrics leverages existing actively managed marketing research panels for sampling. The targeted population was adult East Asian Americans (Chinese, Japanese, Korean) living in the United States that were not international students. International students were excluded because they would have a different process of acculturation and enculturation compared to Asian American nationals (Yasuda & Duan, 2002). The Qualtrics panels randomly selected participants based on these specifiers. Participants were emailed an invitation informing them of the survey, detailing how long it was expected to take (30-45 minutes) and incentives (cash, airlines miles, gift cards, sweepstakes entry, or redeemable points). Participants were not told the details of the contents of the survey. The survey included: the Asian Values Scale – Revised; the European Americans Values Scale for Asian Americans – Revised; and the Acculturation Rating Scale for Mexican Americans (ARSMA-II) adapted for Asian Americans, which were all tested for measurement invariance. Additional measures were assessed for future analyses, in particular the researcher was interested in how the acculturation/enculturation measures related to help-seeking attitudes, ethnic identity, and mental health. All procedures and measures of the study were approved by the University of Connecticut’s Institutional Review Board. Missing data did not occur in the sample due to the Qualtrics’s requirements for participants for completion.

Participants. The participants were self-identified East Asian Americans and included 138 Chinese Americans, 138 Korean Americans, and 134 Japanese Americans. Given the

demographics of the sample, this may be a unique sample that is not representative of the national population of East Asian Americans.

The Chinese American participants had a mean age of 38.55 (SD=16.74) and mean time living in the U.S. was 29.18 (SD=16.63) years. Sixty-eight percent of the Chinese American participants identified as female. Thirty-seven percent of the Chinese American sample were married, 42% were single, 8.7% were in a committed partnership, 10.1% were divorced, and 1.4% were widowed. Generationally, 51.4% of participants were first-generation (born in native country and immigrated to the U.S.), 31.9% second-generation (born in the U.S. and children of the first-generation immigrants), 8.7% were third-generation (born in the U.S. and the grandchildren of the first-generation immigrants), 7.9% were fourth generation or later. Educationally, 62.3% of the Chinese American sample completed at least a bachelor's degree. The Chinese American participants varied in income ranging from under \$5,000 (14.5%) to over \$100,000 (21%). Finally, 28.3% of the Chinese American participants stated they had attended therapy in the past.

The Japanese American participants had a mean age of 45.37 (SD=16.55) and mean time living in the U.S. was 38.77 (SD=20.695) years. Seventy-two percent of the Japanese American participants identified as female. Thirty-five percent of the Japanese American sample were married, 45.5% were single, 11.9% were in a committed partnership, and 7.5% were divorced. Generationally, 29.1% of participants were first-generation, 21.6% second-generation, 31.3% were third-generation, 17.9% were fourth generation or later. Educationally, 51.5% of the Japanese American sample completed at least a bachelor's degree. The Japanese American participants varied in income ranging from under \$5,000 (11.9%) to over \$100,000 (14.2%).

Finally, 35.1% of the Japanese American participants reported they had attended therapy in the past.

The Korean American participants had a mean age of 33.17 (SD=11.32) and mean time living in the U.S. was 28.29 (SD=11.17) years. Seventy-three percent of the Korean American participants identified as female. Forty-one percent of the Korean American sample were married, 39.1% were single, 10.1% were in a committed partnership, 8% were divorced, and 1.4% were widowed. Generationally, 47.8% of participants were first-generation, 40.6% second-generation, 6.5% were third-generation, 5.1% were fourth generation or later. Educationally, 54.4% of the Korean American sample completed at least a bachelor's degree. The Korean American participants varied in income ranging from under \$5,000 (16.7%) to over \$100,000 (13.8%). Finally, 31.2% of the Korean American participants reported they had attended therapy in the past.

Measures

Demographic Questionnaire. Participants completed a demographic questionnaire to obtain biographical data, including age, ethnicity, gender, parents' ethnicity, generational status, education, income, time living in the U.S., relationship status, current geographic location, if they have attended therapy presently or in the past. If they had attended therapy, an open-ended question asked for what problem they sought therapy.

Acculturation Rating Scale for Mexican Americans (ARSMA-II) adapted for Asian Americans. The ARSMA-II adapted for Asian Americans (Lee, Yoon, Liu-Tom, 2006) is an adaptation of a measurement of primarily behavioral acculturation and enculturation for Mexican Americans. The ARSMA-II has been used in research with Mexican Americans and has a strong reported internal reliability and consistency (Cuellar, Arnold, & Maldonado, 1995). The

ARSMA-II was adapted for Asian Americans by replacing “Mexican” with “Asian” in the survey items (Lee, Yoon, Liu-Tom, 2006). The scale has 30 items on a 5-pt Likert scale (1 – not at all, to 5 – extremely often or almost always). The ARSMA-II adapted for Asian Americans is broken into two subscales, Enculturation to Asian Culture and Acculturation to Western Culture. Higher scores on either scale indicate greater orientation to Asian or Western culture. The ARSMA-II adapted for Asian Americans has good reliability ($\alpha > .70$) and adequate construct validity (Lee, Yoon, Liu-Tom, 2006). The two value items were dropped for the study to focus the ARSMA-II on just behavioral acculturation and enculturation.

Asian Values Scale – Revised (AVS-R). The Asian Values Scale – Revised (B. Kim & Hong, 2004) is a 25-item scale that measures values enculturation in Asian Americans. It is composed of items on a 4-pt Likert scale (1- strongly disagree, to 4 - strongly agree). The original AVS had $\alpha > .81$. The developers of the AVS-R reasoned that because they removed items and did not add related information to the scale, the reliability should be similar (B. S. K. Kim & Wong, 2004). Finally, concurrent validity between the original AVS and revised was equal to .93. The AVS-R works in conjunction with the EAVS-AA-R for a bidimensional model of acculturation and enculturation.

European American Values Scale for Asian Americans - Revised (EAVS-AA-R). The European American Values Scale for Asian Americans – Revised (Hong, B. Kim, & Wolfe, 2005) is a 25-item scale that measures values acculturation in Asian Americans. It is composed of items on a 4-pt Likert scale (1- strongly disagree, to 4 - strongly agree). Its internal consistency alpha was .77.

Analytic Procedures

Because most statistical tests assume the data are normally distributed, the data were tested for normality through estimating skewness and kurtosis. Given the non-normal distribution of the data, an MLR (maximum likelihood estimation with robust standard errors) estimation method was used in structural equation modeling. In addition, the researcher used a mean and covariance structure (Little, 1997) for latent mean analysis because it leads to less biased mean estimates (Byrne, Shavelson, & Muthén, 1989) in cases of non-normally distributed data. A confirmatory factor analysis framework through structural equation modeling provides a way to test the construct validity of items on the latent variable of interest (acculturation/enculturation). In addition, it provides a way to test if the differences in groups reflect true group differences or group-specific differences (Gregorich, 2006). Confirmatory factor analyses were performed using Mplus 8.2 statistical software (Muthen & Muthen, 2018). Mplus was chosen for its user-friendliness and flexibility.

Fit indices. Fit indices are used in structural equation modeling to indicate the ability of a model, as defined by the researcher, to reproduce the data given. A model that has “good” fit is one that can be said to be consistent with the data. A model that does not have “good” fit can be said to be not consistent with the data and therefore should be rejected.

The fit indices χ^2 , Root Mean Square Error of Approximation (RMSEA), Standardized Root Mean-square Residual (SRMR), and Comparative Fit Index (CFI) were used to evaluate how well the models fit the observed data and the change in model fit through the invariance iterations. Because χ^2 may be overly sensitive to small deviations in large samples (Chen, 2007; Cheung & Rensvold, 2002), the approximate fit indices CFI, SRMR, and RMSEA were chosen as more robust fit indices to assess change. The RMSEA and SRMR are fit indices that compare the distance of the tested model to a perfect fit model. The rule of thumb for close fit for the

RMSEA and SRMR is “.01-.05”; acceptable fit is “.05-.08”; mediocre fit is “.08-.10”; and poor fit is “>.10”. The CFI compares the distance of the model to a null model. The rule of thumb for close fit for the CFI is “.95-.99”; acceptable fit is “.90-.95”; mediocre fit is “.85-.90”; and poor fit is “<.85.”

Testing Measurement Invariance. Measurement invariance was tested across the three ethnic groups sampled, Chinese, Japanese, and Korean Americans. This was conducted to test the assumption invariance of the above acculturation/enculturation measures and the other measures that are salient to Asian American mental health. These measures are used in association with other constructs such as help-seeking attitudes/behaviors with EAAs. These measures should have been first tested for invariance before testing their association with other constructs.

The researcher tested for three forms of measurement invariance, configural, weak, and strong. Configural invariance tests if the same pattern of free and fixed loadings are used across the three ethnic groups in a structural equation model. This is testing if the same construct is associated with the same items across the groups. Weak invariance tests if the factor loadings are equal across groups and that the items are capturing acculturation and enculturation equally well. Any score differences in a weak invariant model is a result of actual response differences rather than measurement error. This is asking if the items used to measure the construct (acculturation/enculturation) are the same in their ability to assess. Strong invariance tests if the item intercepts are the same across the groups, meaning the different groups use the same response scale of items in the same way. This indicates an absence of response bias and that people from different groups on the same level of acculturation or enculturation have the same score. In other words, does a “5” on an item of acculturation mean the same thing for Chinese

Americans than it does for Japanese Americans. If strong invariance is found, this signifies that mean differences across groups can be calculated and compared. Using a free baseline approach, the researcher conducted the iterative process in which invariance must hold true for the previous tests before moving onto the next more stringent invariance test. Given the small group sample size and unequal group sample sizes, two reasons why Type I errors may occur in invariance testing, the researcher used the guidelines proposed by Chen (2007) to be more conservative with decision making for rejecting or accepting invariance. The decision rules of a $\leq -.005$ change in CFI, a $\geq .010$ change in RMSEA, and a change $\geq .025$ in SRMR (.005 for strong invariance) were chosen to indicate noninvariance in a model (Chen, 2007).

Each group's measurement model was tested for goodness of fit separately using the fit indices: χ^2 , RMSEA, SRMR, and CFI. If modification indices indicated and there was theoretical support to do so, the models' structures were changed to improve the model's fit with the data. For example, the residuals of "item 3" and "item 1" in the ARSMA-II were correlated, that is the errors of these two items were associated together in the model. In other words, some of the unexplained variability or external biases that may exist were associated together statistically.

Configural invariance examined if acculturation and enculturation have the same pattern of free and fixed loadings for the model across ethnic groups. The baseline model was simultaneously tested across the ethnic groups with no equality constraints on the model. Weak invariance tested the equivalence of factor loadings in the model across ethnic groups. It was tested by constraining the factor loadings to be equivalent across the three groups. The model was then compared with the configural invariance model to determine fit. If the new overall model was worse than the original configural invariant model, that indicated that weak invariance was not supported because at least one factor loading is not equivalent across groups.

Strong invariance tested the equivalence of item intercepts. Strong invariance was tested by constraining the item intercepts to be equivalent across the groups. The model was compared with the weak invariant model to determine fit. Again, if the overall model had worse fit than the weak invariant model, strong invariance was not supported, and at least one item intercept within the measure differed across the groups. This indicates the presence of response bias in at least one item, and at least two of the groups differ on how they view acculturation or enculturation. The researcher hypothesized that all three measures would be found to be strong invariant, because of the shared Sino influence of the East Asia region, which allows the field to test mean differences across ethnic groups and suggests that the field can aggregate EAA ethnic groups as one group, as well. This also allows the field to aggregate and create interventions and programs to meet the needs of the EAA population. If invariance is not found this would suggest that researchers and practitioners need to more specific and culturally sensitive to the differences EAA ethnic groups have.

CHAPTER 4: RESULTS

Asian Americans are one of the fastest growing minority groups in the United States (López, Ruiz, N, & Patten, 2017) and currently the third-largest group in the U.S. (U.S. Census Bureau, 2016). While Asian Americans have some of the lowest prevalence rates of past-year mental disorder diagnoses (SAMHSA, 2012), the Asian American population is also underserved in mental health services (U.S. Department of Health & Human Services, 2013). Past literature has established the importance of cultural values through the processes of acculturation and enculturation on help-seeking attitudes and behaviors in East Asian Americans (EAAs) (B. Kim, 2007). The literature, however, has not established first that the measure used to assess EAA acculturation and enculturation are invariant and instead assumed that the ethnic groups composing EAAs conceptualize these constructs in the same way. The present study aimed to test this assumption of measurement invariance on three commonly used measures of acculturation and/or enculturation: the Asian Values Scale – Revised (AVS-R; B. Kim & Hong, 2004); the European American Values Scale for Asian Americans – Revised (EAVS-AA-R; Wolfe, Yang, Wong, & Atkinson, 2001); and the Acculturation Rating Scale for Mexican Americans (ARSMA-II; R. Lee, Yoon, & Liu-Tom, 2006) adapted for Asian Americans.

The methodology used for this project was confirmatory factor analyses in a structural equation modeling framework. Measurement invariance was tested on three levels - configural, weak, and strong. The research followed the prescribed routine used to establish measurement invariance (Kline, 2016). The research was intended to establish measurement invariance of the AVS-R, EAVS-AA-R, and the ARSMA-II so that the assessments could be used for other constructs in the field of MFT such as help-seeking attitudes and behaviors. In addition, the

research could be used to test the association between acculturation and enculturation and common mental health diagnoses such as depression and anxiety.

Single-group CFAs

The measurement models of the ARSMA-II, AVS-R, and EAVS-AA-R were first tested separately in each ethnic group. Residuals of items within the ARSMA-II were allowed to covary to improve model fit because they were prescribed by the measures' authors (ARSMA-II; Lee, Yoon, Liu-Tom, 2006) or in the case of the AVS-R, and EAVS-AA-R because the items conceptually and theoretically fit, e.g. "I enjoy speaking an Asian language" with "My thinking is done in an Asian language." Covarying the residuals allows the unexplained variance of the two items to be correlated. Conceptually, we would expect some items and their systematic error to be related, such as Asian language items.

Acculturation Rating Scale for Mexican Americans (ARSMA-II). The fit of the baseline model for the ARSMA-II ranged from mediocre to acceptable (China: $\chi^2(df) = 432.942(279)$, $p=.000$; CFI = .912; RMSEA = .063; SRMR = .078; Japan: $\chi^2(df) = 530.867(279)$, $p=.000$; CFI = .854; RMSEA = .082; SRMR = .092; Korea: $\chi^2(df) = 527.674(279)$, $p=.000$; CFI = .876; RMSEA = .080; SRMR = .068).

Asian Values Scale – Revised (AVS-R). The fit for the baseline model of the AVS-R ranged from poor to mediocre (China: $\chi^2(df) = 532.375(268)$, $p=.000$; CFI = .490; RMSEA = .085; SRMR = .127; Japan: $\chi^2(df) = 568.561(268)$, $p=.000$; CFI = .559; RMSEA = .085; SRMR = .109; Korea: $\chi^2(df) = 576.465(268)$, $p=.000$; CFI = .613; RMSEA = .091; SRMR = .131).

European American Values Scale for Asian Americans – Revised (EAVS-AA-R). The model for the baseline model of the EAVS-AA-R range from poor to acceptable (China:

$\chi^2(df) = 521.566(266)$, $p = .000$; CFI = .682; RMSEA = .083; SRMR = .111; Japan: $\chi^2(df) = 395.537(266)$, $p = .000$; CFI = .796; RMSEA = .060; SRMR = .093; Korea: $\chi^2(df) = 512.647(266)$, $p = .000$; CFI = .647; RMSEA = .082; SRMR = .098). The factor loadings are shown in Table 3.

Given the poor model fit of the AVS-R and EAVS-AA-R, in particular the CFI and SRMR, for the suggested factor models, the researcher did not pursue measurement invariance testing of these measures. The poor model fit for the AVS-R and EAVS-AA-R means that even at the most basic level of confirmatory factor analysis, the data did not fit the factor model for Chinese, Japanese, or Korean Americans. Because all three groups individually had poor model fit, it is likely accurate to say that there was no one specific ethnic group that had outliers that affected factor loadings, intercepts, or variance, but rather the model itself was flawed. It could be the questions proposed in the AVS-R and EAV-AA-R are not related as much as the model developers believed and may not represent acculturation and enculturation processes for EAAs.

ARSMA-II

Configural invariance. The baseline model with no equality constraints was simultaneously tested across all groups. This tests if the same pattern of free and fixed factor were equivalent. As can be seen in Table 3, the model had mediocre to acceptable model fit ($\chi^2(df) = 1491.271(837)$, $p = .000$; CFI = .881; RMSEA = .076; SRMR = .080), indicating that the configural model was adequately consistent with the data.

Weak invariance. Weak invariance indicates that across the three groups, the factor loadings of the model are equal. When factor loadings were constrained (made equivalent) for the weak invariance model, the Δ CFI from the original configural model to the weak invariant model was -.008, greater than the .005 limit suggested and the Δ SRMR was +.026, greater than

the .025 limit suggested (Chen, 2007). This indicated that weak invariance does not fit; there are differences between the groups on the factor loadings of the items in the ARSMA-II. The items must not be capturing behavioral acculturation or enculturation equally well between groups.

Development of New Factor Structures

The AVS-R and EAVS-AA-R both have unknown or unclear factor structures (B. Kim, 2007), which may explain their poor model fit with a basic confirmatory factor analysis in this study. The poor fit of the approximate fit indices indicated that the factor models did not fit for any of the three ethnic groups. This may mean that the current items used to measure value acculturation/enculturation are not as related as theoretically hypothesized and that the items do not capture the same underlining construct well. Given the poor fits of the models, the researcher conducted post hoc trimming of the measures and then conducted exploratory factor analyses (EFA) to determine a factor model for each measure. Because factor models were found for both the AVS-R and EAVS-AA-R, the researcher conducted measurement invariance testing on these new models. All EFA analyses were conducted in Mplus 8.2 (Muthen & Muthen, 2018), using Maximum Likelihood as the method of extraction. The items were rotated with an oblique solution because factors should be correlated theoretically.

AVS-R

Items with factor loadings less than .2 in the original CFA were removed and the remaining items were used for the EFA. Loadings less than .2 indicate low correlations between the item and the latent construct (acculturation/enculturation). A cutoff of .2 is less than the ideal .4 cutoff (Hair, Anderson, Tatham, & Black, 1998) in deciding whether an item belongs to the construct, however due to the poor factor loadings in general, the researcher decided on the .2 loading cutoff to ensure enough items would be included. The remaining fourteen items were: 1,

2, 5, 7, 9, 11, 14, 15, 17, 19, 20, 22, 23, and 24. A three-factor solution was selected due to theoretical fit and the “leveling off” of the eigenvalues on the scree plot after three factors. The three factors for the Improved AVS-R were: collectivism (four items: 2, 9, 11, 14); conformity to norms (five items: 1, 15, 17, 19, 24); and filial piety and achievement (five items: 5, 7, 20, 22, 23).

Single Group CFAs. The fit for the baseline model of the Improved AVS-R ranged from poor to exact (China: $\chi^2(df) = 113.037(73)$, $p = .002$; CFI = .847; RMSEA = .063; SRMR = .072; Japan: $\chi^2(df) = 86.583(73)$, $p = .132$; CFI = .957; RMSEA = .037; SRMR = .067; Korea: $\chi^2(df) = 72.894(73)$, $p = .482$; CFI = 1.00; RMSEA = .000; SRMR = .066), indicating that the configural models were adequately consistent with the data.

Configural invariance. The baseline model with no equality constraints was simultaneously tested across all groups to test if the same pattern of free and fixed factor loads were equivalent. As can be seen in Table 5, the model had acceptable to close model fit ($\chi^2(df) = 274.210(219)$, $p = .000$; CFI = .944; RMSEA = .043; SRMR = .068), indicating that the configural model was adequately consistent with the data.

Weak invariance. When the factor loadings were constrained (made equivalent) for the weak invariance model, the Δ CFI from the original configural model to the weak invariant model was -.004 (less than the .005 limit), the Δ RMSEA was -.01 (less than the +.01 limit), and the Δ SRMR was +.017 (less than the .025 limit). Because the fit indices changes were less than the guidelines set by Chen (2007) from the configural to the weak model, this indicated that the model of the data did not change enough to reject measurement invariance, and there are no differences between the groups on the factor loadings of the items in the Improved AVS-R.

Strong invariance. A model has strong invariance when the intercepts (means) are equal across the groups. When the item intercepts were constrained for the strong invariance model, the weak invariance model was compared to the strong invariance model. The Δ CFI from the weak to strong model was -.012 (greater than the -.005 limit), Δ RMSEA was +.003 (less than the +.01 limit), and the Δ SRMR was +.004 (less than the .005 limit). Because the CFI change was greater than the limit and SRMR was nearly at the limit (Chen, 2007), the researcher rejected the strong invariant model. This indicated that the item intercepts differ across the groups, and the groups must not have the same response scale for at least some of the items in the measure.

EAVS-AA-R

Similarly, as with the Improved AVS-R, items with factor loadings less than .2 in the original CFA were removed and the remaining items were used for the EFA. The remaining fifteen items were: 2, 4, 5, 6, 7, 8, 9, 10, 14, 17, 18, 20, 21, 22, 25. A two-factor solution was selected due to theoretical fit. The two factors for the Improved EAVS-AA-R were: sexual freedom (four items: 3, 8, 9, 10) and individualism (11 items: 2, 5, 6, 7, 14, 17, 18, 20, 21, 22, 25).

Single Group CFAs. The fit for the baseline model of the Improved EAVS-AA-R ranged from mediocre to acceptable (China: $\chi^2(df) = 106.539(75)$, $p = .010$; CFI = .915; RMSEA = .055; SRMR = .066; Japan: $\chi^2(df) = 106.479(75)$, $p = .010$; CFI = .877; RMSEA = .056; SRMR = .073; Korea: $\chi^2(df) = 113.767(75)$, $p = .002$; CFI = .875; RMSEA = .061; SRMR = .069), indicating that the configural models were adequately consistent with the data.

Configural invariance. The baseline model with no equality constraints were simultaneously tested across all groups to test if the same pattern of free and fixed factor loads were equivalent. As can be seen in Table 5, the model had mediocre to acceptable model fit

($\chi^2(df) = 326.471(225)$, $p = .000$; CFI = .892; RMSEA = .057; SRMR = .070), indicating that the configural model was adequately consistent with the data.

Weak invariance. When factor loadings were constrained (made equivalent) for the weak invariance model, the Δ CFI from the original configural model to the weak invariant model was -.021 (greater than the -.005 limit), the Δ RMSEA was +.003 (less than the +.01 limit), and the Δ SRMR was +.025 (equal to the .025 limit). This indicated that the hypothesis of weak invariance must be rejected; there are differences between the groups on the factor loadings of the items in the Improved EAVS-AA-R. The items must not be capturing value acculturation equally well between groups.

CHAPTER 5: DISCUSSION

The purpose of this study was to examine measurement invariance of three measures of acculturation and enculturation across three East Asian American (EAA) ethnic groups, Chinese - Japanese - and Korean Americans. Measurement invariance of these measures were tested because of the importance of acculturation and enculturation in EAAs. The results of the study found that these measures may not be invariant across East Asian ethnic groups. These results were unexpected given the widespread and long-term Sino influence in the region (Holcombe, 2017). China and Chinese culture influenced the East Asian region for hundreds, if not thousands of years, through language, religion, and ethics and as a result the cultural values of East Asian groups were expected to be similar.

The results of this examination highlight the limitations of the underlying assumption of equivalence of East Asian Americans and based upon this unique sample the results of the study demonstrate the need for future research. Specifically, the measures of value acculturation and enculturation may have poor factor structures and could not be used to compare means across EAA ethnic groups in this sample. In other words, the measures of value acculturation and enculturation used in this study may not reflect how the sample of EAAs actually view these constructs and as a result do poorly in representing the constructs for this sample. Given that the Asian Values Scale – Revised (AVS-R; B. Kim & Hong, 2004) and European American Values Scale for Asian Americans – Revised (EAVS-AA-R; Wolfe, Yang, Wong, & Atkinson, 2001) poorly fit the data, more research is needed to understand why the data did not fit the proposed factor models.

Because of the AVS-R and the EAVS-AA-R had factor structures that did not represent the data, the study created new measures that could be useful for future research. The study

improved both the AVS-R and the EAVS-AA-R by trimming poor loading items and conducting exploratory factor analyses. Despite these steps, the models were still not found to demonstrate strong invariance. None of the measures of behavioral or value acculturation/enculturation were found to have strong invariance.

Taken together, these results mean that researchers are cautioned before making mean comparisons across EAA groups, and the social sciences may not be able to aggregate East Asian Americans together using these measures. Specifically, it appears that current conceptualizations of Asian American cultural values may not reflect the actual acculturation and enculturation experiences of this population. Furthermore, based on the results of the study, EAA ethnic groups have unique differences in their cultural values and thus cannot be grouped together as one population of interest.

If the field of Marriage and Family Therapy (MFT) can better understand EAA cultural values manifested through the process of acculturation and enculturation, it may be able to engage with this population more. The study's findings change how researchers and clinicians within the field of MFT understand East Asian American experiences of acculturation and enculturation. Many of the assumptions for this group may need to be revisited given the findings of this research. New research needs to start from the bottom up to increase our understanding of this population. The current literature is based on the assumption of equivalence of values. These results, using this unique sample, suggest that there is not equivalence of values, as there is no monolithic Asian culture. The study was unable to find invariance with closely related Asian ethnic groups on value acculturation and enculturation, yet the field expects invariance with disparate Asian ethnic groups. Based on the results of this study, the field should be wary about aggregating East Asian Americans when measuring

cultural values and the extant literature is based on the premise of aggregating Asian Americans. Previous findings may need to be re-evaluated in their conclusions because of this limitation in previous research. It may be for a number of studies that, the conclusions are really about the predominately sampled specific Asian American ethnic group (such as Chinese American) rather than Asian Americans as a whole. More needs to be done to look at the differences in cultural values between groups.

Historically, researchers and clinicians in a variety of fields attempted to identify common Asian American cultural values (B. Kim, 2007; D. Sue & S. Sue, 2003) and fit these values onto different Asian American ethnic groups. While there may be commonalities, the findings of this study suggest that this is insufficient. Instead, researchers need to work individually with each Asian American ethnic group to identify the cultural values of importance for that respective ethnic group. This exploratory bottom-up approach through working with individual ethnic groups will allow researchers to differentiate between ethnic groups.

Clinical Implications

Acculturation and enculturation are the keys to understanding why or why not EAAs come to therapy and how they develop a therapeutic alliance. If we understand how a client is acculturated and enculturated, we have a better idea of how they might engage. However, currently the field does not understand how acculturation and enculturation impact other important constructs such as help-seeking attitudes/behaviors or expectations and currently conceptualizes these constructs as the same across East Asian American ethnic groups. This research informs how the field could instruct practitioners on working with not just the East Asian American population, but minorities as a whole by demonstrating the flaws in assuming and aggregating minority populations as the same.

Seeking help from family may not be enough for East Asian Americans, especially given the stigma around mental illness where individuals and families may be told to suppress their feelings. This can be seen in culturally bound diagnoses such as Hwa-byung, in which Koreans suppress their anger because they feel that they are unable to confront or resolve what has caused them distress. Professional psychological help, especially in the field of Marriage and Family Therapy could be a way to alleviate mental health issues in this population. Instead of seeing cultural values and factors as barriers to engagement, the field can use them as an entry point. For example, the cultural values of Nunchi, Jeong, Heung, and Han denote the power of connection in Korean culture (Jeong, 2015). If the field as a whole and individually as practitioners can utilize the power of family connection and engage the whole family, Korean American clients may attend therapy at greater rates. In addition, by seeking help outside of system and environment in which they live in, East Asian Americans may be able more able to openly express their beliefs and thoughts without the fear of repercussions occurring within their ethnic enclave.

Supervision, instruction, and treatment needs to be informed by research on minority populations. Research such as this emphasizes the importance of multicultural competence and sensitivity. For example, practitioners need to be aware of mislabeling the collectivistic value as enmeshment or misdiagnosing reserved emotional expression as depressed. Further education and research on how EAAs conceptualize mental illness and how mental illness uniquely manifests for this population would also increase the field's understanding of the unique experiences of this population.

Limitations

While the present study provides useful data, it is not without limitations. Several challenges should be considered when interpreting the results of this study. Though the survey was anonymous, participants may not have been forthcoming in answering questions honestly about therapy attendance and symptomology due to the threat of stigma and loss of face in answering the questions truthfully. Furthermore, participants may have introduced social desirability bias into their answers because the research explicitly aims to sample East Asian Americans. Participants were drawn from a panel of Asian Americans. Due to the limitations of the information the researcher could receive about the panel, a limitation of the research is the inability to explain some of the demographic moderators.

This study was also limited by several demographic moderators. Seventy percent of the sample were female, and there may be gender differences in acculturation and enculturation processes. The assumption of measurement invariance between females and males has also not been established. The majority of the sample were first- or second-generation immigrants, but the study did not control for generation when testing measurement invariance, and this may have impacted how different generations view acculturation/enculturation. In addition, the incomes of participants were skewed heavily above the average income of the Americans, but the second-highest reported income for participants was under \$5,000. The researcher hypothesized that these low-income results are because participants in the panels may be students, retirees, and stay at home partners/parents.

More technology-savvy individuals and/or acculturated individuals may be more likely to be part of the sample, limiting the generalizability and possible variation in the sample. Finally, the survey was only conducted in English. There may be large differences in levels of acculturation/enculturation between those who are fluent in English and those who are not.

However, EAAs, when seeking treatment, may more often than not be working with a native English speaker, and this expectation may influence help-seeking attitudes/behaviors and the therapeutic alliance.

Given the above limitations, it is possible that the study's sample was a unique sample in terms of participants' acculturation and enculturation. The sample consisted of participants in middle adulthood that were generally highly educated, affluent, and were connected to research panels that were likely drawn from acculturated individuals who are comfortable with Western technology needs. However, these demographics represent similar demographics as those whom are most likely to be consumers of therapy (Harpaz-Rotem, Libby, & Rosenheck, 2012; Hodges, 2016).

Future Research

Further research is needed to understand how EAA cultural values and behaviors impact the therapeutic alliance because measurement invariance was not found with acculturation and enculturation. There appears to be unique differences between EAA ethnic groups, and these differences in the constructs of value acculturation and enculturation may explain help-seeking attitudes/behaviors and the development of the therapeutic alliance. Further, future research is needed to delineate between cultural values that contribute to the therapeutic alliance.

Conclusion

This study revealed the relatively poor measurements that are currently used with EAAs. While the literature suggests that value acculturation and enculturation may be important constructs in relationship to the therapeutic alliance, measures currently used cannot be trusted for use with this population as they are presently. This study was the first to test measurement invariance assumptions for acculturation and enculturation measures in East Asian Americans.

Presently, this assumption cannot be met, and further research is needed to explain the differences in different EAA ethnic groups.

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Table 1

Demographics

Variables	Chinese American		Japanese American		Korean American	
	<i>M</i>	<i>Or %</i>	<i>SD</i>	<i>M</i>	<i>Or %</i>	<i>SD</i>
Age	38.55		16.74	45.37		16.553
Percent Female	68.8			72.4		73.2
Time living in US (years)	29.18		16.63	38.77		20.695
Generation						
First	51.4			29.1		47.8
Second	31.9			21.6		40.6
Third	8.7			31.3		6.5
Fourth	4.3			12.7		2.9
Fifth	2.2			3.7		0.0
Sixth	1.4			1.5		2.2
Education						
Less than HS	.7			0.0		2.9
HS/GED	13.8			9.0		15.2
Some College	17.4			19.4		18.1
Voc/Tech	2.2			4.5		0.0
Associates	3.6			15.7		9.4
Bachelors	35.5			34.3		37.0
Masters	21.7			14.2		12.3
Doctoral	5.1			3.0		5.1
Relationship Status						
Single	42.0			45.5		39.1
Committed, not	8.7			11.9		10.1
Married	37.7			35.1		41.3
Divorced	10.1			7.5		8.0
Widowed	1.4			0.0		1.4
Been to Therapy	28.3			35.1		31.2
Income (\$k)						
Under 5	14.5			11.9		16.7
5-15	8.0			5.2		8.7
15-25	6.5			7.5		5.1
25-35	8.0			10.4		4.3
35-45	8.0			8.2		10.9
45-55	5.8			10.4		10.1
55-65	8.7			10.4		10.1
65-75	6.5			3.0		9.4
75-85	4.3			6.7		5.1
85-95	5.1			5.2		2.9
95-100	3.6			6.7		2.9
Over 100	21.0			14.2		13.8

Table 2

Single-group confirmatory factor analyses.

	χ^2	<i>df</i>	p	CFI	SRMR	RMSEA	90% CI for RMSEA	
							LL	UL
ARSMA-II								
China (n=138)	432.942	279	.000	.912	.078	.063	.051	.075
Japan (n=134)	530.867	279	.000	.854	.092	.082	.071	.093
Korea (n=138)	527.674	279	.000	.876	.068	.080	.070	.091
AVS-R								
China	532.375	268	.000	.490	.127	.085	.074	.095
Japan	568.561	268	.000	.559	.109	.091	.081	.102
Korea	576.465	268	.000	.613	.131	.091	.081	.102
EAVS-AA-R								
China	521.566	266	.000	.682	.111	.083	.073	.094
Japan	395.537	266	.000	.796	.093	.060	.047	.072
Korea	512.647	266	.000	.647	.098	.082	.071	.093

Note: In all groups, residual terms of items were allowed to covary

CFI = comparative fit index; SRMR = standardized root mean squared residual; RMSEA = root mean square error of approximation; LL = lower limit; UL = upper limit

Table 3

Unstandardized Factor Loadings (Standard Errors) and Residuals of Confirmatory Model of the ARSMA-II Entire Sample (n= 410)

Item	Chinese (n=138)		Japanese (n=134)		Korean (n=138)	
	Loading	Residual	Loading	Residual	Loading	Residual
Item 1	.958 (.075)	.555	1.041 (.079)	.365	1.137 (.068)	.334
Item 2	.625 (.064)	.158	.382 (.114)	.214	.266 (.104)	.164
Item 3	.892 (.087)	.686	1.120 (.084)	.756	1.154 (.071)	.536
Item 4	.787 (.109)	.651	.405 (.127)	1.288	.647 (.096)	.840
Item 5	.462 (.132)	.828	.042 (.159)	1.343	.681 (.096)	.881
Item 6	.936 (.093)	.750	.806 (.104)	.992	.904 (.083)	1.052
Item 7	.618 (.064)	.481	.380 (.114)	.721	.424 (.082)	.418
Item 8	.919 (.104)	.907	.908 (.095)	1.037	1.014 (.083)	.806
Item 9	.641 (.083)	.539	.498 (.096)	.602	.572 (.073)	.324
Item 10	.530 (.109)	.633	.481 (.119)	.769	.478 (.117)	.282
Item 11	.757 (.100)	.790	.601 (.113)	1.187	.864 (.089)	.841
Item 12	1.151 (.090)	.745	1.201 (.089)	.496	.928 (.093)	.728
Item 13	.513 (.106)	.734	.699 (.111)	1.086	.543 (.098)	.414
Item 14	1.012 (.090)	.586	1.182 (.092)	.258	.953 (.079)	.576
Item 15	.689 (.097)	.236	.600 (.110)	.516	.359 (.096)	.173
Item 16	.756 (.080)	.292	.888 (.092)	.177	.564 (.077)	.132
Item 17	1.017 (.084)	.535	1.196 (.096)	.442	1.015 (.065)	.397
Item 18	.736 (.084)	.606	.830 (.085)	.561	.725 (.078)	.482
Item 19	.714 (.082)	.175	.613 (.075)	.218	.440 (.088)	.181
Item 20	.636 (.119)	.657	.636 (.145)	2.174	1.246 (.111)	1.508
Item 21	.554 (.112)	.595	.555 (.129)	1.620	1.149 (.155)	1.199
Item 23	.718 (.125)	.962	1.320 (.174)	-.015	.942 (.076)	.471
Item 24	.597 (.100)	.489	.726 (.082)	.448	1.177 (.094)	.416
Item 25	.829 (.098)	.346	.691 (.128)	.729	.953 (.079)	.291
Item 26	.469 (.124)	.918	.596 (.113)	.882	.788 (.097)	.653
Item 29	.551 (.086)	.687	.574 (.110)	1.219	.481 (.097)	1.060

Table 4

Unstandardized Factor Loadings (Standard Errors) and Residuals of Confirmatory Model of the AVS-R Entire Sample (n= 410)

Item	Chinese (n=138)		Japanese (n=134)		Korean (n=138)	
	Loading	Residual	Loading	Residual	Loading	Residual
Item 1	.242 (.148)	.530	.281 (.110)	.574	.234 (.156)	.729
Item 2	.187 (.149)	.592	.294 (.106)	.757	.142 (.121)	.665
Item 3	.210 (.101)	.501	.124 (.121)	.645	.397 (.073)	.470
Item 4	.016 (.108)	.573	.126 (.073)	.584	-.103 (.115)	.534
Item 5	.156 (.085)	.475	.324 (.077)	.389	.381 (.077)	.430
Item 6	-.010 (.153)	.581	.099 (.076)	.426	.046 (.116)	.563
Item 7	.411 (.103)	.530	.321 (.099)	.587	.474 (.100)	.478
Item 8	.307 (.107)	.384	.189 (.090)	.523	.255 (.115)	.462
Item 9	.117 (.160)	.498	.133 (.105)	.552	.101 (.126)	.612
Item 10	.341 (.090)	.510	.277 (.082)	.512	.334 (.111)	.594
Item 11	-.056 (.150)	.481	.127 (.107)	.596	.128 (.124)	.557
Item 12	.189 (.090)	.344	.270 (.085)	.307	.316 (.093)	.387
Item 13	-.021 (.140)	.423	.184 (.059)	.293	.005 (.096)	.390
Item 14	.184 (.138)	.534	.360 (.081)	.473	.293 (.147)	.593
Item 15	.167 (.159)	.555	.299 (.092)	.455	.368 (.149)	.543
Item 16	-.002 (.117)	.434	.108 (.091)	.399	.041 (.129)	.601
Item 17	.281 (.175)	.603	.593 (.071)	.438	.430 (.178)	.628
Item 18	.399 (.087)	.371	.225 (.092)	.410	.398 (.095)	.480
Item 19	.027 (.108)	.310	.246 (.066)	.445	.053 (.083)	.329
Item 20	.395 (.112)	.392	.514 (.064)	.239	.566 (.074)	.308
Item 21	.251 (.131)	.509	.190 (.097)	.564	.484 (.108)	.508
Item 22	.381 (.089)	.351	.505 (.073)	.339	.581 (.071)	.390
Item 23	.589 (.066)	.264	.481 (.072)	.321	.548 (.059)	.241
Item 24	.111 (.123)	.468	.285 (.097)	.451	-.088 (.112)	.456
Item 25	.155 (.116)	.617	.310 (.085)	.512	.242 (.109)	.596

Table 5

Unstandardized Factor Loadings (Standard Errors) and Residuals of Confirmatory Model of the EAVS-AA-R Entire Sample (n= 410)

<i>Item</i>	<i>Chinese (n=138)</i>		<i>Japanese (n=134)</i>		<i>Korean (n=138)</i>	
	<i>Loading</i>	<i>Residual</i>	<i>Loading</i>	<i>Residual</i>	<i>Loading</i>	<i>Residual</i>
<i>Item 1</i>	-.059 (.095)	.654	.215 (.099)	.758	-.051 (.106)	.642
<i>Item 2</i>	.410 (.069)	.527	.401 (.084)	.398	.565 (.073)	.435
<i>Item 3</i>	.077 (.092)	.514	.421 (.086)	.417	-.026 (.072)	.484
<i>Item 4</i>	.343 (.086)	.658	.147 (.110)	.695	.436 (.099)	.547
<i>Item 5</i>	.359 (.082)	.489	.456 (.080)	.393	.398 (.081)	.537
<i>Item 6</i>	.304 (.081)	.546	.404 (.094)	.487	.326 (.096)	.623
<i>Item 7</i>	.381 (.077)	.483	.103 (.091)	.604	.394 (.091)	.597
<i>Item 8</i>	.493 (.068)	.502	.289 (.102)	.581	.480 (.083)	.401
<i>Item 9</i>	.341 (.086)	.625	.171 (.102)	.763	.390 (.087)	.718
<i>Item 10</i>	.338 (.095)	.594	.108 (.111)	.630	.266 (.102)	.590
<i>Item 11</i>	.157 (.081)	.396	-.053 (.070)	.418	.105 (.095)	.501
<i>Item 12</i>	.026 (.088)	.426	.178 (.086)	.444	.062 (.094)	.530
<i>Item 13</i>	.208 (.098)	.727	.066 (.087)	.691	.344 (.089)	.825
<i>Item 14</i>	.597 (.075)	.427	.317 (.088)	.643	.599 (.072)	.596
<i>Item 15</i>	-.087 (.100)	.692	.132 (.100)	.742	.076 (.109)	.786
<i>Item 16</i>	.025 (.066)	.376	.271 (.084)	.386	.042 (.070)	.386
<i>Item 17</i>	.064 (.076)	.434	.390 (.054)	.247	.125 (.072)	.418
<i>Item 18</i>	.482 (.071)	.438	.270 (.088)	.538	.409 (.096)	.477
<i>Item 19</i>	-.343 (.066)	.451	-.246 (.078)	.478	-.328 (.103)	.546
<i>Item 20</i>	.400 (.073)	.485	.295 (.086)	.561	.369 (.083)	.510
<i>Item 21</i>	.487 (.077)	.610	.303 (.089)	.539	.455 (.109)	.592
<i>Item 22</i>	.522 (.057)	.315	.362 (.079)	.443	.477 (.083)	.510
<i>Item 23</i>	-.187 (.087)	.496	.197 (.096)	.544	-.175 (.096)	.700
<i>Item 24</i>	.113 (.084)	.514	-.019 (.099)	.642	.181 (.071)	.424
<i>Item 25</i>	.634 (.069)	.312	.489 (.073)	.305	.458 (.109)	.437

Table 6

Testing for measurement invariance of the ARSMA-II, AVS-R, EAVS-AA-R across three groups

	χ^2	<i>df</i>	CFI	SRMR	RMSEA	90% CI for RMSEA		Δ CFI	Δ RMSEA	Δ SRMR
						LL	UL			
ARSMA-II										
M1. Configural invariance	1491.271	837	.881	.080	.076	.069	.082			
M2. Weak invariance	1576.975	881	.873	.106	.076	.070	.082	-0.008	.000	+.026
AVS-R										
M1. Configural invariance	1674.622	804	.560	.123	.089	.083	.095			
M2. Weak invariance	1677.405	827	.570	.125	.087	.081	.093	+0.01		
M3. Strong invariance	1766.461	900	.562	.132	.084	.078	.090	-0.008		
EAVS-AA-R										
M1. Configural invariance	1433.664	798	.704	.101	.076	.070	.083			
M2. Weak invariance	1535.475	846	.679	.116	.077	.071	.083	-0.025		
M3. Strong invariance	1620.263	894	.661	.119	.077	.071	.083	-0.018		

Note: In all groups, residual terms of items were allowed to covary

CFI = comparative fit index; SRMR = standardized root mean squared residual; RMSEA = root mean square error of approximation; LL = lower limit; UL = upper limit

Table 7

Single-group confirmatory factor analyses with modified AVS-R and EAVS-AA-R.

	χ^2	<i>df</i>	p	CFI	SRMR	RMSEA	90% CI for RMSEA	
							LL	UL
AVS-R								
China	113.037	73	.002	.847	.072	.063	.039	.085
Japan	86.583	73	.132	.957	.067	.037	.000	.065
Korea	72.894	73	.482	1.00	.066	.000	.000	.049
EAVS-AA-R								
China	106.539	75	.010	.915	.066	.055	.028	.078
Japan	106.479	75	.010	.877	.073	.056	.028	.079
Korea	113.767	75	.002	.875	.069	.061	.037	.083

Note: In all groups, residual terms of items were allowed to covary

CFI = comparative fit index; SRMR = standardized root mean squared residual; RMSEA = root mean square error of approximation; LL = lower limit; UL = upper limit

Table 8

Testing for measurement invariance across three groups with modified AVS-R and EAVS-AA-R

	χ^2	df	CFI	SRMR	RMSEA	90% CI for RMSEA		Δ CFI	Δ RMSEA	Δ SRMR
						LL	UL			
AVS-R										
M1. Configural invariance	274.210	219	.944	.068	.043	.024	.058			
M2. Weak invariance	300.219	241	.940	.085	.042	.024	.057	-0.004	-.001	+.017
M3. Strong invariance	334.842	263	.928	.089	.045	.028	.058	-0.012	+.003	+.004
EAVS-AA-R										
M1. Configural invariance	326.471	225	.892	.070	.057	.043	.071			
M2. Weak invariance	370.560	249	.871	.095	.060	.047	.072	-0.021	+.003	+.025

Note: In all groups, residual terms of items were allowed to covary

CFI = comparative fit index; SRMR = standardized root mean squared residual; RMSEA = root mean square error of approximation; LL = lower limit; UL = upper limit

Table 9

Summary of Exploratory Factor Analysis Results for the Improved AVS-R using Maximum Likelihood Estimation (N = 410)

Item	Factor Loadings		
	Collectivism	Conformity to Norms	Filial Piety and Achievement
One should not deviate from familial and social norms.	.205	.412	-.035
Children should not place their parents in retirement homes	.303	.141	.059
Younger persons should be able to confront their elders.	.261	-.072	.346
One need not achieve academically in order to make one's parents proud.	.062	.067	.457
One should consider the needs of others before considering one's own needs.	1.006	-.397	.000
One should think about one's group before oneself.	.681	.017	-.252
One's achievements should be viewed as family's achievements.	.324	.289	.035

One should avoid bringing displeasure to one's ancestors.	.179	.521	.006
The worst thing one can do is to bring disgrace to one's family reputation.	.047	.768	.044
One should be humble and modest.	.154	.326	-.099
Family's reputation is not the primary social concern.	-.032	.252	.491
Occupational failure does not bring shame to the family.	.002	.127	.584
One need not follow the role expectations (gender, family hierarchy) of one's family.	.154	.009	.709
One should not make waves.	-.004	.552	-.242

Note: Factor loadings over .3 appear in bold.

Table 10

Summary of Exploratory Factor Analysis Results for the Improved AVS-R using Maximum Likelihood Estimation (N = 410)

Item	Factor Loadings	
	Sexual Freedom	Individualism
Sometimes, it is necessary for the government to stifle individual development	.115	.525
Single women should not have children and raise them alone.	.739	.013
I prefer not to take on responsibility unless I must.	.179	.379
I do not like to serve as a model for others.	.148	.323
It is okay if work interferes with the rest of my life.	-.012	.418
It is okay to allow others to restrict one's sexual freedom.	.382	.369
No one is entitled to complete sexual freedom without restriction.	.410	.157
A woman should not have a child unless she is in a long-term relationship	.782	-.070
Faithfulness is very important for a successful marriage.	-.087	.401
Monetary compensation is not very important for a job.	.049	.484

Luck determines the course of one's life.	.054	.417
Cheating on one's partner doesn't make a marriage unsuccessful.	-.073	.592
Greater emphasis on individual development is not a good thing.	.065	.549
Faithfulness is not important for a successful marriage.	-.024	.753

Note: Factor loadings over .3 appear in bold.

Appendix A
Acculturation Rating Scale for Mexican Americans (ARSMA-II) adapted for Asian Americans.

(Lee, Yoon, Liu-Tom, 2006)

Use the scale below to indicate the extent to which you do the following behaviors

	Not at all	Very Little	Moderately	Very Often	Almost always
1. I speak an Asian language.	1	2	3	4	5
2. I speak English	1	2	3	4	5
3. I enjoy speaking an Asian language.	1	2	3	4	5
4. I associate with Whites	1	2	3	4	5
5. I associate with Asians and/or Asian Americans	1	2	3	4	5
6. I enjoy listening to Asian language music.	1	2	3	4	5
7. I enjoy listening to English language music.	1	2	3	4	5
8. I enjoy Asian language TV.	1	2	3	4	5
9. I enjoy English language TV.	1	2	3	4	5
10. I enjoy English language movies.	1	2	3	4	5
11. I enjoy Asian language movies.	1	2	3	4	5
12. I enjoy reading in an Asian language (e.g., books).	1	2	3	4	5
13. I enjoy reading in the English language (e.g., books).	1	2	3	4	5
14. I write in an Asian language (e.g., letters).	1	2	3	4	5
15. I write in the English language (e.g., letters).	1	2	3	4	5
16. My thinking is done in the English language.	1	2	3	4	5
17. My thinking is done in an Asian language.	1	2	3	4	5
18. My contact with an Asian country has been _____.	1	2	3	4	5
19. My contact with the United States has been _____.	1	2	3	4	5
20. My father identifies or identified himself as "Asian."	1	2	3	4	5
21. My mother identifies or identified herself as "Asian."	1	2	3	4	5
22. My friends, while I was growing up, were of Asian descent.	1	2	3	4	5
23. My friends, while I was growing up, were of White/European descent.	1	2	3	4	5
24. My family cooks Asian foods.	1	2	3	4	5
25. My friends are of White/European descent.	1	2	3	4	5
26. My friends now are of Asian descent.	1	2	3	4	5
27. I like to identify myself as White.	1	2	3	4	5
28. I like to identify myself as Asian American.	1	2	3	4	5
29. I like to identify as Asian.	1	2	3	4	5
30. I like to identify myself as an American.	1	2	3	4	5

Appendix B
Asian Values Scale – Revised
(B. S. K. Kim & Hong, 2004)

INSTRUCTIONS: Use the scale below to indicate the extent to which you agree with the value expressed in each statement.

- 1 = Strongly Disagree
- 2 = Disagree
- 3 = Agree
- 4 = Strongly Agree

- _____ 1. One should not deviate from familial and social norms.
- _____ 2. Children should not place their parents in retirement homes.
- _____ 3. One need not focus all energies on one's studies.
- _____ 4. One should be discouraged from talking about one's accomplishments.
- _____ 5. Younger persons should be able to confront their elders.
- _____ 6. When one receives a gift, one should reciprocate with a gift of equal or greater value.
- _____ 7. One need not achieve academically in order to make one's parents proud.
- _____ 8. One need not minimize or depreciate one's own achievements.
- _____ 9. One should consider the needs of others before considering one's own needs.
- _____ 10. Educational and career achievements need not be one's top priority.
- _____ 11. One should think about one's group before oneself.
- _____ 12. One should be able to question a person in an authority position.
- _____ 13. Modesty is an important quality for a person.
- _____ 14. One's achievements should be viewed as family's achievements.
- _____ 15. One should avoid bringing displeasure to one's ancestors.
- _____ 16. One should have sufficient inner resources to resolve emotional problems.
- _____ 17. The worst thing one can do is to bring disgrace to one's family reputation.
- _____ 18. One need not remain reserved and tranquil.
- _____ 19. One should be humble and modest.
- _____ 20. Family's reputation is not the primary social concern.
- _____ 21. One need not be able to resolve psychological problems on one's own.
- _____ 22. Occupational failure does not bring shame to the family.
- _____ 23. One need not follow the role expectations (gender, family hierarchy) of one's family.
- _____ 24. One should not make waves.
- _____ 25. One need not control one's expression of emotions.

Appendix C
European American Values Scale for Asian Americans – Revised
(Hong, Kim, & Wolfe, 2005)

INSTRUCTIONS: Use the scale below to indicate the extent to which you agree with the value expressed in each statement.

- 1 = Strongly Disagree
- 2 = Disagree
- 3 = Agree
- 4 = Strongly Agree

- ___ 1. I think it is fine for an unmarried woman to have a child.
- ___ 2. Sometimes, it is necessary for the government to stifle individual development.
- ___ 3. You can do anything you put your mind to.
- ___ 4. Single women should not have children and raise them alone.
- ___ 5. I prefer not to take on responsibility unless I must.
- ___ 6. I do not like to serve as a model for others.
- ___ 7. It is okay if work interferes with the rest of my life.
- ___ 8. It is okay to allow others to restrict one's sexual freedom.
- ___ 9. No one is entitled to complete sexual freedom without restriction.
- ___ 10. A woman should not have a child unless she is in a long-term relationship.
- ___ 11. I follow my supervisor's instructions even when I do not agree with them.
- ___ 12. The world would be a better place if each individual could maximize his or her development.
- ___ 13. Partners do not need to have similar values in order to have a successful marriage.
- ___ 14. I cannot approve of abortion just because the mother's health is at risk.
- ___ 15. It is okay for a woman to have a child without being in a permanent relationship.
- ___ 16. Friends are very important.
- ___ 17. Faithfulness is very important for a successful marriage.
- ___ 18. Monetary compensation is not very important for a job.
- ___ 19. A student does not always need to follow the teacher's instructions.
- ___ 20. Luck determines the course of one's life.
- ___ 21. Cheating on one's partner doesn't make a marriage unsuccessful.
- ___ 22. Greater emphasis on individual development is not a good thing.
- ___ 23. I have always enjoyed serving as a model for others.
- ___ 24. Being humble is better than expressing feelings of pride.
- ___ 25. Faithfulness is not important for a successful marriage.