

CULTURE AND DEPRESSION AMONG ASIAN AMERICANS:
DISENTANGLING ETHNIC DIFFERENCES BY EXAMINING CULTURALLY RELEVANT
PSYCHOLOGICAL FACTORS

By

Zornitsa Kalibatseva

A DISSERTATION

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

Psychology—Doctor of Philosophy

2015

ABSTRACT

CULTURE AND DEPRESSION AMONG ASIAN AMERICANS: DISENTANGLING ETHNIC DIFFERENCES BY EXAMINING CULTURALLY RELEVANT PSYCHOLOGICAL FACTORS

By

Zornitsa Kalibatseva

The overall goal of this project was to disentangle or unpack ethnic differences in depression among Asian Americans and European Americans by conducting two studies that examine cultural and contextual factors. The general introduction (Chapter 1) provides information on Asian American demographics, discusses depression among Asian Americans and describes the disentangling approach (Leong, Park, & Kalibatseva, 2013), which tests the incremental validity of culturally relevant psychological variables. A brief description of several culturally relevant psychological constructs is provided at the end of Chapter 1 and more information about each construct is presented in each study.

The first study (Chapter 2) used secondary data analysis to examine loss of face and acculturation family conflict in relation to depression among Asian American and European American college students. As predicted, the study found that Asian Americans reported higher scores on depression, loss of face, and acculturation family conflict than European Americans. In addition, the two culturally relevant psychological variables explained a larger portion of the variance in depression scores in the Asian American sample compared to the European American sample. Using the disentangling approach, ethnicity was no longer a significant predictor of depression and sensitivity to loss of face and the seriousness of acculturation family conflict (but not the likelihood) predicted depression for the entire sample.

The second study (Chapter 3) examined how cultural factors associate with the report of depressive and somatic symptoms among Chinese American and European American college students. There were no ethnic differences in depression scores. However, European Americans surprisingly reported more somatic symptoms than Chinese Americans. Post-hoc analyses revealed that this difference was largely due to the high report of somatic symptoms among European American females. When somatic symptoms and gender were controlled for in an ad-hoc analysis, an ethnic difference in depression emerged with Chinese Americans reporting higher scores than European Americans. The two samples did not vary in independent and interdependent self-construal and emotion regulation. The only ethnic difference for the culturally relevant variables was in higher sensitivity to loss of face for Chinese Americans than European Americans. It is possible that the hypothesized cultural differences were not observed because the Chinese American sample reported relatively high mainstream acculturation levels and low to moderate heritage acculturation levels. The disentangling approach revealed that higher depression scores were predicted by low independent self-construal and cognitive reappraisal and high sensitivity to loss of face and expressive suppression. The ethnic differences in depression, which were detected when controlling for somatic symptoms and gender, were no longer significant when the culturally relevant psychological variables were included in the regression. This study did not find evidence for somatization among Chinese Americans and suggested that depression differences could be explained by examining culturally salient constructs. Clinical implications include the reduction of health disparities in accessing and receiving quality depression treatment and provision of culturally sensitive treatments for depression.

ACKNOWLEDGEMENTS

I would like to thank Frederick Leong, my advisor and mentor, for his continuous support and guidance throughout my career. He has provided with me with invaluable opportunities to grow as a scholar and encouraged me to pursue my interests. His wisdom and knowledge have inspired me and his passion for research and productivity have been infectious. I am truly thankful for his expertise and thoughtful advice.

I would also like to thank Chris Hopwood who has taught me many valuable lessons as my dissertation co-chair, clinical supervisor, and instructor. Chris has challenged me to improve my work, which has helped me to develop more autonomy and confidence as a scholar and clinician. He has also provided me with much needed support and encouragement in difficult times. My committee member NiCole Buchanan has also played an important role in my development as a researcher, clinician, and instructor. I feel fortunate to have had the opportunity to learn from her in so many different capacities. She has always been kind, nurturing, and thoughtful in her feedback and I admire her knowledge, humor, and poise. Lastly, I appreciate my committee member Evelyn Oka for her expertise, warmth, and engagement throughout this process.

My gratitude also goes to all of the research assistants and work-study students at the Consortium for Multicultural Psychology Research (CMPR). I appreciate Yang Chen's and Brittany Lannert's help with data collection, data cleaning, and data analysis for the first study. In addition, I am particularly thankful to Joel Arnold who helped me with data collection and data cleaning for the second study.

This research project would have not been possible without the hundreds of participants and I would like to thank them for their time and effort in completing the questionnaires. I also appreciate the assistance in recruiting participants from the Human Participant Research staff at the Department of Psychology, the Registrar's Office at Michigan State University, and the Registrar's Office at the University of Michigan. Moreover, I am thankful to the APA Science Directorate for awarding me the 2013 Dissertation Research Grant. As a result of this, I was able to provide an incentive to participants and recruited a large number of participants within a short amount of time.

Life in graduate school can be stressful and I am forever indebted to my close friends and colleagues who were always there for me and laughed and cried with me when I needed their friendship, advice, and company. I am thankful to Lisa Vroman for being my best friend and partner in crime in graduate school and fully supporting me in all of my endeavors. I am also grateful to Katey Smagur, who inspired me with her own persistence and faith and always kept me entertained. Thanks to Brooke Bluestein, who has also supported me in many important moments. Last but not least, I am thankful to my dear friend Christine Shenouda, who provided me with relentless support during the long hours of commuting and kept my spirits up.

Finally, I would like to express my endless gratitude to everyone in my family. My parents and my brother encouraged and supported me in pursuing my dreams. My grandparents who are no longer with us instilled in me passion for education and continuously cheered me up and believed in me. My accomplishments would not be possible without my partner, Ryotaro Tashiro, who has been a constant pillar in my life. Your love and care mean the world to me and I thank you for being there for me every step of the way and supporting me in finishing my degree.

TABLE OF CONTENTS

LIST OF TABLES	viii
LIST OF FIGURES.....	ix
CHAPTER 1	1
CULTURE AND DEPRESSION AMONG ASIAN AMERICANS	1
Definitions.....	1
Depression among Asian Americans.....	4
Cross-cultural approach to study psychopathology.....	6
Disentangling race and ethnicity as predictors of depression.....	7
CHAPTER 2.....	9
STUDY 1: THE ASSOCIATION OF LOSS OF FACE AND FAMILY CONFLICT WITH DEPRESSION AMONG ASIAN AMERICAN AND EUROPEAN AMERICAN COLLEGE STUDENTS.....	9
Loss of face and Asian Americans.....	13
Acculturation family conflict among Asian Americans	14
Rationale and hypotheses.....	16
Method	18
Participants.....	18
Procedure	18
Measures	19
Loss of Face (LOF).....	19
Asian American Family Conflict Scale (FCS).....	19
Center for Epidemiological Studies Depression Scale (CES-D) ...	20
Demographic Questionnaire	20
Results.....	20
Discussion	25
CHAPTER 3	29
STUDY 2: SELF-CONSTRUAL, LOSS OF FACE, AND EMOTION REGULATION AND THEIR ASSOCIATION WITH DEPRESSION AND PHYSICAL SYMPTOMS AMONG CHINESE AMERICAN AND EUROPEAN AMERICAN COLLEGE STUDENTS	29
Culture and psychopathology	29
Culture, depression, and somatization	30
Self-construal, individualism, and collectivism.....	34
Loss of face	38
Emotion regulation.....	39
Rationale and hypotheses.....	41
Method	45
Participants.....	45
Procedure	45

Measures	46
Center for Epidemiological Studies Depression Scale (CES-D) ...	46
Patient Health Questionnaire (PHQ-9)	46
Patient Health Questionnaire (PHQ-15)	47
The Self-Concept Scale (SCS).....	47
Loss of Face (LOF).....	47
Emotion Regulation Questionnaire (ERQ)	48
Vancouver Index of Acculturation (VIA).....	48
Demographic Questionnaire	49
Results.....	49
Ad-hoc analyses	52
Discussion	60
Clinical implications	66
Limitations and future directions	67
CHAPTER 4	70
GENERAL DISCUSSION	70
Conclusion	74
Funding acknowledgment.....	74
REFERENCES	75

LIST OF TABLES

Table 1. Means and Standard Deviations for All Variables by Ethnic Group.....	23
Table 2. Regression Coefficients Predicting Depression by Ethnic Group and for Full Sample ..	24
Table 3. Demographics.	54
Table 4. Comparisons between Chinese Americans and European Americans	55
Table 5. Correlations for the Chinese American Sample (Above the Diagonal) and European American Sample (Below the Diagonal)	56
Table 6. Hierarchical Regression Predicting Depression (CESD).....	57
Table 7. Hierarchical Regression Predicting Physical Symptoms (PHQ-15).....	58
Table 8. Hierarchical Regression Predicting Depression (CESD) and Controlling for Gender and Physical Symptoms	59

LIST OF FIGURES

Figure 1. Conceptual Model of Study 1	17
Figure 2. Conceptual Model of Study 2.....	44

CHAPTER 1

CULTURE AND DEPRESSION AMONG ASIAN AMERICANS

Definitions

Asian Americans are the second fastest-growing minority group in the United States (U.S. Census Bureau, 2013). According to the U.S. Census, in 2011 the Asian alone-or-in-combination population numbered 18.2 million individuals, which represents a growth of 46% between 2000 and 2010. In terms of subgroups, the Chinese population makes up the largest Asian group in the United States at 4 million, followed by Filipinos (3.4 million), Asian Indians (3.2 million), Vietnamese (1.9 million), Koreans (1.7 million), and Japanese (1.3 million). Several smaller subgroups include Pakistanis (390,000), Cambodians (302,000), Thai (270,000), Hmong (251,000), and Laotians (231,000) among others.

According to the U.S. Census (2010), the term “Asian” refers to people “having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent, for example, Cambodia, China, India, Japan, Korea, Malaysia, Pakistan, the Philippine Islands, Thailand, and Vietnam”. The comparison group that is most often used in psychology is “White” and refers to people “having origins in any of the original peoples of Europe, the Middle East, or North America” (U.S. Census, 2010). This project used the terms Asian American and European American, where the latter refers to non-Latino Whites, consistent with the American Psychological Association (APA) publication manual guidelines to avoid unparalleled designations (APA, 2009).

As the terms culture, race, and ethnicity have often been conceptually confused and used interchangeably, I provide definitions for each of these constructs. Betancourt and Lopez’ (1993)

seminal work on the distinction between culture, ethnicity, and race guided the formulation of the definitions. These definitions are prefaced with the disclaimer that “there is no one definition of ethnicity, race, and culture that is agreed on by all” (p. 367, Okazaki & Sue, 1995). Within cross-cultural psychology and anthropology, **culture** refers to “highly variable systems of meanings, which are learned and shared by a people or an identifiable segment of a population” (p. 630; Betancourt & Lopez, 1993; Rohner, 1984). Psychologically relevant elements that constitute culture represent “social norms, roles beliefs, and values” (p. 630) and may include topics, such as familial roles, gender roles, communication styles, affective styles, values of authority or personal control, individualism, collectivism, and spirituality among others (Betancourt & Lopez, 1993). The definition of **race** often involves similar observable physical characteristics, such as skin color, hair type and color, eye color, facial features, and so on. The use of the term race may often imply biological variation as the physiognomic features specific to one’s race are associated with populations within isolated geographic locations (Betancourt & Lopez; Okazaki & Sue). **Ethnicity** usually refers to groups that may have common characteristics, such as nationality, language, history, traditions, race, and/or culture. Thus, ethnic characteristics may not occur independently of race and culture, which may contribute to the common interchangeable use of these terms.

Previous research has often grouped together individuals from the same ethnic or racial background and used ethnicity or race as predictor variables under the assumption that the participants share similar psychological characteristics and these characteristics associate with personality or psychopathology (Okazaki & Sue, 1995). This dissertation followed the recommendations of Betancourt and Lopez (1993) and Okazaki and Sue (1995) that research

needs to identify and directly measure specific psychological variables associated with culture that are assumed to explain differences between racial or ethnic groups.

Asian Americans constitute a very heterogeneous group, which encompasses over 50 subgroups diverse in ethnicity, culture, English proficiency, religious traditions, histories, experience, and native languages and dialects (American Psychiatry Association Office of Minority and National Affairs [OMNA], 2010). Due to the difficulty of sampling adequate numbers of each subgroup, researchers often collapse ethnic categories among racial groups, which may hinder the interpretation and generalizability of research findings (Sue, Kurasaki, & Srinivasan, 1999).

Ideally, researchers would recruit adequate samples of each Asian subgroup and examine culturally relevant psychological variables for each subgroup. Yet, it has been difficult to recruit large samples of each ethnic group and researchers often collapse participants across groups into an Asian American group. This practice has been encouraged considering the issue of differential research infrastructure in mental health research, which shows that our knowledge of psychiatric epidemiology for European Americans is more advanced and developed than that for Asian Americans (Leong & Kalibatseva, 2010). Therefore, there is a need to conduct more research with Asian Americans in order to understand this population better. Regardless of whether future research combines subgroups into the Asian American category or samples separate Asian ethnic subgroups, it would still provide valuable information, especially if researchers attend to and empirically examine culturally relevant psychological factors they assume to be similar across Asian populations. Hence, I conducted two studies that examined culturally relevant psychological factors. The first study sampled Asian Americans without emphasizing the

specific ethnic subgroup of the participants, whereas the second study sampled Chinese Americans. European Americans served as a comparison group in both studies.

Depression among Asian Americans

According to the World Health Organization, the most likely cause of disability worldwide is suffering from depression and it ranks third in contributing to the global burden of disease as it often goes untreated (WHO, 2008). Depression is found universally across all countries and ethnic and racial groups that have been investigated (Miranda, Lawson, & Escobar, 2002; Weissman et al., 1996). Large-scale epidemiological studies show substantial variations in prevalence rates of depression across different countries and racial groups in the U.S. (Miranda et al., 2002; Weissman et al., 1996). In general, prevalence rates of mental disorders, especially depression, among Asian Americans are similar to or lower than those among non-Latino Whites (OMNA, 2010). However, Asian Americans may experience more affective, cognitive, value, and structural barriers than European Americans that prevent them from accessing mental health services (Leong & Kalibatseva, 2011; Leong & Lau, 2001). To illustrate this, Alegría et al. (2008) found that Asian Americans in a national representative sample with a past-year depressive disorder were significantly less likely to access any depression treatment and to receive adequate care compared to non-Latino Whites.

Kalibatseva and Leong (2011) provided a review of the prevalence, manifestation, assessment, and diagnosis of depression among Asian Americans. The prevalence rates of DSM-IV lifetime depressive disorders among Asian Americans in national representative samples have been reported as lower than the rates among other racial groups in the U.S. For example, 9.1% of Asian Americans in the National Latino and Asian American Study (NLAAS) endorsed any depressive disorder (i.e., dysthymia, major depressive episode or disorder; Takeuchi, Hong, Gile,

& Alegría, 2007) in comparison to 17.9% of non-Latino Whites, 13.5% of Hispanics, and 10.8% of non-Hispanic Blacks in the National Comorbidity Study-Replication (Breslau et al., 2006). Additionally, the Chinese American Psychiatric Epidemiological Study (CAPES), a community epidemiological study of 1700 native-born and immigrant Chinese Americans in Los Angeles, indicated a relatively low lifetime prevalence rate of major depressive episode (MDE; 6.9%) (Takeuchi et al., 1998).

Yet, Kalibatseva and Leong (2011) pointed out that depression prevalence rates among Asian Americans may fluctuate based on ethnicity or country of nativity. For example, Filipinos had the lowest prevalence rate of lifetime major depressive disorder (7.2%), whereas the rate was higher among Chinese participants (10.1%) in the NLAAS (Jackson et al., 2011). This difference could relate to differences in culturally relevant factors, such as religion and/or values. To illustrate this, Filipinos have a long history of Catholicism and emphasize innocence and morals, while the Chinese have been influenced by Confucianism and value humbleness and filial piety (Russell, Crocket, Shen, & Lee, 2008). In addition, Jackson et al. compared the prevalence rates of major depressive episode for U.S. born and non-U.S. born participants in the NLAAS and found that non-U.S. born participants reported lower prevalence rates across all Asian ethnic subgroups. This finding supports the “immigration paradox”, which refers to the phenomenon of non-U.S. born Asian and Latino/a immigrants reporting better mental health outcomes than U.S.-born Asian Americans and Latino/as (Leong, Park, & Kalibatseva, 2013; Takeuchi et al., 2007). Specifically, the MDE prevalence rate for U.S. born Chinese Americans was 21.5% as opposed to 7.7% for the non-U.S. born Chinese Americans. In reaction to these findings, Jackson and colleagues suggested that future depression research needs to examine the interactions of culture, race, ethnicity, and immigration. Expanding on Jackson et al.’s recommendation, researchers

need to go beyond examining demographic variables to explain observed differences in prevalence rates and symptom presentation and explore how psychological variables relevant to specific cultural contexts (similar to the example with Filipinos and Chinese) may explain these observed differences.

Cross-cultural approach to studying psychopathology

Psychological phenomena and psychopathology, in particular, can be examined at various levels. Using a biopsychosocial model (Engel, 1977), psychologists may choose to examine biological markers of psychopathology (e.g., brain images, hormone levels), psychological constructs (e.g., self-esteem, optimism), and social or cultural constructs (e.g., individualism/collectivism, family cohesion). These different levels of analysis have been proposed in various theoretical frameworks before and after the emergence of the biopsychosocial model. For example, Kluckhohn and Murray's (1950) famous tripartite framework suggested that "Every man is in certain respects: a) like all other men, b) like some other men, and c) like no other men" (p. 35). Similarly, Ryder, Ban, and Chentsova-Dutton (2011) proposed the interdisciplinary field of cultural and clinical psychology, which assumes that culture, mind, and brain "constitute one another as a multi-level dynamic system, in which no level is primary" (p. 960) and psychopathology emerges as a property of this system. This dissertation project examined the social dimension of the biopsychosocial model, which was conceptualized from the perspective of culture and used research methods from the field of cross-cultural psychology and racial and ethnic minority psychology.

Two distinct tracks have been identified within the field of multicultural psychology: cross-cultural psychology and racial and ethnic minority psychology (Leong, 2007). Within these two disciplines, the former was influenced by anthropology and concentrated on cross-country

comparisons, whereas the latter was influenced by sociology and concentrated on comparisons across ethnic minority groups in the U.S. (Leong, 2007). An example of a cross-cultural study is a comparison of tightness (strong norms and low tolerance of deviance) versus looseness (weak norms and high tolerance of deviance) across a number of countries and identification of cultural factors that may contribute to any observed differences (Gelfand et al., 2011). The racial and ethnic minority psychology approach assumes that race and ethnicity are important social-psychological predictors and may be associated with specific outcomes (Leong & Brown, 1995). For instance, African Americans and Asian Americans may be less likely to access treatment for depression and receive adequate treatment than European Americans (Alegría et al., 2008).

Leong, Leung, and Cheung (2010) proposed to advance the fields of cross-cultural psychology and ethnic minority psychology by integrating the methodological approaches from both fields. In particular, the authors recommended advancing ethnic minority psychology by integrating decentering and convergence. The decentering approach refers to formulating constructs by incorporating multiple cultural perspectives. Constructs that have been generated and researched in the cultural context of majority groups may not be able to explain cultural differences between members of the majority and minority group (Leong et al., 2010). Therefore, it is important to examine constructs that may be specific to a cultural context. Such constructs would fit within the social or cultural dimension of the biopsychosocial model and may serve as moderators of psychopathology that could explain possible group differences.

Disentangling race and ethnicity as predictors of depression

The use of race and ethnicity in psychological research as variables that carry specific psychological attributes has been a point of contention for many scholars in the field of psychology (Betancourt & Lopez, 1993; Helms, Jernigan, & Mascher, 2005; Leong et al., 2013;

Markus, 2008; Okazaki & Sue, 1995). Okazaki and Sue (1995) stated that many of the problems resulted from the lack of explicit assumptions about the meaning of ethnicity and its use as a single predictor variable. Therefore, future research needs to adequately describe and measure the cultural and contextual characteristics that are assumed when racial and ethnic minority samples are recruited.

One way to accomplish this goal is to incorporate culturally relevant constructs that can be used to explain potential ethnic differences in various psychological phenomena. A culturally relevant construct refers to a factor that varies across certain cultures and may have originated in a non-mainstream culture. For example, Western cultures tend to be more individualistic and East Asian cultures tend to be more collectivistic, which may suggest that individualism and collectivism are culturally relevant constructs (Oyserman, Coon, & Kemmelmeier, 2002). This dissertation consists of two separate comparative studies that incorporated culturally relevant psychological constructs to examine their relationship with depression between Asian American and European American college students.

CHAPTER 2

STUDY 1: THE ASSOCIATION OF LOSS OF FACE AND FAMILY CONFLICT WITH DEPRESSION AMONG ASIAN AMERICAN AND EUROPEAN AMERICAN COLLEGE STUDENTS

The release of the Surgeon General's supplement report in 2001 (U.S. Department of Health and Human Services) highlighted existing mental health disparities among racial and ethnic minorities and urged mental health professionals to study the role of culture in order to increase access to services, improve assessment and diagnosis, and reduce barriers to treatment. Although over a decade has passed since the release of the report, culturally valid assessment and quantification of cultural biases in symptom reporting (e.g., a tendency to underreport, overreport, or report certain mental issues over others) still require more research to advance the state of Asian American mental health (Sue, Cheng, Saad, & Chu, 2012).

In the last decade, several researchers suggested a departure from group comparisons based solely on race, ethnicity, nationality, and immigration status. Instead, they recommended disentangling or unpacking group differences by examining psychological factors that may underlie these cultural differences (Betancourt & Lopez, 1993; Helms, Jernigan, & Mascher, 2005; Leong, Park, & Kalibatseva, 2013; Markus, 2008). In other words, race, ethnicity, and nationality are demographic variables and psychologists should not treat them as psychological variables. In order to understand psychological phenomena, such as health disparities or cross-cultural symptom presentation, psychologists need to use psychological variables that are culturally relevant. The disentangling approach seeks to identify psychological factors or

mechanisms underlining differences which have been found between racial and ethnic groups in the existing literature.

This study examined culturally relevant psychological variables, which may explain patterns in depression between Asian Americans and European Americans. For example, Asian Americans have been found to score higher on self-report measures of depression than European Americans (Okazaki, 1997) despite having lower rates of major depressive disorder than European Americans (Takeuchi et al., 2007). This finding has been mainly replicated among Asian American and European American college students (e.g., Abe & Zane, 1990; Okazaki, 1997; Young, Fang & Zisook, 2010) and recently it was replicated in a sample of university counseling center clients (Kalibatseva et al., in preparation). One moderator in this case may be student status as it is possible that Asian American and European American non-students do not have different depression scores. However, this explanation is less plausible if we take into consideration studies with non-clinical community samples (Kuo, 1984; Ying, 1988) which also revealed that Asian Americans' mean scores on a screening measure for depression (i.e., Center for Epidemiological Studies- Depression) were higher than the published norms with European Americans for this measure.

Little research has examined what cultural factors may contribute to observed ethnic differences among college students in self-reported measures of depression (Okazaki, 1997). Few studies attempted to explain these differences in self-reported depression scores between Asian American and European American students by examining depression in conjunction with social anxiety, self-construal, report method, and self-enhancement using a comparative paradigm (Norrasakkunkit & Kalick, 2002; Okazaki, 1997; 2000).

The current study aimed at exploring specific cultural factors, such as loss of face and acculturation family conflict, and their relationship with depression among Asian American and European American college students. In order to accomplish this goal, the study had to replicate differences in depression scores based on ethnicity first and then provide an alternative explanation for these differences based on cultural psychological variables that empirical research has identified as relevant to Asian Americans (e.g., self-construal, acculturation, discrimination, loss of face, acculturation family conflict, etc.). It is important to note that these culturally relevant variables are not unique to Asian Americans and individual variation within groups is greater than between group variation. Yet, when researchers compare two demographic groups, such as Asian Americans and European Americans, instead of making assumptions about what cultural factors may contribute to the observed results, they need to measure sociocultural factors and link them to the outcomes.

Previous research has examined two possibilities for the observed differences in depression between Asian American and European American students. The first explanation proposed that ethnic differences in depression scores would be explained by social anxiety as social anxiety may be a more culturally congruent form of expressing emotional distress for Asian Americans (Okazaki, 1997). The author suggested that social anxiety “is an expression of discomfort in, or about, interpersonal situations” (p. 54) and hypothesized that interdependent and independent self-construal would explain more variance in Asian-White differences in social anxiety than depression. The findings supported this prediction but ethnicity still remained a significant predictor of social anxiety even after entering self-construal as a predictor and controlling for depression. Moreover, Okazaki (1997) found that Asian Americans did not differ from White Americans in their report of depressive symptoms when social anxiety was

controlled for, and including the self-construal variables failed to explain further variance in the depression scale scores. Whereas it is possible that social anxiety would explain differences in depression among Asian American and European American students, ethnicity still remained a significant predictor of social anxiety, which suggests that there may be other cultural factors to explain the relationship between social anxiety and depression among Asian Americans and European Americans.

The second explanation examined measurement as a possible reason for the observed differences between Asian Americans and European Americans. Specifically, Asian Americans may report more distress when they answer anonymously or interact with close family and less distress during observations or interviews when they disclose information to strangers and may risk losing face (Katz, Sanborn & Gudeman, 1969). Okazaki (2000) suggested that the observed ethnic differences in self-reported measures of depression may be an artifact of cultural response style. Therefore, an interaction between ethnicity (Asian American and European American) and reporting method (self-report questionnaire and face-to-face interview) was predicted, such that Asian Americans would report fewer depression symptoms than European Americans during in-person interviews than on anonymous self-report measures. In this study, Okazaki (2000) replicated the finding that Asian Americans scored higher than European Americans on self-report depression and social anxiety measures. However, no significant interaction was found between ethnicity and reporting method. There was a main effect indicating that all participants reported more distress on the questionnaires than in the interviews but this finding did not explain the existing ethnic differences in self-reported depression scores.

Researchers can approach differently how to examine differences in self-reported depression measures between Asian Americans and European Americans. Sociocultural

variables that have been examined in relation to cross-cultural differences in depression and social anxiety among Asian Americans and European Americans include self-construal, sociotropy, acculturation, emotion suppression, and family cohesion (Lam, 2005; Mak, Law, & Teng, 2011; Okazaki, 1997; 2000; Park et al., 2011). However, no study to date has examined loss of face or acculturation family conflict and their relationship to ethnic differences in depression among Asian Americans and European Americans. These variables seem directly related to the concept of maintaining harmony within one's group and may explain more variance in depression among Asian Americans than European Americans. Moreover, loss of face and acculturation family conflict may explain enough variance in depression to deem ethnicity as a marginal predictor.

Loss of face and Asian Americans

Loss of face refers to the danger of losing one's social integrity and status in interpersonal dynamics. Face (*mianzi* or *lian*) is defined as "a person's set of socially-sanctioned claims concerning one's social character and social integrity in which this set of claims or this "line" is largely defined by certain prescribed roles that one carries out as a member and representative of a group" (p. 126; Zane & Yeh, 2002). In other words, "having face" loosely refers to having a good reputation, honor, prestige, and social value in other people's eyes. Preservation of one's face is related to both individual and group integrity (Zane & Yeh, 2002).

Loss of face (*diu lian*) is an important cultural variable for Asians and Asian Americans (Zane & Yeh, 2002) but it is certainly not unique to Asians and Asian Americans. It refers to "the threat or loss of social integrity, especially in the interpersonal and psychosocial relationship dynamics" (p. 142; Leong, Kim, & Gupta, 2011). Ho, Fu, and Ng (2004) defined losing face as a "damaging social event, in which one's action is publicly given notice and negatively judged by

others, resulting in a loss of moral or social standing” (p. 70; Ho et al., 2004). Loss of face may impact negatively one’s social role and disrupt interpersonal relationships and networks that are of great importance in Asian cultures (Ho, 1974 as cited in Leong et al., 2011).

Shame is often used as a mechanism to reinforce societal expectations and appropriate behaviors in Asian cultures (Leong, Lee, & Chang, 2008). Loss of face typically results in shame, which is particularly relevant to Asian Americans as it may discourage them from seeking help for issues they find embarrassing (Zane & Yeh, 2002). Loss of face refers to how one believes others perceive her/him and shame emphasizes how one perceives herself/himself. The two concepts are often related but one can occur without the other. For examples, if a manager scolded a worker publicly, the worker may lose face in front of her/his colleagues. If s/he in fact made a serious mistake, s/he may also feel ashamed. However, if the worker was criticized publicly unfairly, s/he may instead feel angry.

Leong et al. (2008) further suggested that the emotion of shame and the experience of losing face may be associated with heightened levels of emotional distress as the family, community, and society withdraw their approval and support from the individual. Loss of face was significantly correlated with depressive symptoms ($r = .29$ for Asian Americans and $r = .28$ for European Americans), fear of negative evaluation ($r = .42$ for Asian Americans and $r = .45$ for European Americans), and social avoidance and distress ($r = .35$ for Asian Americans and $r = .48$ for European Americans; Leong et al., 2008). Thus, sensitivity to the loss of face could be one culturally relevant psychological variable that is associated with depression.

Acculturation family conflict among Asian Americans

Family conflict within immigrant families often takes place as a result of different rates of acculturation between immigrant parents who retain values, behaviors, and traditions

consistent with their native culture and their children who grow up in the new host country and embrace the mainstream culture (Lee, Choe, Kim, & Ngo, 2000). In particular, foreign-born immigrant parents may hold strong cultural values and practices of their country-of-origin, whereas their children may acculturate to the dominant culture faster than their parents as a result of school, work, and friendships (Szapocznik & Kurtines, 1993). Thus, both parents and children are in a process of changing and adapting to the cultural contexts, but some family units may experience more synchrony in the process than others (Juang, Syed, & Takagi, 2007).

Acculturation family conflict has been linked to decreased well-being and vulnerability to depression and other forms of psychological distress among Asian American adolescents and college students (Juang et al., 2007; Lee et al., 2000). It would be hypothesized that acculturation family conflict contributes to depressed mood more so among Asian Americans than European Americans. However, a comparative study needs to confirm this hypothesis. One comparative study of Asian and European Americans used a similar construct and measured the perceived quality of the parent-adolescent relationship (Greenberger & Chen, 1996). The authors found that ethnic differences in depressed mood were nonsignificant after entering the quality of the parent-child relationship as a predictor. Similar results about the association between depression and acculturation family conflict in a comparison study between Asian Americans and European Americans would attest the cultural relevance of family conflict in ethnic depression score differences.

Juang and colleagues (2007) examined discrepancies between parents' and adolescents' perceptions of parental control and their association with depression in a sample of Chinese American adolescents. The authors found that the adolescents' perception of family conflict partially mediated the relationship between parent-adolescent discrepancies in the perception of

parental control and depressive symptoms. These findings suggested that identifying areas of family conflict regarding values, behaviors, and beliefs may be important in interventions for depression for Chinese Americans (Juang et al.).

In addition, Leong et al. (2013) found that family conflict was a risk factor for both 12-month and lifetime anxiety disorder and depressive disorder in a national representative sample of Asian Americans. In particular, low levels of family conflict significantly decreased the odds of an anxiety or depressive disorder diagnosis and high levels of family conflict significantly increased the odds of the same disorders. Thus, family conflict needs to be examined as a potential cultural variable that could explain ethnic differences in self-reported measures of depression.

Rationale and hypotheses

Following the recommendations by Betancourt and Lopez (1993), Helms et al. (2005), and Leong et al. (2013) the current study sought to disentangle or unpack differences in depression among Asian Americans and European Americans by examining two culturally relevant psychological factors, namely, loss of face and acculturation family conflict. This study used secondary data analysis of an existing dataset in an attempt to answer the following questions:

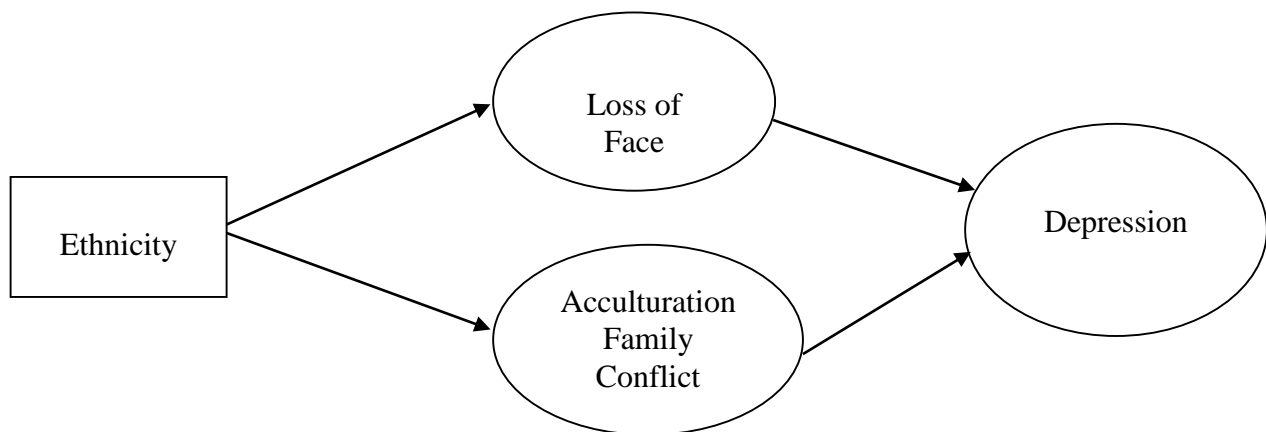
- 1) Do Asian American college students report more depression than European American college students?
- 2) Are loss of face and acculturation family conflict more culturally relevant to Asian American college students than European American college students?
- 3) Do loss of face and acculturation family conflict predict depression in Asian American college students more so than European American college students?

- 4) When culturally relevant psychological factors are taken into consideration, does ethnicity still explain differences in depression among Asian Americans and European Americans?

The conceptual model of the study is presented in Figure 1. Based on the reviewed research, this study posed five hypotheses:

- 1) Asian American college students will report higher levels of depression than European American college students after controlling for age and gender differences.
- 2) Asian Americans will have higher scores on loss of face and acculturation family conflict than European Americans.
- 3) Loss of face will predict more variance in depression among Asian Americans than European Americans.
- 4) Acculturation family conflict will predict more variance in depression among Asian Americans than European Americans.
- 5) Depression will be predicted by loss of face and acculturation family conflict, whereas ethnicity will be a marginal predictor and will explain a smaller portion of the variance in depression than the culturally relevant variables.

Figure 1. Conceptual Model of Study 1.



Method

Participants

A total of 553 undergraduate students at a large Midwestern university started the survey. Forty-six students were removed from the dataset because they did not meet the eligibility criteria (i.e., did not identify as Asian American or European American) or did not complete the survey. Thus, the final sample consisted of 507 participants. Self-identified Asian American participants consisted 43% of the sample ($n = 218$). Of those, 94 were male (43.3%) and 123 were female (56.7%). The majority of Asian American participants reported they were U.S. citizens ($n = 178$; 82.8%), compared to 15.3% U.S. permanent residents ($n = 33$) and four with “other” status. Data on the ethnicity of the Asian American participants were not available. Over half of the sample ($n = 289$; 57%) self-identified as European American. Among them, 85 were men (29.4%) and 204 were women (70.6%). The Asian American sample had significantly more males than the European American sample ($\chi^2 = 10.48, p = .001$). The Asian American sample ($M = 20.30, SD = 1.55$) was also significantly younger than the European American sample ($M = 20.69, SD = 1.51$), $t(478) = 2.77, p = .006$. Almost half of the full sample was first-year students (43.7%), 24.1% were sophomores, 17.5% were juniors, and 14.6% were seniors.

Procedure

Data were collected at three different times in 2008, 2010, and 2013. All students were recruited from the psychology student subject pool and Asian American student organizations. Students in psychology classes were awarded credit for their participation. The study was approved by the Michigan State University Institutional Review Board. All participants read and signed a consent form before filling out the paper-and-pencil questionnaires. In the first data collection, 104 Asian Americans and 106 European Americans filled out the survey. The second

(38 Asian Americans and 183 European Americans) and third set (76 Asian Americans) of participant data were collected in 2009-2010 and 2013. Comparisons of the first and the combined second and third datasets revealed no significant differences in demographic variables and the main variables of interest. Therefore, the three sets of data were combined and analyzed together in this study. Totals for all questionnaires were scored if missing data were 15% or less.

Measures

Loss of Face (LOF). All participants completed the LOF questionnaire (Zane, 1991), which contains 21 items to measure a person's self-assessment of sensitivity to face loss in different situations. Items are scored on a 7-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Total scores may range from 21 to 147, with higher scores indicating greater concerns with losing face. The psychometric properties of this instrument suggest that it is reliable in assessing the construct of face loss with a high internal consistency (Cronbach's α ranged from .84 to .92; Leong & Zhang, in preparation). In the present study, Cronbach's α was .87 for the Asian American sample and .88 for the European American sample.

Asian American Family Conflicts Scale (FCS; Lee et al., 2000). The instrument consists of 10 items that measure intergenerational family conflict. The items' wording reflects differences in the child's and the parent's values and expectations from the child's perspective (e.g., "Your parents tell you what to do with your life, but you want to make your own decisions"). The items are rated on a 5-point Likert scale and assess the likelihood of discrepancy occurrence (FCS-Likelihood) and the seriousness of the problem (FCS-Seriousness). The Likelihood items range from 1 (*almost never*) to 5 (*almost always*) and the Seriousness items range from 1 (*not at all*) to 5 (*extremely*). A family intensity score (FCS-Intensity) can be calculated by averaging the FCS-Likelihood and FCS-Seriousness mean scores. The subscales

demonstrated good internal reliability ($\alpha = .81-.91$) and convergent validity with three family conflict items from the Social, Attitudinal, Familial, and Environmental Acculturation Stress Scale (Lee et al., 2000). Validation of the measure revealed that the FCS-Likelihood measures both acculturation and intergenerational differences. FCS was positively correlated with participants' and parents' Asian orientation and negatively correlated with parents' Western orientation (Lee et al., 2000). The alpha coefficients for the present study were .88 (likelihood) and .89 (seriousness) for the Asian American sample and .78 (likelihood) and .86 (seriousness) for the European American sample.

Center for Epidemiologic Studies Depression Scale (CES-D). The CES-D measures the frequency of 20 symptoms of depression over the past week. It uses a 4-point Likert scale ranging from 0 (*rarely or none of the time*) to 3 (*most or all of the time*) and higher scores indicate higher levels of depression. The CES-D has been frequently used with Asian Americans (Okazaki, 2000; Ying, 1988) and detected ethnic differences between Asian Americans and European Americans. It revealed good internal consistency with coefficient alphas of .90 or above for both community and clinical samples (Radloff, 1977). In this study, the coefficient alphas for Asian Americans and European Americans were .85 and .83, respectively.

Demographic Questionnaire. The survey included questions about the birth year, gender, class standing, and citizenship status of the participants.

Results

Table 1 shows the means and standard deviations as well as the group comparison statistics (t , p and Cohen's d values) for all variables. As predicted in Hypothesis 1, Asian American college students reported higher depression scores than European American college

students on the CES-D ($t(505) = -1.99, p = .047, d = .18^1$). Similarly, Hypothesis 2 was confirmed as Asian Americans scored higher than European Americans on the culturally relevant variables loss of face and acculturation family conflict. The differences were statistically significant for the FCS Likelihood and FCS Seriousness subscales and for the averaged FCS Intensity scale. Future analyses included the FCS Likelihood and FCS Seriousness scales separately and did not use the FCS Intensity scale since it was an averaged score of the two subscales.

Table 2 presents the regression coefficients for simple, multiple, and hierarchical linear regressions predicting depression scores. In particular, a simple linear regression revealed that loss of face was a significant predictor of depression among both Asian Americans and European Americans. Similarly, the likelihood and seriousness of family conflict significantly predicted depression among both Asian Americans and European Americans. Hypotheses 3 and 4 were partially supported as loss of face and seriousness of family conflict explained more variance among Asian Americans than European Americans; however, likelihood of family conflict explained more variance among European Americans than Asian Americans (see Table 2). To examine the simple regressions further, moderated regressions compared the beta coefficients for Asian Americans and European Americans and tested the null hypothesis that the beta coefficients for Asian Americans were the same as those for European Americans. A dummy variable was created, such that “Asian American” was coded as 1 and “European American” as 0. Next, another variable was created that was the product of the dummy coded variable (i.e., Asian American) and the independent variable (i.e., loss of face, family conflict). No significant

¹ This analysis was also conducted controlling for age and gender and the results were similar as ethnicity was still a significant predictor of depression, $F = 5.09, p = .025$ and age and gender were not. Therefore, future analyses did not include gender and age as covariates.

differences were detected between the beta coefficients for Asian Americans and European Americans in the simple regression analyses.

When all three independent variables (loss of face, likelihood, and seriousness of family conflict) served as predictors in a multiple linear regression, likelihood of family conflict was no longer a significant predictor of depression for Asian Americans. Conversely, seriousness of family conflict was no longer a predictor of depression for European Americans (see Table 2).

Lastly, a hierarchical linear regression tested Hypothesis 5 and confirmed that ethnicity was no longer a significant predictor of depression when loss of face and the likelihood and seriousness of family conflict were entered as predictors at Step 1. Thus, the culturally relevant psychological variables loss of face and family conflict predicted depression, whereas ethnicity served as a marginal predictor ($p = .513$).

Table 1. *Means and Standard Deviations for All Variables by Ethnic Group*

Instrument	Asian American	European American	<i>t</i> (df)	<i>d</i>	<i>p</i>
	M (<i>SD</i>)	M (<i>SD</i>)			
CESD	19.94 (9.88)	18.28 (8.84)	-1.99 (505)	.18	.047
LOF	89.42 (18.55)	83.91 (18.14)	-3.35 (504)	.30	.001
FCS Likelihood	28.64 (10.05)	18.99 (6.57)	-9.66 (505)	1.14	.001
FCS Seriousness	24.71 (9.71)	17.24 (7.27)	-7.46 (505)	.87	.001
FCS Intensity	26.67 (9.54)	18.11 (6.53)	-8.56(505)	1.05	.001

Table 2. *Regression Coefficients Predicting Depression by Ethnic group and for Full Sample*

Variable	Asian American					European American				
	B	SE	β	R ²	P	B	SE	β	R ²	p
LOF	.126	.04	.236	.056	< .001	.094	.03	.192	.037	.001
FCS Lik	.182	.07	.185	.034	.006	.315	.08	.234	.055	<.001
FCS Ser	.252	.07	.248	.062	< .001	.233	.07	.192	.037	.001
LOF	.101	.036	.189		.005	.077	.03	.157		.007
FCS Lik	-.117	.126	-.119		.359	.242	.122	.18		.048
FCS Ser	.311	.131	.306	.099	.019	.043	.109	.036	.079	.691
Full Sample										
1. LOF	.09	.02	.178		<.001					
FCS Lik	.048	.09	.049		.576					
FCS Ser	.171	.08	.169		.042					
2.Ethnicity	-.203	.31	-.032		.513					

Discussion

The current study examined two culturally relevant psychological variables, loss of face and acculturation family conflict, and their relationship with depression among Asian American and European American college students. The goal of the study was to disentangle existing ethnic differences in self-reported depression scores between Asian American and European American students. The findings replicated the ethnic differences in depression that previous research established among college student samples (Abe & Zane, 1990; Okazaki, 1997; Young, Fang & Zisook, 2010). Specifically, Asian American students had higher depression scores on the CESD than European American students after controlling for gender and age. Although the difference was statistically significant, its effect size was relatively small ($d = .18$). In addition, we tested the cultural relevance of loss of face and acculturation family conflict and found that, on average, Asian Americans reported higher scores on both variables than European Americans. The effect sizes were particularly large for the likelihood and seriousness of acculturation family conflict. These findings provided validation that the selected variables were culturally relevant as suggested by the empirical literature (e.g., Lee et al., 2000; Leong et al., 2008). At the same time, although these variables may be culturally salient to Asian Americans, they are not unique or equally salient to all Asian Americans as individual variation within groups is greater than variation between groups.

As further confirmation of the greater cultural relevance of loss of face and acculturation family conflict for Asian American compared to European Americans, the study found that these two variables separately and collectively explained more variance in depression among the former. In particular, loss of face explained 5.6% in depression among Asian American college students compared to 3.7% among European American college students. Similarly, the

seriousness of acculturation conflict explained 6.2% among Asian Americans and 3.7% among European Americans. However, the likelihood of acculturation conflict seemed to be more predictive of depression among European Americans (5.5%) than Asian Americans (3.4%). Despite the differences in explained variance, the regression coefficients between the two ethnic groups did not differ significantly, which suggests that the magnitude of the differences was relatively small.

This study set out to disentangle the previously found ethnic differences in depression among Asian Americans and European Americans by showing that cultural psychological constructs would make ethnicity a marginal (or non-significant) predictor of depression. Indeed, the findings supported this hypothesis as ethnicity no longer served as a significant predictor of depression when loss of face and acculturation family conflict were included in the regression. Ethnicity led to no change in explained variance when it was entered into the model, which indicated that loss of face and the seriousness of acculturation family conflict already explained 8.7% of variance in the full sample. However, the likelihood of family conflict was also no longer a significant predictor of depression. It is possible that this variable captured the likelihood of intergenerational conflict, which may be considered normative in societies that value individualism as adolescents and young adults begin to form an independent identity (Ying & Han, 2007).

This study's findings suggest that loss of face and acculturation family conflict are significantly related to self-reported depression among Asian Americans. It is possible that these cultural variables also play an important role in other forms of psychopathology. The significant association between loss of face and depression may provide further support for the theory that Asian Americans have a more relational self than European Americans (Markus & Kitayama,

1991; Cross, Hardin, & Gercek-Swing, 2011). Therefore, disturbances in relational dynamics may have a stronger effect on psychological functioning and mental health among people who are more concerned with losing face. Similarly, acculturation family conflict may disrupt family cohesion and more serious family conflict predicts higher depression among college students, which is consistent with previous research findings among both Asian American and European American adolescents (Juang et al., 2007) and adults (Leong et al., 2013).

This research has important clinical implications as it suggests that loss of face and acculturation family conflict are associated with depression and need to be included in the assessment and intervention process. At the same time, the study reveals that Asian American clients should not be stereotyped as these cultural psychological variables may be more important to some than other clients and they are also relevant to European Americans. Moreover, these findings emphasize the significance of the relational self and family harmony.

The study's results provide insight in disentangling ethnic differences in depression. Yet, there are some limitations that need to be addressed in future research. For instance, the study recruited Asian Americans without specifically inquiring about their identification with an ethnic subgroup. This issue has been referred to as ethnic gloss, or the use of a simplistic category to describe rich and culturally variable ethnocultural groups (Trimble & Dickson, 2005). In addition, there are various culturally relevant psychological variables, such as self-construal and emotion suppression, that may contribute to depression but were not examined. Another limitation is the reliance on self-report questionnaires as it may introduce social desirability bias or random responding. Future research needs to address the existing limitations by preventing ethnic gloss, identifying more culturally relevant variables that are specific to ethnic subgroups and using other data collection methods and designs (e.g., experimental design, focus groups).

Overall, this study contributes to the existing literature by examining specific culturally salient psychological variables that may explain ethnic differences in depression between Asian American and European American college students. The disentangling method seems to be a promising tool for avoiding stereotypes based on race and ethnicity and understanding and addressing health disparities.

CHAPTER 3

STUDY 2: SELF-CONSTRUAL, LOSS OF FACE, AND EMOTION REGULATION AND THEIR ASSOCIATION WITH DEPRESSION AND PHYSICAL SYMPTOMS AMONG CHINESE AMERICAN AND EUROPEAN AMERICAN COLLEGE STUDENTS

Culture and psychopathology

Culture comprises a variety of psychologically relevant elements, which may represent values, social norms, and beliefs. It may include topics, such as familial roles, gender roles, communication styles, affective styles, values of authority or personal control, individualism, collectivism, and spirituality among others (Betancourt & Lopez, 1993). As a result, culture plays an important role in shaping the experience, expression, and communication of distress (e.g., Chentsova-Dutton & Tsai, 2009; Ryder et al., 2008). Researchers argued that culture intervenes at various levels of psychopathology, ranging from etiology and symptom manifestation, to diagnosis and outcome (e.g., Alarcón, 2009; Kirmayer, 2001). Although we realize “culture matters” in mental health, the knowledge of how and why it matters is limited (Ryder et al., 2011). Ryder and colleagues (2011) recently proposed the need to integrate findings from cultural and clinical psychology and to explore cultural contexts and not just pathologies across cultures. Similarly, researchers have encouraged moving away from racial or ethnic group comparisons towards examining the cultural factors that may be behind observed differences (Betancourt & Lopez, 1993; Helms, Jernigan, & Mascher, 2005; Leong, Park, & Kalibatseva, 2013; Markus, 2008). Whereas race, ethnicity, and nationality are demographic and not psychological variables, they have been used to explain psychological phenomena, such as symptom expression and prevalence rates. This study addresses the need to integrate cultural

psychological variables into our understanding of cross-cultural psychopathology by examining the role of independent and interdependent self-construal, loss of face, and emotion regulation, in the expression of distress as measured by depression and physical symptoms.

Culture, depression, and somatization

Depression is the leading cause of disability worldwide and the third largest contributor to the global burden of disease (WHO, 2008). The topic of culture and depressive experience has attracted a large number of theoretical and clinical publications (e.g., Chentsova-Dutton & Tsai, 2009; Kirmayer & Jarvis, 2006; Kleinman & Good, 1985; Marsella, 1987). Although depression has been found cross-culturally, the symptoms of major depression that are described by the DSM and measured by clinicians may not be equally culturally sensitive to depressive experience (i.e., may be endorsed differently) in all populations in the U.S. (Kalibatseva & Leong, 2011; Kalibatseva, Leong, & Ham, 2014; Ryder & Chentsova-Dutton, 2012).

Somatization refers to “complaints about, or the appearance of, physical symptoms such as headaches, stomach pains, inability to concentrate, chronic fatigue, sleep difficulties, loss of sensory functioning, and so on that have a strong psychological basis” (p. 348, Chun, Enomoto, & Sue, 1996).

A common pattern that has been proposed in cross-cultural psychopathology is that people of Asian descent somatize psychological distress, and depression, in particular. This proposition has been mostly researched with Chinese, Chinese Americans, and Chinese Canadians (e.g., Kleinman, 1977; Mak & Zane, 2004; Ryder et al., 2008) as well as several other Asian ethnic subgroups. Kleinman (1982) suggested that the high prevalence of somatization among Asians was accompanied by significantly lower rates of major depressive episode among the same populations and proposed a link between these phenomena. However, despite an

abundance of theoretical works that propose Asians somatize psychological distress (e.g., Kleinman & Kleinman, 1985; Parker, Gladstone, & Chee, 2001; Tseng, 1975), empirical findings on this topic may be mixed and insufficient (Mak & Zane, 2004; Ryder et al., 2008).

Initially, the anthropological literature reported a potential association between depression and somatization. Subsequently, the levels of analyses expanded and several psychological studies also investigated the association between these phenomena. Among the first empirical studies, Kleinman (1977) reported that 40% (10 out of 25) of Chinese patients in an outpatient psychiatric clinic who initially presented with only somatic symptoms never admitted to experiencing depressed mood and 28% denied altogether the possibility of experiencing depression although they recovered after being treated with antidepressants. According to Kleinman, although these 40% of patients reported all symptoms of a depressive syndrome except dysphoric mood, they would not accept the medical diagnosis of depression and believed that they had a physical illness. However, one possibility for these patients' recovery is that antidepressants may have actually impacted somatic symptoms directly and not via reducing psychological distress (Sussman, 2003). Several years later, Kleinman (1982) examined 100 Chinese patients diagnosed with neurasthenia and concluded that 87 of them meet DSM-III criteria for major depressive disorder. Kleinman (1982) reported that psychological symptoms were expressed very rarely and had to be elicited from patients.

These findings raise the question of whether patients who report somatic symptoms as their major complaints but acknowledge affective symptoms when asked directly about them should be considered to somatize depression. For example, Cheung, Lau, and Waldmann (1980-81) examined a sample in a general practice in Hong Kong and concluded that depression was manifested in a variety of somatic complaints, such as general fatigue, sleep disturbances, pains

and aches, dizziness, and menopausal symptoms. These symptoms were usually among the patients' initial complaints but when directly asked about dysphoric mood, loss of interest in social activities or sex, and self-reproach, many of them would endorse affective and cognitive symptoms, too.

Initial symptom report plays an important role in assessment, diagnosis, and treatment. Parker, Cheah, and Roy (2001) examined the extent to which Chinese psychiatric outpatients in Malaysia and Caucasian outpatients in Australia reported cognitive and somatic symptoms of depression as a reason to seek help and as markers of their depressive disorder. The authors attempted to clarify whether somatic symptoms are underlying symptoms of depression among Chinese patients or represent culturally determined proxies (i.e., depression is somatized). The findings of this study suggested that the Malaysian patients were more likely to report hypersomnia, suicidal thoughts, chest pain, difficulty breathing, and weight loss than Australian Caucasian patients. At the same time, Caucasian Australian patients were more likely to report depressed mood, sadness, hopelessness/helplessness, anhedonia, loss of interest, guilt, difficulty with concentration, psychomotor retardation, suppressed appetite, feeling self-critical, feeling irritable, feeling dazed, worrying, feeling bad about themselves, thinking about death, and inability to laugh.

The most highly ranked symptoms among Chinese Malaysian patients were somatic, whereas the most common symptoms among Australian patients were anxiety symptoms, depressed mood, and cognitive items (e.g., guilt, hopeless/helpless, etc.). Moreover, when patients were asked to identify the symptom that initiated the psychiatric consultation, Chinese Malaysian patients were more likely to name a somatic symptom (60% vs. 13%) and Australian Caucasian patients were more likely to nominate a mood symptom (47% vs. 25%).

Ryder and colleagues (2008) also explored depressive symptom presentations and reporting method among Chinese and Euro-Canadian outpatients and concluded that the type of assessment (spontaneous problem report, symptom self-report questionnaire, or structured clinical interview) influenced the type and frequency of the symptoms that the patient reported. In this study, Chinese outpatients were found to report more depressive somatic symptoms in spontaneous report and structured interviews, while Euro-Canadian outpatients reported significantly more depressive affective symptoms (e.g., depressed mood, anhedonia, worthlessness, guilt) in all three assessment modalities. Based on their findings, Ryder and colleagues suggested that researchers may have spent too much time discussing Chinese somatization of depression. Instead, they argued that it was more likely that Westerners overemphasized the affective or psychological aspects of depression compared to other cultures.

Although Mak and Zane (2004) did not have a comparative sample, they investigated the rates of somatic symptoms and their association with depression among a community sample of Chinese Americans in the Los Angeles area. Mak and Zane reported that 57.2% of the sample endorsed at least one somatic symptom and 12.9% reported five or more. Somatic symptoms were moderately correlated with depression ($r = .42$) and among participants with depression diagnosis, 41.9% reported 5 or more somatic symptoms and met the study criterion for somatization (5/5). Conversely, 29.5% of those who met criterion for somatization also met criteria for depression.

Overall, there is supporting empirical evidence that somatic symptoms (e.g., poor appetite, headache, restless sleep, aches and pains in body, etc.) are more likely to be initially reported than psychological symptoms (e.g., depressed mood, fearfulness, crying) of depression

among people of Chinese descent. However, there is little evidence to support that somatic symptoms are reported more often or at the expense of psychological symptoms.

Self-construal, individualism, and collectivism

Cultural dimensions, such as individualism and collectivism, and the related constructs of independent and interdependent self-construal (Markus & Kitayama, 1991; Oyserman et al., 2002) influence multiple psychological processes and behaviors, such as cognition, motivation, and emotions. This study used self-construal as an organizing framework to examine depressive and physical symptoms among Chinese Americans and European Americans, two ethnic groups that have been previously implicated to differ in their reported rates of depression and somatization. The cultural dimension of self-construal may provide an important conceptual value to understanding distress patterns in culturally diverse populations (Mak, Law, & Teng, 2011).

The notion of the self has been central in the field of psychology for over a century as a part of various theories and empirical findings (Kitayama, Duffy, & Uchida, 2007). The idea of the self as a social product was first suggested in the works of Charles Horton Cooley and George Herbert Mead (Cooley, 1902/1922; Mead, 1934, as cited in Kitayama et al., 2007). In particular, the concept of the “looking-glass self” proposed that the self develops in interactions with others and from the perceptions of others. Harry Stack Sullivan (1953) later introduced this idea into mental health with the formulation of interpersonal theory. Similar to Mead’s social self, Sullivan’s notion of the self develops from interpersonal relationships and constitutes of reflected appraisals in relation to other people (Green, 1962).

In the mainstream psychology literature, the ways individuals relate to others are often described within two broad domains: agency or individuality and communion or relatedness

(Bakan, 1966; Guisinger & Blatt, 1994). Agency/individuality refers to an individual's efforts towards autonomy, competence, assertion of the self, achievement, and power.

Communion/relatedness refers to an individual's aspiration for closeness and cooperation with others. Guisinger and Blatt (1994) emphasized that individuality and relatedness develop together in a transactional and dialectical manner and the two dimensions continuously interact and build upon each other. Guisinger and Blatt also alluded to the emphasis on individuality in Western psychologies and the focus on relatedness in some non-Western societies, minority groups, and women.

In the field of cross-cultural psychology, the broad domains of agency and communion may resemble the constructs of individualism and collectivism and independence and interdependence (Kagitcibasi, 2005). Independent self-construal is more often observed in Western cultures and refers to placing the individual over the group, as individuals seek independence, separateness, and uniqueness from others. Interdependent self-construal is more prevalent in East Asian cultures and refers to prioritizing the group over the individual as individuals try to fit in and maintain the group's harmony (Markus & Kitayama, 1991; Cross, Hardin, & Gercek-Swing, 2011). More importantly, selves always exist within a context and, therefore, reflect what is considered important within the specific contexts (Markus & Kitayama, 2010). Thus, selves cannot exist without contexts or relationships with others (Markus & Kitayama, 2010). Given the consistent findings of differences in independence and interdependence in East Asian and Western societies, self-construal is a good candidate to provide a bridge between culture and distress (Marsella, 1985; Okazaki, 2002).

Independence and interdependence or agency and relatedness present as two distinct dimensions (Kagitcibasi, 2005). One's standing on one dimension (i.e., independence) does not

define one's standing on the other (i.e., interdependence; Kagitcibasi, 2005). Although there have been various criticisms of using the theoretical framework of independence and interdependence because of questionable empirical support (Matsumoto, 1999), other studies and a meta-analysis (Oyserman et al., 2002) pointed out that the framework has been valuable in showing differences in the self and how one relates to others (Kagitcibasi, 2005).

Previous findings regarding self-construal and ethnic differences in depression have been mixed. One consistent finding in studies of U.S. college students is the existence of a positive association between interdependence and depression and a negative association between independence and depression (Norasakkunkit & Kalick, 2002; Okazaki, 1997; 2000; 2002). A possible explanation could be that in contexts where independence is valued more, it serves as a protective factor against depression. Conversely, interdependence may serve as a risk factor for depression in an individualistic society. Yet, little research has examined what mechanisms may explain these associations and whether they would hold in collectivistic contexts.

Mak et al. (2011) tested a cultural model of vulnerability to distress, which examined the relationship between interdependent/independent self-construal, sociotropy, anxiety, and depression among Asian American and European American students. Sociotropy refers to a cognitive style associated with high levels of dependence and excessive need to please others (Mak et al.). The authors found that "interdependent self-construal predisposes a person to develop sociotropy and consequent depression via a heightened level of anxiety" (p. 75). The model was a good fit for both Asian American and European American participants. Conversely, Lam (2005) found that interdependent self-construal was associated with family cohesion, which increased the adolescents' self-esteem and resulted in lower scores of depression among Vietnamese American adolescents. The first model (Mak et al.) examined sociotropy as an

undesired characteristic in a context of independence, whereas the second model (Lam, 2005) presented family cohesion as a desired attribute in a context of interdependence (the Vietnamese American family unit). Thus, it is possible that the fit between self-construal and social context is important in determining self-construal's relationship to depression (Mak et al.).

Okazaki (1997; 2000) conducted two empirical studies that examined the relationship between self-construal and depression and social anxiety. Independent self-construal was negatively correlated with a self-report measure of depression ($r = -.27$), whereas interdependent self-construal was positively correlated with depression ($r = .20$). One possible explanation is that Okazaki (1997; 2000) conducted the studies on U.S. college campuses where independence may be considered more valued than interdependence and students who report higher levels of interdependence may not feel they fit in. The levels of self-construal explained variance in social anxiety above and beyond ethnicity and depression. However, hierarchical regression models did not find support for ethnicity or self-construal as significant predictors of depression after social anxiety was entered as a covariate (Okazaki, 1997). The second study examined ethnicity and reporting method (interview vs. anonymous self-report) as predictors of depression. Asian Americans were hypothesized to report less depression in the interview condition than European Americans in order to save face in an interaction with another person. However, there was no interaction between ethnicity and reporting method. It is possible that the reporting method condition was not able to capture the salience of interdependence and potential loss of face for Asian Americans. Therefore, this study examines self-construal as well as the construct of loss of face and their associations with depressive and physical symptoms.

Loss of face

Following Betancourt and Lopez' (1993) recommendation to deconstruct culture into specific psychological elements that allow the formulation of testable hypotheses, Zane and Yeh (2002) reviewed the construct of face as a candidate to explain ethnic differences in symptom presentation and help-seeking behavior. Face is defined as "a person's set of socially-sanctioned claims concerning one's social character and social integrity in which this set of claims or this "line" is largely defined by certain prescribed roles that one carries out as a member and representative of a group" (p. 126; Zane & Yeh, 2002). Thus, preserving one's face is related to both individual and group integrity (Zane & Yeh).

Loss of face refers to how one believes others perceive her/him and shame emphasizes how one perceives herself/himself. The two concepts are often related but one can occur without the other. For examples, if a manager scolded a worker publicly, the worker may lose face in front of her/his colleagues. If s/he in fact made a serious mistake, s/he may also feel ashamed. However, if the worker was criticized publicly unfairly, s/he may instead feel angry.

This study focused on loss of face as it has been theorized as an important relational construct, which may affect well-being, concepts of mental illness, and help-seeking (Leong, Kim, & Gupta, 2011; Zane & Yeh, 2002). Loss of face has been found to correlate strongly with acculturation, so that individuals who identified more strongly with their Asian heritage (i.e., separated) exhibited more concerns with losing face (Leong et al., 2011). Little is known about the relationship of loss of face with measures of distress. Zane and Yeh (2002) reported that loss of face was moderately correlated with social anxiety but it was not correlated with maladjustment. Considering the theorized importance of this relational construct for Asian American mental health, more information is needed on the relationship between loss of face,

depression, and physical symptoms in order to discuss the possibility that people with high levels of concern with losing face may prefer to report somatic symptoms as opposed to depressive symptoms.

Emotion regulation

Other explanations that have been proposed for the somatization of depression are emotional regulation and inhibition of strong affect, or emotion suppression. Self-control in both affective and behavioral reactions in social situations seems an important prerequisite for maintaining the harmony of interpersonal relationships and group functioning in Asian cultures (Chen & Swartzman, 2001). Whereas sharing one's emotions may be viewed more favorably in the U.S. and other Western societies, in China and other Asian countries the suppression of strong positive or negative emotions may be more emphasized. Researchers generally agree that learning cultural display rules are an important aspect of learning to regulate one's emotions, which may improve with age and experience (e.g., Saarni, 1979; Thompson & Meyer, 2007). Individuals who restrain their emotions may be perceived as more socially and psychologically mature in China than individuals who openly exhibit their emotions (Chen & Swartzman, 2001). Maturity may be characterized by emotional "flatness" or suppression and unresponsiveness to challenges or stressors. However, the same behavior could be seen as pathological in Western countries and may lead to interpersonal difficulties for Asian people in their interactions with Westerners.

Chinese children have been found to show reduced emotional reactivity compared to North American children (Camras et al., 1998; Chen et al., 1998). While child inhibition was associated positively with mothers' warm and positive attitudes in China, it was related to punishment and mothers' negative attitudes in Canada (Chen et al.). With respect to both

negative and positive affect, Asian children, adolescents, and adults seem less emotionally reactive and expressive compared to their Western counterparts (Chen & Swartzman, 2001).

Thus, emotional suppression and inhibition seem to be associated with health, maturity, and resilience in Asian cultures and maladaptive patterns in Western cultures (Chang & Lim, 2007; Chen & Swartzman, 2001). This may be an important distinction when examining somatization and depression because it may suggest that somatizing distress serves a social function in Asian cultures.

Unfortunately, no empirical studies were found that provide a direct test of the relationship between emotional regulation and/or emotional suppression and somatization and depression. The construct of alexithymia might provide some indirect evidence for the association between emotional suppression and depression and anxiety. In particular, higher levels of alexithymia were observed among depressed and anxious Chinese patients compared to a control group of Chinese students (Zhu et al., 2007). Since alexithymia refers to one's difficulty to identify and/or describe feelings, there may be some overlap with one's ability to suppress negative affect. In fact, alexithymia has been associated with a greater expertise in using suppression-based regulation techniques (Swart, Kortekaas, & Aleman, 2009) as demonstrated in a study that used event-related brain potentials (Walker, O'Connor, & Schaefer, 2011). Additionally, externally oriented thinking, which is also a part of the alexithymia construct, mediated cultural differences in somatization (Dere, Falk, & Ryder, 2012). This study examined the link between emotional regulation, depression, and physical symptoms among Chinese Americans and European Americans to address the gap in the existing research whether reporting physical symptoms may be associated with higher levels of emotional regulation (in

particular, expressive suppression) among Chinese Americans compared to European Americans.

Rationale and hypotheses

The current study aimed at examining the relationship between culturally relevant factors, such as independence, interdependence, loss of face, and emotion regulation, and depression and physical symptoms among Chinese American and European American students (see Figure 2 for a conceptual model). This study offers to make a contribution to the existing literature in several ways. First, this study provided more empirical evidence for the relationship between depression and somatic symptoms among Chinese Americans and European Americans. Second, this was the first study to my knowledge to examine depression, somatization, self-construal, loss of face, and emotion regulation using a comparative framework. Third, by collecting information on cultural factors among Chinese and European Americans this study provided a bridge between group comparisons based on demographic variables and move the field towards comparisons based on psychological variables that are culturally relevant (Helms et al., 2005). Thus, the design allowed for disentangling potential ethnic differences in depression and physical symptoms by examining cultural psychological factors (Leong et al., 2013).

The goal of this study was to answer the following research questions:

- 1) Do Chinese Americans somatize by reporting more physical symptoms than European Americans?
 - a. Does acculturation affect the report of physical symptoms among Chinese Americans?
- 2) Are Chinese Americans on average more interdependent and less independent than European Americans?

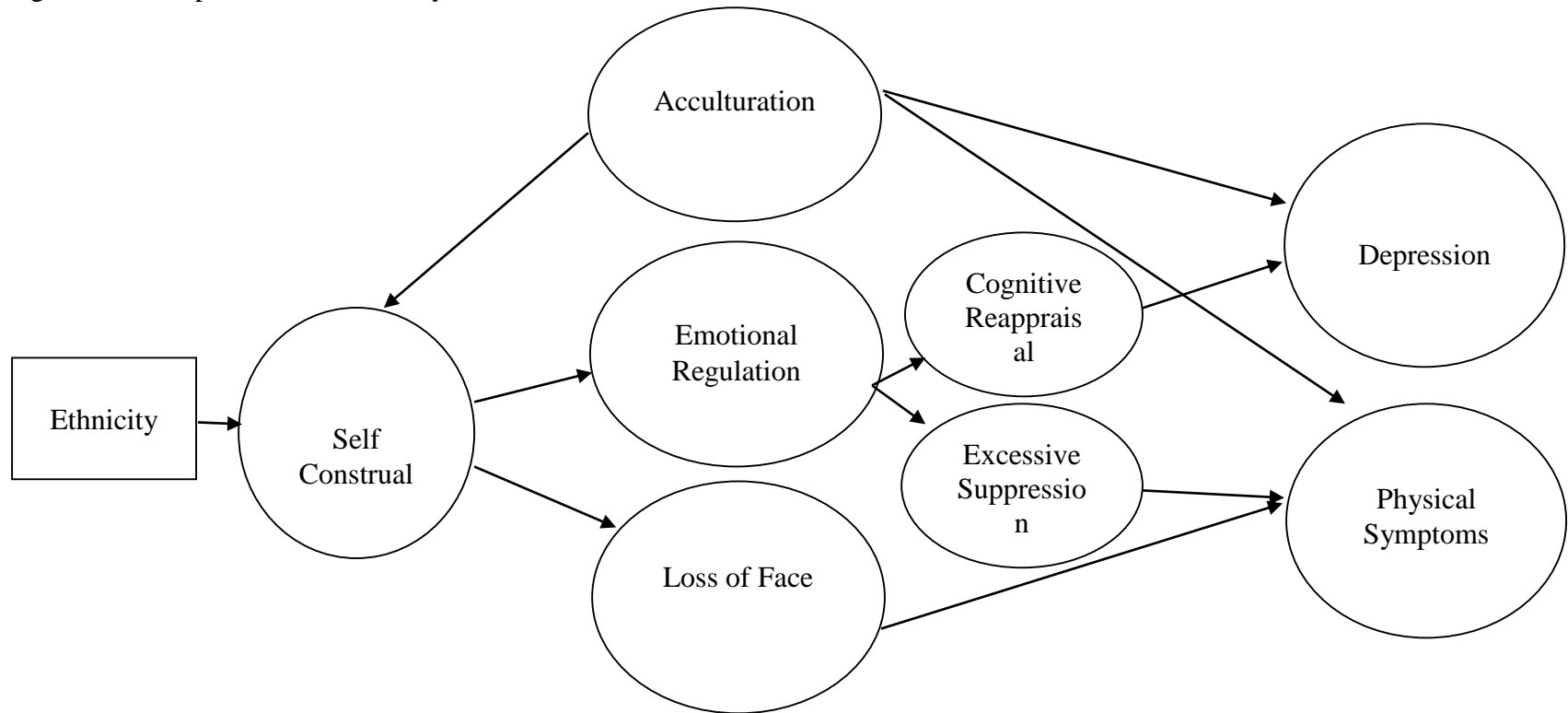
- 3) Do Chinese Americans report more physical and psychological distress than European Americans?
 - a. Does acculturation affect the report of depression among Chinese Americans?
 - b. Are there ethnic differences in symptoms of depression (i.e., depressed mood, physical symptoms, interpersonal problems, and positive affect)?
- 4) What is the association between self-construal, sensitivity to loss of face, and emotion regulation and depression and physical symptoms? Does it differ for the two samples?
- 5) Do self-construal, loss of face, and emotion regulation predict depression among Chinese and European Americans? Is ethnicity a significant predictor of depression after accounting for the culturally relevant psychological variables?
- 6) Do self-construal, loss of face, and emotion regulation predict physical symptoms among Chinese and European Americans? Is ethnicity a significant predictor of physical symptoms after accounting for the culturally relevant psychological variables?

The study tested six main hypotheses based on integrating the abovementioned research:

- 1) Chinese Americans will not differ significantly from European Americans in their report of physical symptoms.
 - a. However, acculturation was hypothesized to serve as a moderator, such that Chinese Americans with lower acculturation levels would report more physical symptoms than Chinese Americans with higher acculturation scores and European Americans.
- 2) Chinese Americans will endorse higher levels of interdependent self-construal than European Americans, whereas European Americans will endorse higher levels of independent self-construal.

- 3) Chinese Americans will have higher mean scores of depression than European Americans.
 - a. Acculturation was hypothesized to serve as a moderator and Chinese Americans with low mainstream acculturation scores would report higher depression scores compared to those with high mainstream acculturation levels.
 - b. Chinese Americans will report higher subscale scores on positive affect than European Americans. No differences will be found in subscale scores of somatic symptoms, depressed mood and interpersonal problems.
- 4) Interdependent self-construal, sensitivity to loss of face, and emotion regulation, will be positively correlated with physical symptoms and depression. The correlations will be stronger among Chinese Americans than European Americans.
- 5) Depression scores will be predicted by self-construal, loss of face, and emotion regulation, whereas ethnicity will be a marginal predictor and will explain less variance after the culturally relevant psychological variables are entered.
- 6) Physical symptoms will be predicted by self-construal, loss of face, and emotion regulation, whereas ethnicity will be deemed a marginal predictor and will explain less variance after the culturally relevant psychological variables are entered.

Figure 2. Conceptual Model of Study 2.



Method

Participants

There were 777 students who accessed the survey online and 256 (33%) were removed because they did not complete the survey or did not meet eligibility criteria (i.e., were not Chinese American or European American college students over the age of 18). The final sample consisted of 521 participants predominantly from two large Midwestern universities. There were 205 (39.3%) participants who self-identified as Chinese American. Among the Chinese Americans, 14 self-identified as Taiwanese and 5 reported that they identified as Chinese and another Asian ethnic sub-group (i.e., Vietnamese, Malaysian, Indonesian, or Filipino). Almost two thirds of the Chinese American sample (64.2%, $n = 131$) were female, 37.8% ($n = 73$) were male, and one participant chose “other”. The mean age for the Chinese American sample was 20.64 ($SD = 2.94$).

There were 316 participants (60.7%) who self-identified as White or European American. Sixty-two percent ($n = 196$) were female and 38% ($n = 120$) were male. One person did not report their gender. The mean age was 19.87 ($SD = 2.86$). The Chinese American sample was significantly older than the European American sample. However, the two samples were comparable in their gender composition.

Procedure

Participants were recruited with the use of different strategies, including general recruitment via the Psychology Department Human Participants Research (HPR) pool, and targeted recruitment of Chinese Americans through the Registrar’s Office at two large Midwestern universities, campus organizations of Asian American students, and a posting on the listserv of the Asian American Psychological Association. To facilitate the recruitment of

Chinese American students at one of the universities, participants received \$10 as incentive for their participation. At the second university, students voluntarily entered a raffle to win one of eight \$10 gift certificates. Data were collected electronically by providing the study link (hosted on SurveyMonkey.com) to potential participants via the HPR website or an email invitation from the university Registrar's Office and/or the Asian American Psychological Association listserv. Participants first read the study's consent form and were able to proceed to the next page with questionnaires if they electronically signed the consent form. The survey took approximately 30 to 45 minutes. Totals for all questionnaires were scored if missing data were 15% or less.

Measures

Center for Epidemiologic Studies Depression Scale (CES-D). The CES-D measures the frequency of 20 symptoms of depression over the past week. It uses a 4-point Likert scale ranging from 0 (*rarely or none of the time*) to 3 (*most or all of the time*) and higher scores indicate higher levels of depression. The CES-D has been frequently used with Asian Americans (Okazaki, 2000; Ying, 1988) and detected ethnic differences. It revealed good internal consistency with coefficient alphas of .90 or above for both community and clinical samples (Radloff, 1977). In the current study, Cronbach's alpha was .89 for both the Chinese American and European American samples.

Patient Health Questionnaire (PHQ-9). The PHQ-9 assesses depression symptom frequency over the previous two weeks (Kroenke, Spitzer, & Williams, 2001). It maps directly on the DSM-IV diagnosis of major depressive episode and consists of 9 items rated on a 4-point Likert scale from 0 (*not at all*) to 3 (*nearly every day*). Previous research suggests that the PHQ-9 has good reliability and construct validity (Kroenke et al., 2001). The PHQ-9 had excellent internal consistency for Chinese Americans ($\alpha = .86$) and European Americans ($\alpha = .87$)

Patient Health Questionnaire (PHQ-15). The PHQ-15 is a self-report questionnaire that measures the severity of 15 somatic symptoms over the past four weeks (Kroenke, Spitzer, & Williams, 2002). Each item is scored on a 3-point Likert scale from 0 (*not bothered at all*) to 2 (*bothered a lot*). The PHQ-15 has been used successfully in medical settings and family practice clinics to screen for somatization. Its internal reliability was good as indicated by Cronbach's alpha of .80 or higher (Kroenke et al., 2002). The PHQ-15 has a similar format to the PHQ-9 as part of the larger PHQ measure and allows an easy comparison of depressive and physical symptoms. The Cronbach's α was .74 for the Chinese American sample and .81 for the European American sample.

The Self-Construal Scale (SCS). The SCS (Singelis, 1994) assesses independent and interdependent self-construal and maps on the Markus and Kitayama (1991) theoretical model. It consists of two scales with 12 items each rated on a 7-point Likert scale from 1 (*strongly disagree*) to 7 (*strongly agree*). The Independent subscale reflects the separateness and uniqueness of the individual and the Interdependent scale emphasizes connectedness and the importance of relationships. Cronbach's alpha coefficient for the Independent and Interdependent subscales ranged between .69 and .74, respectively (Singelis, 1994). In this study, the Cronbach's alpha coefficients for the Interdependent self-construal subscale were .71 for Chinese Americans and .78 for European Americans. Similarly, the Independent self-construal subscale also revealed good internal consistency ($\alpha = .75$ for Chinese Americans and $\alpha = .78$ for European Americans).

Loss of Face (LOF). Participants completed the LOF questionnaire (Zane, 1991), which contains 21 items to measure a person's self-assessment of sensitivity to face loss in different situations. Items are scored on a 7-point Likert scale ranging from 1 (*strongly disagree*) to 7

(*strongly agree*). Total scores may range from 21 to 147, with higher scores indicating greater concerns toward losing face. The psychometric properties of this instrument suggest that it is reliable in assessing the single construct of face loss with a high internal consistency (Cronbach's α ranged from .84 to .92; Leong & Zhang, in preparation; Zane & Yeh, 2002). The current sample demonstrated excellent reliability for the Chinese American ($\alpha = .90$) and European American ($\alpha = .88$) samples.

Emotion Regulation Questionnaire (ERQ). This 10-item self-report scale was designed to measure respondents' tendency to regulate their emotions (Gross & John, 2003). It consists of two subscales that measure Cognitive Reappraisal and Expressive Suppression. Respondents score items on a 7-point Likert scale from 1 (*strongly disagree*) to 7 (*strongly agree*). The scale demonstrated good convergent and divergent validity and internal consistency with Cronbach's alpha coefficients ranging from .68 to .76 (Gross & John, 2003). Similarly, in the current study coefficients for Cognitive Reappraisal and Expressive Suppression were .86 and .76 for Chinese Americans and .86 and .79 for European Americans.

Vancouver Index of Acculturation (VIA). The VIA is a self-report bidimensional measure of acculturation (Ryder, Alden, & Paulhus, 2000). It assesses several domains related to acculturation including values, social relationships, and adherence to traditions (Ryder et al., 2000). The instrument consists of 20 items divided in heritage and mainstream subscales. Each item is rated on a 9-point Likert scale ranging from 1 (*disagree*) to 9 (*agree*). The measure has been validated and widely used with Chinese samples (Ryder et al., 2000). This questionnaire had acceptable internal consistency in the Chinese American sample (Heritage: $\alpha = .90$; Mainstream: $\alpha = .87$) and in the European American sample (Heritage: $\alpha = .89$; Mainstream: $\alpha = .92$).

Demographic Questionnaire. Demographic information was collected on age, gender, year in college, socioeconomic status, GPA, and generational status.

Results

Demographics for the Chinese American and European American samples are presented in Table 3. Based on independent *t*-tests and chi-square tests, the two samples differed in several demographic variables, including citizenship, generation, age, class standing, income, and GPA. Cutoffs of 5, 10, and 15 on the PHQ-15 (low, medium and high somatic symptom severity as proposed by Kroenke et al., 2002) indicated that there were 63.7%, 35.8%, and 0.5% of Chinese Americans in each respective group compared to 52.4%, 44.1%, and 3.5% of European Americans. Despite the prediction for no difference in physical symptoms in **Hypothesis 1**, an independent *t*-test revealed that European Americans reported higher scores than Chinese Americans (see Table 4). In order to examine the role of acculturation in the report of physical symptoms among Chinese Americans, both heritage and mainstream culture were examined as predictors of physical symptoms in a multiple linear regression. **Hypothesis 1a** was rejected since the relationship between acculturation and physical symptoms was not statistically significant ($F(2, 201) = .604, p = .547$) for both heritage ($\beta = -.018, t(201) = -1.091, p = .277$) and mainstream cultural orientation ($\beta = .007, t(201) = .34, p = .734$).

Hypothesis 2 predicted ethnic differences in interdependent and independent self-construal. However, it was also rejected as an independent *t*-test showed no differences in interdependent and independent self-construal between Chinese Americans and European Americans (see Table 4). The relationships were in the predicted direction for interdependent self-construal (Chinese American mean scores > European American mean scores) and independent self-construal (European American mean scores > Chinese American mean scores).

but lacked statistical significance. The effect sizes were small ($d = .13$ and $d = -.03$, respectively).

The study also did not find differences in depression scores between the two ethnic groups despite the prediction in **Hypothesis 3** that there would be ethnic differences in depression. This finding was consistent for both the CESD and the PHQ-9 results. Chinese Americans had insignificantly higher mean scores on the CESD and European Americans had insignificantly higher mean scores on the PHQ-9. To test **Hypothesis 3a**, a multiple regression revealed that only the level of mainstream acculturation predicted depression among Chinese Americans, such that less acculturated participants had higher depression scores, $B = -.12$, $SE = .05$, $\beta = -.16$, $t = -2.29$, $p = .023$. When subscale scores for the CESD were compared for **Hypothesis 3b**, Chinese Americans reported less positive affect ($M = 4.21$, $SD = 2.70$) than European Americans ($M = 3.58$, $SD = 2.59$), $t = 2.65(512)$, $p = .008$. These results were reverse-scored for the calculation of the total CESD score and higher values corresponded to less positive affect. As predicted, there were no differences between the two groups for the depressed affect ($t = .30(507)$, $p = .767$), somatic symptoms ($t = -.48(508)$, $p = .631$) and interpersonal subscales, ($t = -.98(517)$, $p = .326$). Exploratory item-level analyses (independent t -tests as the data ranged from 0 to 3) for the CESD items found that European Americans reported significantly higher scores than Chinese Americans on poor appetite, restless sleep, having crying spells, feeling happy, feeling just as good as others, and enjoying life ($p < .05$). Chinese Americans had higher scores than European Americans for only one item, “thought life had been a failure”. The PHQ-9 exploratory item-level analyses revealed that European Americans reported significantly more sleeping troubles and fatigue and Chinese Americans reported more suicidal thoughts ($p < .05$). A one-way ANOVA and post-hoc Tukey tests revealed that the PHQ-

9 differences in somatic symptoms were explained by the high scores of the European American females on the two items, whereas the difference in suicidal thoughts was explained by the high endorsement of Chinese American males².

Next, correlations among interdependent self-construal, loss of face, emotion regulation, physical symptoms, and depression were examined in **Hypothesis 4**. Table 5 shows correlations for all variables by sample. Physical symptoms (PHQ-15) did not correlate significantly with interdependent self-construal among Chinese Americans or European Americans ($r = .02$ for both samples). The only variables that were associated with physical symptoms were depression scores (r s ranged between .30 and .47 for Chinese Americans and .47 and .57 for European Americans). Loss of face showed significant positive associations with depression, interdependent self-construal, cognitive appraisal, and expressive suppression among the Chinese American and European American samples. Physical symptoms and loss of face were positively correlated only in the European American sample ($r = .16, p < .05$). In order to compare the correlation coefficients for the two samples, the Fisher r -to- z transformation was applied and the resulting z -scores were compared in a 2-tailed significance test (Meng, Rosenthal, & Rubin, 1992). Significant differences were found for the relationship between expressive suppression and loss of face, which was stronger for Chinese Americans ($r = .46, p < .001$) than European Americans ($r = .30, p < .001; Z = 2.15, p = .03$).

Hypothesis 5 was tested with a hierarchical linear regression. Depression as measured by CESD scores was predicted by interdependent and independent self-construal, loss of face, cognitive reappraisal and expressive suppression in Step 1. Ethnicity (Chinese American or European American) was added in Step 2 to see if it would be a significant predictor. As there

² Detailed results were not provided for these analyses as they were exploratory but they can be explained in more detail if necessary.

were no ethnic differences in depression detected earlier, ethnicity continued to be a non-significant predictor in this analysis. Interdependent self-construal did not predict depression. However, independent self-construal, loss of face, and the two components of emotional regulation were all significant predictors of depression (see Table 6).

The same hierarchical regression model was used to examine physical symptoms in **Hypothesis 6**. Only loss of face was a significant predictor of physical symptoms in Step 1. As European Americans reported more physical symptoms than Chinese Americans, ethnicity was still a significant predictor of physical symptoms in Step 2 (see Table 7).

Ad-hoc analyses

In order to test further some of the rejected hypotheses or findings inconsistent with the initially formulated hypotheses, ad-hoc analyses were conducted. In particular, as European Americans reported more somatic symptoms than Chinese Americans, this difference was further examined by adding gender as previous research suggested women may somatize more than men (Wool & Barsky, 1994). A 2x2 ANOVA with gender and ethnicity as independent variables and PHQ-15 as a dependent variable revealed a main effect for gender ($F(3,515) = 29.812, p < .001, \eta^2 = .055$), a main effect for ethnicity ($F(3,515) = 8.548, p = .004, \eta^2 = .016$), and an interaction ($F(3,515) = 5.172, p = .023, \eta^2 = .01$). These variables explained 9.7% of the variance in somatic symptoms ($R^2 = .097$). To follow up on the interaction, four groups were created based on gender and ethnicity (i.e., Chinese American females, European American females, Chinese American males, and European American males). A post-hoc one-way ANOVA with somatic symptoms as a dependent variable showed that European American women reported significantly more somatic symptoms than the other three groups, $F(3,515) = 18.461, p < .001, \eta^2 = .097$. No other significant differences emerged.

Since PHQ-15 was one of the few variables that showed ethnic differences that were possibly driven by the high scores of European American females, it was hypothesized that somatic symptoms and gender may be masking potential differences in depression. To further explore this hypothesis, a univariate analysis was conducted with ethnicity as a predictor of depression while controlling for gender and somatic symptoms. Indeed, ethnicity was a significant predictor of depression with Chinese Americans ($M = 13.97$, $SD = 8.72$) scoring higher than European Americans ($M = 13.60$, $SD = 8.73$) when gender and somatic symptoms were statistically controlled for in the analyses, $F(3,515) = 5.333$, $p = .021$ ($\eta^2 = .01$).

Based on these results, the hierarchical linear regression from Hypothesis 5 was re-run by entering gender, somatic symptoms, and ethnicity in Step 1 and the remaining culturally salient variables in Step 2. As initially predicted in Hypothesis 5, ethnicity was a significant predictor of depression in Step 1 when controlling for gender and somatic symptoms. However, it was no longer a significant predictor at Step 2 when independent and interdependent self-construal, loss of face, and emotion regulation were included (see Table 8).

Table 3. *Demographics*

Variable		Chinese American M (<i>SD</i>) or %	European American M (<i>SD</i>) or %	<i>t</i> (df) or χ^2	<i>P</i>
Gender	Male	35.8%	38%	.255	.643
	Female	64.2%	62%		
Citizenship	US citizen	93.2%	99.1%	13.675	<.001**
	Permanent res	6.8%	0.9%		
Generation	First	10.5%	1.3%	309.48	<.001**
	Second	78.5%	9.3%		
	Third or more	8%	89.4%		
	Adopted	3%	0%		
Age		20.64 (2.94)	19.87 (2.86)	2.93(514)	.004**
Class standing		2.83 (1.45)	2.44 (1.12)	3.45 (520)	.001**
Income		7.22 (3.57)	8.41 (2.77)	-4.21 (504)	<.001**
GPA		3.41 (.45)	3.29 (.47)	2.79 (448)	.005**

** $p \leq .01$, * $p \leq .05$

Table 4. *Comparisons between Chinese Americans and European Americans*

Instrument	Chinese American M (SD)	European American M (SD)	<i>t</i> (df)	<i>d</i>	<i>p</i>
CESD	13.97 (8.71)	13.58 (8.72)	.49(517)	.04	.625
PHQ-9	5.30 (4.69)	5.63 (4.72)	-.78(520)	-.07	.437
PHQ-15	4.62 (3.57)	5.89 (4.41)	-3.43(519)	-.32	.001**
SCS	60.38 (8.21)	59.29 (8.92)	1.40(518)	.13	.162
Interdependent					
SCS Independent	57.81 (9.60)	58.09 (9.70)	-.33(519)	-.03	.745
Loss of Face	95.70 (18.73)	92.63 (16.16)	1.99(518)	.18	.048*
Cognitive	29.26 (6.52)	29.78 (5.86)	-.94(520)	-.08	.348
Appraisal					
Expressive Suppr	16.16 (5.04)	15.34 (5.03)	1.81(520)	.16	.07
VIA Heritage	64.71 (15.66)	65.68 (14.81)	-.71(519)	-.06	.476
VIA Mainstream	71.40 (12.03)	74.99 (12.59)	-3.24(519)	-.29	.001**

** $p \leq .01$, * $p \leq .05$

Table 5. *Correlations for the Chinese American Sample (Above the Diagonal) and European American Sample (Below the Diagonal)*

	CESD	PHQ9	PHQ15	SCS Inter	SCS Ind	LOF	CA	ES	VIA-H	VIA-M
CESD	1	.80**	.30**	-.08	-.39**	.25**	-.21**	.24**	-.13	-.18**
PHQ-9	.81**	1	.47**	-.11	-.32**	.21**	-.12	.21**	-.16*	-.09
PHQ-15	.47**	.55**	1	.02	-.07	.04	-.02	-.04	-.07	.01
SCS Interdep	-.15*	-.11*	.02	1	.21**	.29**	.23**	.08	.32**	.20**
SCS Independent	-.25**	-.25**	-.06	.52**	1	-.27**	.26**	-.17*	.21**	.30**
Loss of Face	.19**	.23**	.16**	.29**	-.11	1	.14*	.46**	.12	-.05
Cog Reappraisal	-.18**	-.13*	-.06	.34**	.44**	.11*	1	.14*	.28**	.19**
Expressive Suppr	.22**	.19**	-.04	-.03	-.07	.30**	.11*	1	-.02	-.18**
VIA Heritage	-.11	-.10	.01	.40**	.26**	.23**	.28**	0	1	.19**
VIA Mainstream	-.23**	-.17**	.01	.45**	.30**	.27**	.31**	-.05	.59**	1

** $p \leq .01$, * $p \leq .05$

Table 6. *Hierarchical Regression Predicting Depression (CESD)*

Variable	B	SE	B	<i>t</i>	<i>P</i>
Step 1, $R^2 = .162$, $F(5, 509) = 19.66$, $p < .001$					
SCS Interdependent	-.053	.049	-.053	-1.081	.28
SCS Independent	-.167	.045	-.185	-3.733	< .001
Loss of Face	.077	.025	.153	3.15	.002
Cog Reappraisal	-.205	.064	-.144	-3.197	.001
Expressive Suppr	.293	.076	.170	3.831	< .001
Step 2, $\Delta R^2 = 0$, $F(6, 508) = 16.36$, $p < .001$					
SCS Interdependent	-.052	.049	-.052	-1.065	.29
SCS Independent	-.167	.045	-.185	-3.728	< .001
Loss of Face	.078	.025	.154	3.155	.002
Cog Reappraisal	-.206	.064	-.145	-3.204	.001
Expressive Suppr	.294	.077	.170	3.836	< .001
Ethnicity	.182	.733	.010	.249	.804

Table 7. *Hierarchical Regression Predicting Physical Symptoms (PHQ-15)*

Variable	B	SE	B	<i>t</i>	<i>p</i>
Step 1, $R^2 = .021$, $F(5, 511) = 2.197$, $p = .053$					
SCS Interdependent	-.003	.025	-.006	-.121	.90
SCS Independent	-.015	.023	-.034	-.639	.523
Loss of Face	.032	.013	.132	2.521	.012
Cog Reappraisal	-.018	.033	-.026	-.542	.588
Expressive Suppr	-.084	.039	-.102	-2.136	.033
Step 2, $\Delta R^2 = .026$, $F(6, 510) = 4.199$, $p < .001$					
SCS Interdependent	.002	.025	.005	.091	.927
SCS Independent	-.014	.023	-.033	-.633	.527
Loss of Face	.034	.012	.14	2.706	.007
Cog Reappraisal	-.027	.033	-.04	-.83	.407
Expressive Suppr	-.075	.039	-.091	-1.94	.053
Ethnicity	1.381	.37	.163	3.733	< .001

Table 8. *Hierarchical Regression Predicting Depression (CESD) and Controlling for Gender and Physical Symptoms*

Variable	B	SE	B	<i>t</i>	<i>p</i>
Step 1, $R^2 = .193$, $F(3, 508) = 40.44$, $p < .001$					
Gender	2.779	.746	.154	3.724	< .001
PHQ-15	.962	.088	.458	10.961	< .001
Ethnicity	-1.729	.724	-.097	-2.388	.017
Step 2, $\Delta R^2 = .13$, $F(8, 503) = 29.96$, $p < .001$					
Gender	1.282	.731	.071	1.754	.08
PHQ-15	.874	.082	.416	10.713	< .001
Ethnicity	-1.096	.675	-.061	-1.625	.105
SCS Interdependent	-.055	.045	-.055	-1.226	.221
SCS Independent	-.159	.041	-.176	-.3922	< .001
Loss of Face	.054	.022	.106	2.38	.018
Cog Reappraisal	-.174	.059	-.122	-2.95	.003
Expressive Suppr	.32	.073	.185	4.374	< .001

Discussion

This study examined the association of self-construal, loss of face, and emotion regulation with depression and physical symptoms among Chinese American and European American college students. One of the study's main goals was to investigate further whether Chinese Americans were likely to somatize by reporting more somatic symptoms than European Americans. There was no evidence that somatization was more prominent among Chinese American college students. Conversely, European American college students were more likely to report significantly more physical symptoms than Chinese Americans. Ad-hoc analyses that examined gender and ethnicity simultaneously revealed that European American women experienced more somatic symptoms than Chinese American women, Chinese American men, and European American men. This finding is consistent with literature that proposed women may be more likely to experience somatic symptoms than men (Lee et al., 2009; Wool & Barsky, 1994). However, it goes against the proposition that Chinese Americans may somatize distress more than European Americans. In addition, exploratory item-level analyses of the CESD and PHQ-9 items revealed that European Americans reported higher scores than Chinese Americans on several somatic items (e.g., poor appetite, fatigue, sleep disturbances). Post-hoc tests showed that these differences resulted from the higher scores of European American women compared to Chinese American women. Thus, the study provides further evidence in the relatively scarce empirical literature that Chinese Americans were not more likely to report higher levels of somatic complaints than European Americans (Mak & Zane, 2004). In fact, the current study's sample of European American women reported the most somatic complaints.

The study also examined the effect of acculturation on somatic symptoms among Chinese Americans and did not find any significant effects of mainstream or heritage cultural orientation

on physical distress. A few studies reported that somatization may occur more frequently among less acculturated Chinese immigrants (Bissiri, 1998; Parker, Chan, Tully, & Eisenbruch, 2005; Wong Stokem, 1997). However, Mak and Zane (2004) did not find a significant relationship between acculturation (toward the mainstream culture) and somatization in a community-based sample of Chinese Americans. Therefore, it is possible that the relationship between acculturation and somatization appears primarily in less acculturated samples or samples with a wide range of acculturation scores.

Overall, the Chinese Americans in this study revealed relatively high mainstream acculturation scores, which may also contribute to the lack of a relationship between acculturation and distress given the possible restricted range of acculturation. Moreover, the high levels of acculturation may be associated with the lack of differences in the culturally relevant variables, such as independent and interdependent self-construal. For example, Ho and Lau (2011) reported that ethnicity moderated the positive association between self-construal and social anxiety only among first generation Asian Americans but not among later generations. The demographics of this sample showed that a relatively small number (10.5%) of Chinese Americans identified as first generation, which may have impacted the ability to detect cultural differences.

Moreover, measurement issues may have influenced the results as two of the questionnaires that assess bidimensional constructs, acculturation and self-construal, demonstrated positive correlations between the two dimensions. First, the Self-Construal Scale (Singelis, 1994) may have showed questionable validity in the European American sample as the independent and interdependent self-construal scales had a strong positive correlation ($r = .52$). Such results may undermine the validity of the scale for this sample because they pose the

question if the two dimensions are orthogonal. Some researchers have asserted measurement problems with the Self-Construal Scale ranging from issues with its factor structure (Hardin, Leong, & Bhagwat, 2004) to its lack of validity (Levine et al., 2003). This study also used the bidimensional Vancouver Index of Acculturation scale, which proposed that mainstream and heritage cultural orientation were orthogonal constructs. However, the two scales were significantly and positively correlated in this study for the Chinese American sample ($r = .19$), which may suggest that there were issues with the measurement of acculturation using the VIA (Ryder et al., 2000).

Several previous studies found that Asian Americans reported higher depression scores than European Americans (e.g., Okazaki, 1997; Young, Fang & Zisook, 2010). Still, a few studies did not find such differences (e.g., Hardin & Leong, 2005; Yen, Robins, & Lin, 2000). There are several potential explanations for the lack of replication of depression differences. One possibility is that the sample for this study was unusual in that it was relatively less depressed than other college samples based on the CESD and PHQ-9 average scores. Despite the large sample size of Chinese and European American students, there may not have been enough power to detect group differences based on small effect sizes. A second explanation would be that these differences may be an artifact of assessment and specific to certain self-report measures of depression, such as the CESD. In particular, they may result from the positive affect subscale as the items may function differently among Asian American populations and may need to be removed or reworded in a negative way (Kalibatseva, Wu, & Leong, 2014). This statement could be further supported by the observed reverse pattern of PHQ-9 scores with European Americans scoring higher than Chinese Americans. Third, it is possible that the significant difference in somatic symptoms with European Americans reporting more physical distress than Chinese

Americans is masking a potential difference in depression. The exploratory item-level analyses further support this proposition as European American females reported higher mean scores on several of the somatic depression symptoms as well as the PHQ-15. This proposition was tested in an ad-hoc analysis, which revealed that when somatic symptoms were controlled for, a difference in depression was evident with Chinese Americans scoring higher than European Americans. Lastly, the framework of this study suggests that ethnic differences result from cultural variations and as we noticed the two ethnic groups did not differ significantly on most of the culturally relevant variables, which would suggest no variation in depression as well.

As this is one of the first comparative studies to examine self-construal, loss of face, and emotion regulation in relation to depression and somatization among Chinese Americans and European Americans, the correlations between the variables of interest were examined. It was hypothesized that physical symptoms would be associated with the culturally relevant variables more strongly among Chinese Americans than European Americans. However, for both samples somatic symptoms did not correlate significantly with any of the variables except for a positive association with depression. In addition, loss of face correlated positively with physical symptoms for European Americans only. The magnitude of the correlation was relatively small ($r = .16$), yet it was not observed among the Chinese American sample. The lack of association between somatic symptoms and the majority of the cultural variables may be related to the high mainstream acculturation orientation of the samples.

One finding that seemed consistent with the theoretical literature was a stronger positive correlation between expressive suppression and loss of face among Chinese Americans than European Americans. Reversely, cognitive reappraisal was more strongly associated with loss of face among European Americans than Chinese Americans. Previous research found that Asian

Americans may rely on expressive suppression to regulate negative emotions (Matsumoto, Yoo, & Nagakawa, 2008). Moreover, another study showed that Asian Americans were “culturally trained” to suppress emotions by revealing a decrease in parietal late positive potential in comparison with European Americans (Murata, Moser, & Kitayama, 2013). The stronger correlation of expressive suppression and loss of face in the Chinese American sample provides evidence for the association between suppressing emotions and negative experiences, such as loss of face. However, since correlation does not show causation, further research needs to explore the temporal and causal relationship between these constructs. It is also important to note that Chinese Americans may have favored emotional suppression more so than European Americans even though the difference did not reach statistical significance ($p = .07$). Interestingly, expressive suppression may be beneficial and protective in frustrating situations for Chinese people. In particular, a study of Chinese participants found that emotional suppression resulted in decreasing depression scores and depression-related physiological activity based on skin conductance results (Yuan, Liu, Ding, & Yang, 2013). Conversely, accepting the depressive emotions did not have the same effect. Thus, emotional suppression may have different purposes and consequences based on the specific cultural context (Yuan et al., 2013).

The last two hypotheses involved the disentangling approach, which suggests moving away from ethnic group comparisons and examining culturally relevant variables (Leong et al., 2013). This study did not find group difference in depression scores, which may be explained with the fact that the groups also did not differ significantly on most of the culturally relevant variables except loss of face. Yet, the results showed that the culturally salient constructs are significant predictors of depression regardless of ethnicity. Specifically, independent self-construal and cognitive reappraisal were negatively associated with depression, whereas loss of

face and expressive suppression were positively associated with depression. Ethnicity remained a marginal predictor at that point indicating that depression cannot be predicted based on ethnic group membership and is better explained by variations in culturally relevant variables.

An unexpected finding was that European Americans reported higher scores on somatic symptoms. It is possible that this unpredicted ethnic group difference in somatic symptoms is related to the lack of differences in depression. Ad-hoc analyses showed that ethnicity played a significant role in depression when gender and somatic symptoms were controlled for in the analyses. In this case, Chinese Americans indeed reported higher scores on depression than European Americans. Therefore, Hypothesis 5 was re-tested when gender and physical symptoms were accounted for and the higher scores of depression among Chinese Americans were disentangled with the addition of the culturally relevant variables. Similar to the previous results, independent self-construal and cognitive reappraisal were negatively predictive of depression, whereas physical symptoms, loss of face, and expressive suppression were positively associated with depression. Gender and ethnicity were no longer significant predictors suggesting that the culturally relevant variables explained the demographic differences.

This study contributes to the existing literature in several different ways. First, it adds to the mounting empirical evidence that Chinese Americans do not report more somatic symptoms than European Americans in an attempt to mask depression. Since the Chinese somatization of depression may have gained popularity in the psychopathology literature as a cross-cultural phenomenon mostly based on theoretical propositions and observations, it is important to accumulate a body of empirical literature that tests this hypothesized phenomenon. Second, no relationship was found between acculturation and somatic symptoms, yet mainstream acculturation and depression were negatively associated in the Chinese American sample. These

findings confirm that the relationship between acculturation and distress is complex. Although there has not been a consistent association between acculturation and somatization, mainstream acculturation and depression are negatively associated, whereas heritage acculturation and depression are not significantly correlated. These findings are consistent with a meta-analysis of 38 studies, which concluded that when acculturation is measured as a bidimensional construct, there is a small significant negative relationship between assimilation and depression and a negative but insignificant relationship between orientation to the Asian culture and depression (Gupta, Leong, Valentine, & Canada, 2013). Notably, the cultural context and measurement of acculturation and distress may be of great importance in detecting differences. Third, the study addresses the issue of ethnic gloss by examining a specific ethnic group, Chinese Americans, and not a mixed group of Asian Americans from different ethnic subgroups (Trimble & Dickson, 2005). Fourth, this is among the first studies to use a comparative framework to examine the culturally relevant factors of self-construal, loss of face, and emotion regulation among Chinese Americans and European Americans. Fifth, building upon the comparative framework and the disentangling approach, this study combines cross-cultural and racial and ethnic psychology methodology to examine how culturally salient variables explain racial and ethnic group differences (Helms et al., 2005; Leong et al., 2013). In particular, the study found that ethnic and gender differences in depression were explained by physical symptoms, independent self-construal, loss of face, cognitive reappraisal, and expressive suppression.

Clinical implications

Depression is the leading cause of disability and among the most common psychological disorders worldwide (WHO, 2008). Although there are efficacious treatments for depression, not all racial and ethnic groups with a depressive disorder in the past 12 months accessed treatment

or received adequate depression care (Alegría et al., 2008). To address these existing health disparities, more research of underrepresented racial and ethnic minorities and cultural factors that affect depression and help-seeking is needed. For example, culturally sensitive treatments for depression that incorporate culturally relevant constructs in the treatment have shown promising recruitment, retention, and efficacy rates (Kalibatseva & Leong, in press).

This study's findings suggest that health professionals need to pay attention to specific culturally relevant constructs and refrain from using stereotypes based on race, gender, or other demographic variables. In particular, loss of face and expressive suppression may be important constructs to assess during the initial interview for depressed clients of any racial and ethnic background or gender. Moreover, independent self-construal and cognitive reappraisal were negatively associated with depression for both groups, which suggests that the cultural context may be particularly important in defining effective coping strategies or protective factors. At the same time, health professionals need to be aware of not overpathologizing coping strategies, such as expressive suppression, which may be culturally appropriate in different cultural contexts (Yuan et al., 2013).

Limitations and future directions

Similar to most research, this study revealed a few shortcomings that have implications for the generalizability and interpretations of the findings. First, the sample consisted of college students from two large Midwestern universities. Thus, the results may be more relevant to European and Chinese American college students in the Midwest and caution is required before making generalizations to other populations. Future research can address this issue by examining depression and culturally relevant variables in a nationally representative sample of a number of Asian American ethnic groups. Second, a set of culturally relevant psychological variables were

chosen based on the empirical literature and they explained 22% of the variance in depression. This finding suggests that while these variables explain a good portion of variance in depression, future studies need to focus on additional culturally relevant psychological variables to expand our understanding of cultural influences on depression. For instance, a study that combines individual-level constructs (e.g., rumination), family-level (e.g., family conflict) constructs, and culture-level (e.g., poverty) constructs would be able to explain greater portion of the variance.

Furthermore, this sample of Chinese American students was highly acculturated, which may have resulted in the lack of cultural differences in most of the culturally relevant psychological variables as well as the outcome variables. Therefore, future studies may consider recruiting participants with varying degrees of acculturation and include Chinese international students, too. Using a person-centered analysis approach to detect heterogeneous groups based on acculturation in the sample may also help to identify acculturation patterns and their relationship to culturally relevant psychological variables, depression, and somatization. In addition, the full sample was relatively well-adjusted and few participants reported high depression or somatization scores, which also restricted the range of the outcome variables. Ideally, future studies would recruit participants that have a wide range of acculturative experiences and depression severity as the relationship of acculturation and distress needs further investigation. For example, a cross-culturally study of US and Chinese participants in their respective contexts in community and hospital settings may be able to capture more efficiently some of the ethnic differences that this study did not detect. Another limitation is the use of self-report measures for all of the assessed variables. Future studies could explore the use of an experimental paradigm to prime culturally relevant constructs, such as loss of face or self-construal. Furthermore, the use of mixed methods (i.e., qualitative and quantitative methods) to

identify, conceptualize, and measure culturally relevant variables may be beneficial. Lastly, this study examined only a few culturally relevant variables related to depression and somatization even though there are many others there were not included. Therefore, other culturally relevant variables that may be important in understanding depression among Chinese Americans, such as family cohesion, perfectionism, or discrimination, would need to be included in future studies.

In conclusion, this study contributes to a scarce but growing literature on depression and somatization among Chinese Americans and European Americans. There was no evidence for somatization among Chinese Americans and ethnic differences in depression appeared only after controlling for somatic symptoms and gender. However, these differences were explained by culturally salient variables and ethnicity was no longer a significant predictor of depression. Independent self-construal and cognitive reappraisal predicted less depression, whereas loss of face and expressive suppression predicted more depression among Chinese Americans and European Americans. Cultural context may play an important role in determining what factors serve as protective or risk factors for depression.

CHAPTER 4

GENERAL DISCUSSION

This dissertation consists of two separate comparative studies that examine culturally relevant psychological factors and depression among Asian Americans and European Americans. The conceptualization of both studies relies on the integration of cross-cultural and racial and ethnic minority psychology methods and attempts to advance cross-cultural clinical psychology. More specifically, the studies examine culturally relevant psychological variables that may explain proposed racial and ethnic differences between Asian Americans and European Americans in depression and somatization. Thus, these studies contribute to the cross-cultural clinical psychology literature by using the disentangling approach that unpacks group comparisons based on demographic variables and explores the mechanisms behind observed group differences (Leong et al., 2013).

Whereas the first study detected albeit small ethnic differences in depression, the second study did not find such differences until controlling for gender and physical symptoms. These findings pose the question why stronger ethnic differences in depression were not observed in the two studies as previous research may have suggested. Several possible explanations were entertained in Study 2 in an attempt to contextualize the findings. One possibility is that these differences may be related to the positive affect subscale of the CESD, which has periodically demonstrated problematic psychometric properties. In particular, Asian Americans may be less likely than European Americans to endorse the positively worded items, a tendency which could result in higher depression scores (Kalibatseva, Wu, & Leong, 2014). Another explanation for the lack of differences may be that as the samples are relatively similar in their endorsement of

culturally relevant psychological variables, it is less likely to see differences in depression. In support of this hypothesis, the sample in Study 1 reported larger cultural differences than the sample in Study 2. Third, participants in Study 1 reported higher CESD scores with a mean above the 16 cutoff, whereas the mean in Study 2 was below 16. Thus, ethnic differences in depression might not be observed in samples that primarily report few depression symptoms of low severity. In other words, there may have been a floor effect of the CESD in Study 2. Finally, it is possible that the two ethnic groups may have similar depression scores after all and previous studies that found ethnic differences were not generalizable to other samples.

The two studies in this dissertation concentrated on several culturally relevant psychological variables identified as promising tools to detect cultural differences in the theoretical and empirical literature. Whereas the first study found consistent differences in loss of face and acculturation family conflict, the second study detected significant differences only in loss of face and mainstream acculturation. Despite the difference in mainstream acculturation, the Chinese American sample showed a high mainstream acculturation score, which may explain the lack of differences in most other variables since acculturation serves as a proxy for other culturally relevant variables. Moreover, only 10.5% of the Chinese Americans in Study 2 identified as first generation, which corroborates the high mainstream acculturation scores. Thus, generational status and acculturation levels of Asian Americans may be related to the lack of significant ethnic group differences in Study 2. Unfortunately, it is not possible to draw a direct comparison of generational status or acculturation between the samples in Study 1 and Study 2 to test this hypothesis further.

Overall, culturally relevant psychological variables predicted depression scores in both studies for both groups. The first study found that loss of face and acculturation family conflict

explained more variance in depression scores among Asian Americans than European Americans. The second study showed that independent self-construal and cognitive reappraisal were negatively associated with depression, whereas loss of face and expressive suppression were positively associated with depression. In neither of the studies ethnicity served as a significant predictor of distress when culturally relevant psychological factors were included in the regression analyses. Thus, the disentangling approach confirmed that if ethnic depression differences were detected, they were explained by culturally relevant factors better than demographic variables.

Importantly, loss of face was positively associated with depression in both studies. This finding raises implications for health care providers as patients who may be preoccupied with losing their social status in interpersonal interactions may feel more distressed. Yet, their fear of losing face may prevent them from seeking mental health services in the first places or reporting their emotional distress openly, which may affect the health provider's ability to provide the best course of treatment.

In addition, the seriousness of acculturation family conflict predicted depression scores, so that the more serious intergenerational family conflict participants reported, the more distress they experienced. Therefore, acculturation family conflict may be an important factor to assess and target in depression intervention programs, especially among Asian American adolescents (Juang et al., 2007).

The results from Study 2 supported previous findings that independent self-construal is negatively associated with depression (Norasakkunkit & Kalick, 2002; Okazaki, 1997; 2000; 2002). However, interdependence was not positively associated with depression as previously suggested. Since independence and interdependence were strongly associated among European

Americans, the validity of the Self-Construal Scale and the applicability of the constructs may need to be examined more closely for this population.

Finally, Study 2 was one of the first studies to examine the relationship between emotion regulation, somatization and depression in a comparative study. In particular, the study revealed that cognitive reappraisal was associated negatively with depression, whereas expressive suppression was associated positively with depression. In combination with the earlier findings, one of the main conclusions is that constructs that are more favored in individualistic societies, such as independence and cognitive reappraisal, may serve as protective factors against depression in the U.S. At the same time, factors associated with collectivistic societies, such as concern with face and expressive suppression, may be acting as risk factors for depression in the U.S. Future research needs to examine this finding by operationalizing context as a substantial amount of evidence points to collectivistic factors having the opposite effect in contexts that value collectivism (Lam, 2005; Yuan et al., 2013).

This dissertation also provided more evidence for the lack of somatization among Chinese American college students when compared to European American college students. In fact, European American women were more likely to report physical symptoms and further research may need to examine why this group was at risk for somatization of depression. The field of cross-cultural psychopathology has mounted evidence from a number of empirical studies showing that somatization among Chinese Americans and Asian Americans may be an outdated and/or nonexistent phenomenon (Kalibatseva, Leong, & Ham, 2014; Mak & Zane, 2004; Ryder et al., 2008).

Conclusion

This dissertation presented the results from two separate studies that used the disentangling approach to show that group comparisons based on race and ethnicity need to be accompanied by culturally relevant psychological variables in order to unpack any observed differences in psychological phenomena. Depression differences between Asian Americans and European Americans were observed in the first study and also emerged in the second study after controlling for physical symptoms. However, these differences were relatively small based on the effect sizes and may be difficult to detect with small and acculturated samples. Chinese American students did not report more somatic symptoms than European American students and the evidence does not support the proposition that people of Chinese descent in the US somatize depression. Culturally relevant psychological factors were significantly associated with depression and explained depression differences between the two ethnic groups. In particular, loss of face, seriousness of acculturation family conflict, and expressive suppression positively predicted depression, whereas independent self-construal and cognitive reappraisal negatively predicted depression. Acculturation to the mainstream culture was negatively associated with depression, whereas heritage orientation to Chinese culture was not related to depression. This study contributes to the existing literature by expanding the research on Asian American mental health, examining specific culturally relevant factors that can inform the evaluation and intervention for the specific population to reduce health disparities, and using the disentangling approach to explain the mechanisms behind observed group differences.

Funding acknowledgment

Study 2 was supported by an APA Dissertation Research Award, which was used for participant payments.

REFERENCES

REFERENCES

- Abe, J. S., & Zane, N. W. S. (1990). Psychological maladjustment among Asian and White American college students: Controlling for confounds. *Journal of Counseling Psychology*, 37, 437-444. doi: [10.1037/0022-0167.37.4.437](https://doi.org/10.1037/0022-0167.37.4.437)
- Alarcón, R. D. (2009). Culture, cultural factors and psychiatric diagnosis: Review and projections. *World Psychiatry*, 8, 131-139. doi: 10.1002/j.2051-5545.2009.tb00233.x
- Alegría, M., Chatterji, P., Wells, K., Cao, Z., Chen, C., Takeuchi, D., et al. (2008). Disparity in depression treatment among racial and ethnic minority populations in the United States. *Psychiatric Services*, 59, 1264-1272. doi: 10.1176/appi.ps.59.11.1264
- American Psychiatric Association Office of Minority and National Affairs (2010). Mental health disparities: Asian Americans. Accessed online on April 23, 2013 at: minorityhealth.hhs.gov/templates/content.aspx?ID=6476
- American Psychological Association (2009). Publication manual of the American Psychological Association (6th ed.). Washington, DC: Author.
- Bakan, D. (1966). *The duality of human existence*. Boston: Beacon Press.
- Betancourt, H., & Lopez, S. R. (1993). The study of culture, ethnicity, and race in American psychology. *American Psychologist*, 48, 629-637. doi: [10.1037/0003-066X.48.6.629](https://doi.org/10.1037/0003-066X.48.6.629)
- Bissiri, K. (1998). Self-construal, culture change, and the expression of distress in Chinese and Chinese-Americans (Doctoral dissertation). Retrieved from ProQuest Information and Learning (AAM9910339).
- Breslau, J., Aguilar-Gaxiola, S., Kendler, K. S., Su, M., Williams, D., & Kessler, R. C. (2006). Specifying race-ethnic differences in risk for psychiatric disorders in a USA national sample. *Psychological Medicine: A Journal of Research in Psychiatry and the Allied Sciences*, 36, 57-68. <http://dx.doi.org/10.1017/S0033291705006161>
- Camras, L.A., Oster, H., Campos, J., Campos, R., Ujie, T., Miyake, K., et al. (1998). Production of emotional facial expressions in European American, Japanese, and Chinese infants. *Developmental Psychology*, 34, 616-628. doi: [10.1037/0012-1649.34.4.616](https://doi.org/10.1037/0012-1649.34.4.616)
- Chang, W. C., & Lim, L. L. (2007). Resilience and well-being in an Asian context – Singapore. *Journal of Psychology in Chinese Societies*, 8, 47-69.
- Chen, X., Hastings, P. D., Rubin, K. H., Chen, H., Cen, G., & Stewart, S. L. (1998). Child-

- rearing attitudes and behavioral inhibition in Chinese and Canadian toddlers: A cross-cultural study. *Developmental Psychology*, 34, 677-686. doi: [10.1037/0012-1649.34.4.677](https://doi.org/10.1037/0012-1649.34.4.677)
- Chen, X., & Swartzman, L. C. (2001). Health beliefs and experiences in Asian cultures. In S. Kazarian, D. Evans (Eds.), *Handbook of cultural health psychology* (pp.389-410). San Diego, CA: Academic Press.
- Chentsova-Dutton, Y. E., & Tsai, J. L. (2009). Understanding depression across cultures. In I. H. Gotlib & C. L. Hammen (Eds.), *Handbook of depression* (2nd ed., pp. 363-385). New York: Guilford Press.
- Cheung, F., Lau, B., & Waldmann, E. (1980-81). Somatization among Chinese depressives in general practice. *International Journal of Psychiatry in Medicine*, 10, 361-374.
- Chun, C., Enomoto, K., & Sue (1996). Health care issues among Asian Americans: implications of somatization. In P. M. Kato & T. Mann (Eds.), *Handbook of diversity issues in health psychology* (pp. 347-365). New York, NY: Plenum Press.
- Cooley, C. H. (1922). *Human nature and the social order* (rev. ed.). New York: Scribner's. (Original work published in 1902).
- Cross, S. E., Hardin, E. E., & Gercek-Swing, B. (2011). The what, how, why, and where in self-construal. *Personality and Social Psychology Review*, 15, 142-179. doi:10.1177/1088868310373752
- Dere, J., Falk, C. F., & Ryder, A. G. (2012). Unpacking cultural differences in alexithymia: The role of cultural values among Euro-Canadian and Chinese-Canadian students. *Journal of Cross-Cultural Psychology*, 43, 1297-1312. doi:10.1177/0022022111430254
- Engel, G. L. (1977). The need for a new medical model: A challenge for biomedicine. *Science*, 196, 129-136.
- Gelfand, M. J., Raver, J. L., Nishii, L., Leslie, L. M., Lun, J., Lim. B. C., et al. (2011). Differences between tight and loose cultures: A 33-nation study. *Science*, 332, 1100-1104. doi: 10.1126/science.1197754
- Green, M. R. (1962). The roots of Sullivan's concept of self. *Psychiatric Quarterly*, 36, 271-282.
- Greenberger, E., & Chen, C. (1996). Perceived family relationships and depressed mood in early and late adolescence: A comparison of European and Asian Americans. *Developmental Psychology*, 32, 707-716. doi: [10.1037/0012-1649.32.4.707](https://doi.org/10.1037/0012-1649.32.4.707)
- Gross, J. J., & John, O. P. (2003). Individual differences in two emotion regulation processes: Implications for affect, relationships, and well-being. *Journal of Personality and Social Psychology*, 85, 348-362. doi: 10.1037/0022-3514.85.2.348

- Guisinger, S., & Blatt, S. J. (1994). Individuality and relatedness. *American Psychologist*, 49, 104-111. doi: 10.1037/0003-066X.49.2.104
- Gupta, A., Leong, F., Valentine, J. C., & Canada, D. D. (2013). A meta-analytic study: The relationship between acculturation and depression among Asian Americans. *American Journal of Orthopsychiatry*, 83, 372-385. doi: 10.1111/ajop.12018
- Hardin, E. E., & Leong, F. T. L. (2005). Optimism and pessimism as mediators of the relations between self-discrepancies and distress among Asian and European Americans. *Journal of Counseling Psychology*, 52, 25-35. doi: 10.1037/0022-0167.52.1.25
- Hardin, E. E., Leong, F. T. L., & Bhagwat, A. A. (2004). Factor structure of the Self-Construal Scale revisited: Implications for the multidimensionality of self-construal. *Journal of Cross-Cultural Psychology*, 35, 327-345. doi: 10.1177/0022022104264125
- Helms, J. E., Jernigan, M., & Mascher, J. (2005). The meaning of race in psychology and how to change it: A methodological perspective. *American Psychologist*, 60, 27-36. doi: 10.1037/0003-066X.60.1.27
- Ho, D. Y. F., Fu, W., & Ng, S. M. (2004). Guilt, shame and embarrassment: Revelations of face and self. *Culture and Psychology*, 10, 64-84. doi: 10.1177/1354067X04044166
- Ho, L. Y., & Lau, A. S. (2011). Do self-report measures of social anxiety reflect cultural bias or real difficulties for Asian American college students? *Cultural Diversity and Ethnic Minority Psychology*, 17, 52-58.
- Jackson, J. S., Abelson, J. M., Berglund, P. A., Mezuk, B., Torres, M., & Zhang, R. (2011). Ethnicity, immigration, and cultural influences on the nature and distribution of mental disorders: An examination of major depression. In D. Regier, W. Narrow, E. Kuhl, and D. Kupfer (Eds.) *Conceptual evolution of DSM-5* (pp. 267-285). Arlington, VA, US: American Psychiatric Publishing, Inc.
- John, O. P., & Gross, J. J. (2004). Healthy and unhealthy emotion regulation: Personality processes, individual differences, and lifespan development. *Journal of Personality*, 72, 1301-1334.
- Juang, P., Syed, M., & Takagi, M. (2007). Intergenerational discrepancies of parental control among Chinese American families: Links to family conflict and adolescent depressive symptoms. *Journal of Adolescence*, 30, 965-975. doi: 10.1016/j.adolescence.2007.01.004
- Kagitcibasi, C. (2005). Autonomy and relatedness in cultural context: Implications for self and family. *Journal of Cross-Cultural Psychology*, 36, 403-422. doi: 10.1177/0022022105275959
- Kalibatseva, Z., Bathje, G., Bluestein, B., Wu, I., Leong, F. T. L., Collins-Eaglin, J., (in

- preparation). Racial/ethnic differences in rates of depression and suicidal ideation among university counseling center clients.
- Kalibatseva, Z., & Leong, F. T. L. (2011). Depression among Asian Americans: Review and Recommendations. *Depression Research and Treatment*, Article ID: 320902, doi: 10.1155/2011/320902
- Kalibatseva, Z., Leong, F. T. L., & Ham, E. H. (2014). A symptom profile of depression among Asian Americans: Is there evidence for the differential item functioning of depressive symptoms? *Psychological Medicine*. Published online February 20, 2014, doi:10.1017/S0033291714000130
- Kalibatseva, Z., & Leong, F. T. L. (in press). A critical review of culturally sensitive treatments for depression: Recommendations for intervention and research. *Psychological Services*.
- Kalibatseva, Z., Wu, I. H. C., & Leong, F. T. L. (2014). Assessing depression and suicidality in Asian-Americans. In L. T. Benuto, N. Thaler & B. D. Leany (Eds.), *Guide to Psychological Assessment with Asians* (pp. 181-198). New York, NY: Springer.
- Katz, M. M., Sanborn, K. O., & Gudeman, H. (1969). Characterizing differences in psychopathology among ethnic groups: A preliminary report on Hawaiian-Japanese and Mainland American schizophrenics. In W. Caudill & T.Y. Lin (Eds.) *Mental health research in Asia and the Pacific* (pp. 148-163). Honolulu: East-West Center Press. doi: [10.1111/j.1939-0025.1971.tb00751.x](https://doi.org/10.1111/j.1939-0025.1971.tb00751.x)
- Kirmayer, L. J. (2001). Cultural variations in the clinical presentation of depression and anxiety: Implications for diagnosis and treatment. *Journal of Clinical Psychiatry*, 62, 22-30.
- Kirmayer, L., & Jarvis, G. E. (2006). Depression across cultures. In D. J. Stein, D. J. Kupfer & A. F. Schatzberg (Eds.), *The American Psychiatric Publishing textbook of mood disorders* (pp. 699-715). Arlington, VA, US: American Psychiatric Publishing.
- Kitayama, S., Duffy, S., & Uchida, Y. (2007). Self as a cultural mode of being. In S. Kitayama and D. Cohen, *Handbook of cultural psychology* (pp. 136-174). New York, NY: Guilford Press.
- Kleinman, A. (1977). Depression, somatization and the new cross-cultural psychiatry. *Social Science & Medicine*, 11, 3-19. doi: 10.1016/0037-7856(77)90138-X
- Kleinman, A. (1982). Neurasthenia and depression: A study of somatization and culture in China. *Culture, Medicine, and Psychiatry*, 6, 117-190. doi: 10.1007/BF00051427
- Kleinman, A., & Good, B. (1985). *Culture and depression*. Berkeley, CA: University of California Press.
- Kleinman, A., & Kleinman, J. (1985). Somatization: The interconnections in Chinese society

- among culture, depressive experiences, and the meanings of pain. In A. Kleinman & B. Good (Eds.) *Culture and depression* (pp. 429-480). Berkeley, CA: University of California Press.
- Kluckhohn, C., & Murray, H. A. (1950). Personality formation: The determinants. In C. Kluckhohn & H. A. Murray (Eds.), *Personality in nature, society, and culture* (pp. 35-48). New York: Knopf.
- Kroenke, K., Spitzer, R. L., & Williams, J. B. W. (2001). The PHQ-9: Validity of a brief depression severity measure. *Journal of General Internal Medicine*, 16, 606-613. doi: 10.1046/j.1525-1497.2001.016009606.x
- Kroenke, K., Spitzer, R. L., & Williams, J. B. W. (2002). The PHQ-15: Validity of a new measure for evaluating the severity of somatic symptoms. *Psychosomatic Medicine*, 64, 258-266.
- Kuo, W. H. (1984). Prevalence of depression among Asian Americans. *Journal of Nervous and Mental Disorders*, 172, 449-457. doi: 10.1097/00005053-198408000-00002
- Lam, B. T. (2005). Self-construal and depression among Vietnamese-American adolescents. *International Journal of Intercultural Relations*, 29, 239-250. doi: 10.1016/j.ijintrel.2005.05.007
- Lee, R. M., Choe, J., Kim, G., & Ngo, V. (2000). Construction of the Asian American Family Conflicts Scale. *Journal of Counseling Psychology*, 47, 211-222. doi: 10.1037/0022-D167/47.2211
- Leong, F. T. L. (2007). Cultural accommodation as method and metaphor. *American Psychologist*, 62, 913-927.
- Leong, F. T. L., & Brown, M. (1995). Theoretical issues in cross-cultural career development: Cultural validity and cultural specificity. In W. B. Walsh & S. H. Osipow (Eds.), *Handbook of vocational psychology* (2nd ed., pp.143-180). Hillsdale, NJ: Erlbaum.
- Leong, F. T. L., & Kalibatseva, Z. (2010). Comparative effectiveness research on Asian American mental health: Review and recommendations. *AAPI Nexus*, 8, 21-38.
- Leong, F. T. L., & Kalibatseva, Z. (2011). Cross-cultural barriers to mental health services in the United States. *Cerebrum*, March 23, 2011 (News magazine at the Dana Foundation: <http://dana.org/news/cerebrum/detail.aspx?id=31364>)
- Leong, F. T. L., Kim, H. H. W., & Gupta, A. (2011). Attitudes toward professional counseling among Asian-American college students: Acculturation, concept of mental illness, and loss of face. *Asian American Journal of Psychology*, 2, 140-153.
- Leong, F. T. L., & Lau, A. S. L. (2001). Barriers to providing effective mental health services to

- Asian Americans. *Mental Health Services Research*, 3, 201-214.
- Leong, F., Lee, S., & Chang, D. (2008). Counseling Asian Americans. In P. Pedersen, J. Draguns, W. Lonner, & J. Trimble (Eds.), *Counseling across cultures* (pp. 113-128). Thousand Oaks, CA: Sage Publications, Inc. doi: 10.4135/9781483329314.n7
- Leong, F. T. L., Leung, K. & Cheung, F. M. (2010). Integrating cross-cultural psychology research methods into ethnic minority psychology. *Cultural Diversity and Ethnic Minority Psychology*, 16, 590-597. doi: 10.1037/a0020127
- Leong, F. T. L., Park, Y. S., & Kalibatseva, Z. (2013). Disentangling immigrant status in mental health: Psychological protective and risk factors among Latino and Asian American immigrants using the NLAAS. *American Journal of Orthopsychiatry*, 83, 361-371. doi: 10.1111/ajop.12020
- Leong, F. T. L., & Zhang, H. (in preparation). A psychometric evaluation of the Loss of Face Scale.
- Levine, T. R., Bresnahan, M. J., Park, H. S., Lapinski, M. K., Wittenbaum, G. M., Morinaga Shearman, S., Lee, S. Y., Chung, D., & Ohashi, R. (2003). Self-construal scales lack validity. *Human Communication Research*, 29, 210-252. DOI: 10.1111/j.1468-2958.2003.tb00837.x
- Mak, W. W. S., Law, R. W., & Teng, Y. (2011). Cultural model of vulnerability to distress: The role of self-construal and sociotropy on anxiety and depression among Asian Americans and European Americans. *Journal of Cross-Cultural Psychology*, 42, 75-88. doi:10.1177/0022022110361713
- Mak, W. W. S., & Zane, N. W. S. (2004). The phenomenon of somatization among community Chinese Americans. *Social Psychiatry and Psychiatric Epidemiology*, 39, 967-974. doi: 10.1007/s00127-004-0827-4
- Markus, H. R. (2008). Pride, prejudice, and ambivalence: Toward a unified theory of race and ethnicity. *American Psychologist*, 63, 651-670. doi: 10.1037/0003-066X.63.8.651
- Markus, H. R., & Kitayama, S. (1991). Culture and the self: Implications for cognition, emotion, and motivation. *Psychological Review*, 98, 224-253.
- Markus, H. R., & Kitayama, S. (2010). Cultures and selves: A cycle of mutual constitution. *Perspectives on Psychological Science*, 5, 420-430. doi: 10.1177/1745691610375557
- Marsella, A. J. (1985). Culture, self, and mental disorder. In A. J. Marsella, G. DeVos, & F. L. K. Hsu (Eds.), *Culture and self: Asian and Western perspectives* (pp. 281-307). New York: Tavistock Publications.
- Marsella, A. J. (1987). The measurement of depressive experience and disorder across cultures.

- In A. J. Marsella, R. M. A. Hirschfeld & M. M. Katz (Eds.), *The measurement of depression* (pp. 376-397). New York: Guilford Press.
- Matsumoto, D., Yoo, S. H., Nakagawa, S. (2008). Culture, emotion regulation, and adjustment. *Journal of Personality and Social Psychology*, 94, 925-937.
- Mead, G. H. (1934). *Mind, self, and society*. Chicago: University of Chicago Press.
- Meng, X.-L., Rosenthal, R., & Rubin, D. B. (1992). Comparing correlated correlation coefficients. *Psychological Bulletin*, 111, 172-175.
- Miranda, J., Lawson, W., & Escobar, J. (2002). Ethnic minorities. *Mental Health Services Research*, 4, 231-237.
- Murata, A., Moser, J. S., & Kitayama, S. (2013). Culture shapes electrocortical responses during emotion suppression. *SCAN*, 8, 595-601. doi: 10.1093/scan/nss036
- Norasakkunkit, V., & Kalick, S. M. (2002). Culture, ethnicity, and emotional distress measures: The role of self-construal and self-enhancement. *Journal of Cross-Cultural Psychology*, 33, 56-70. doi: 10.1177/0022022102033001004
- Okazaki, S. (1997). Sources of ethnic differences between Asian American and White American college students on measures of depression and social anxiety. *Journal of Abnormal Psychology*, 106, 52-60. doi: 10.1037/0021-843X.106.1.52
- Okazaki, S. (2000). Asian American and White American differences on affective distress Symptoms: Do symptom reports differ across reporting methods? *Journal of Cross-Cultural Psychology*, 31, 603-625. doi: 10.1177/0022022100031005004
- Okazaki, S. (2002). Cultural variations in self-construal as a mediator of distress and well-being. In K. S. Kurasaki, S. Okazaki, & S. Sue (Eds.) *Asian American mental health: Assessment theories and methods* (pp. 107-121). New York: Kluwer Academic/Plenum Publishers. doi: 10.1007/978-1-4615-0735-2_8
- Okazaki, S., & Sue, S. (1995). Methodological issues in assessment research with ethnic minorities. *Psychological Assessment*, 7, 367-375. doi: 10.1037/1040-3590.7.3.367
- Oyserman, D., Coon, H. M., & Kemmelmeier, M. (2002). Rethinking individualism and collectivism: Evaluation of theoretical assumptions and meta-analyses. *Psychological Bulletin*, 128, 3-72. doi: 10.1037/0033-2909.128.1.3
- Park, I. J. K., Sulaiman, C., Schwartz, S. J., Kim, S. Y., Ham, L. S., & Zamboanga, B. L. (2011). Self-construal and social anxiety among Asian American college students: Testing emotion suppression as a mediator. *Asian American Journal of Psychology*, 2, 39-50. doi: 10.1037/a0023183

- Parker, G., Cheah, Y.-C., & Roy, K. (2001). Do the Chinese somatize depression? A cross-cultural study. *Social Psychiatry and Psychiatric Epidemiology*, 36, 287-293. doi: 10.1007/s001270170046
- Parker, G., Gladstone, G., & Chee, K. T. (2001). Depression in the planet's largest ethnic group: The Chinese. *American Journal of Psychiatry*, 158, 857-864. doi:10.1176/appi.ajp.158.6.857
- Parker, G., Chan, B., Tully, L., & Eisenbruch, M. (2005). Depression in the Chinese: The impact of acculturation. *Psychological Medicine*, 35, 1475-1483. doi: 10.1017/S0033291705005623
- Radloff, L. S. (1977). The CES-D scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement*, 1, 385-401. doi: 10.1177/014662167700100306
- Rohner, R. P. (1984). Toward a conception of culture for cross-cultural psychology. *Journal of Cross-Cultural Psychology*, 15, 111-138. doi: 10.1177/0022002184015002002
- Russell, S. T., Crocket, L. J., Shen, Y., & Lee, S. (2008). Cross-ethnic invariance of self-esteem and depression measures for Chinese, Filipino, and European American adolescents. *Journal of Youth and Adolescence*, 37, 50-61. doi: 10.1007/s10964-007-9231-1
- Ryder, A.G., Alden, L., & Paulhus, D.L. (2000). Is acculturation unidimensional or bidimensional? A head-to-head comparison in the prediction of demographics, personality, self-identity, and adjustment. *Journal of Personality and Social Psychology*, 79, 49-65. doi: 10.1037//0022-3514.79.1.49
- Ryder, A. G., Ban, L. M., & Chentsova-Dutton, Y. E. (2011). Towards a cultural-clinical psychology. *Social and Personality Psychology Compass*, 5, 960-975. doi: 10.1111/j.1751-9004.2011.00404.x
- Ryder, A. G., & Chentsova-Dutton, Y. E. (2012). Depression in cultural context: "Chinese somatization", revisited. *Psychiatric Clinics of North America*, 35, 15-36. doi: 10.1016/j.psc.2011.11.006
- Ryder, A. G., Yang, J., Zhu, X., Yao, S., Yi, J., Heine, S., et al. (2008). The cultural shaping of depression: Somatic symptoms in China, psychological symptoms in North America? *Journal of Abnormal Psychology*, 117, 300-313. doi: 10.1037/0021-843X.117.2.300
- Saarni, C. (1979). Children's understanding of display rules for expressive behavior. *Developmental Psychology*, 15, 424-429. doi: 10.1037/0012-1649.15.4.424
- Singelis, T. M. (1994). The measurement of independent and interdependent self-construals. *Personality and Social Psychology Bulletin*, 5, 580-591. doi: 10.1177/0146167294205014

- Sue, S., Cheng, J. K. Y., Saad, C. S., & Chu, J. P. (2012). Asian American mental health: A call to action. *American Psychologist*, 67, 532-544. doi: [10.1037/a0028900](https://doi.org/10.1037/a0028900)
- Sue, S., Kurasaki, K. S., & Srinivasan, S. (1999). Ethnicity, gender, and cross-cultural issues in clinical research. In P. C. Kendall, J. N. Butcher, & G. N. Holmbeck (Eds.), *Handbook of research methods in clinical psychology* (2nd ed., pp. 54-71). New York: Wiley.U.S.
- Sullivan, H. S. (1953). *The interpersonal theory of psychiatry*. New York: Norton.
- Sussman, N. (2003). SNRIs versus SSRIs: Mechanisms of action in treating depression and painful physical symptoms. *Primary Care Companion Journal of Clinical Psychiatry*, 5, Suppl. 7, 19-26.
- Swart, M., Kortekaas, R., & Aleman, A. (2009). Dealing with feelings: Characterization of trait alexithymia on emotion regulation strategies and cognitive-emotional processing. *PLoS ONE*, 4, e5751. doi: 10.1371/journal.pone.0005751
- Szapocznik, J., & Kurtines, W. M. (1993). Family psychology and cultural diversity: Opportunities for theory, research and application. *American Psychologist*, 48, 400-407.
- Takeuchi, D. T., Chung, R. C., Lin, K. M., Shen, H., Kurasaki, K., Chin, C., et al. (1998). Lifetime and twelve-month prevalence rates of major depressive episodes and dysthymia among Chinese American in Los Angeles. *American Journal of Psychiatry*, 155, 1407-1414. doi: 10.1080/15427600701480998
- Takeuchi, D. T., Hong, S., Gile, K., & Alegría, M. (2007). Developmental contexts and mental disorders among Asian Americans. *Research in Human Development*, 4, 49-69.
- Thompson, R. A., & Meyer, S. (2011). Socialization of emotion regulation in the family. In J. J. Gross (Ed.) *Handbook of emotion regulation* (pp. 249-268). New York: Guilford.
- Trimble, J. E., & Dickson, R. (2005). Ethnic gloss. In C. B. Fisher & R. M. Lerner, (Eds.), *Encyclopedia of applied developmental science* (pp. 412-415), Volume I. Thousand Oaks: Sage.
- Tseng, W.-S. (1975). The nature of somatic complaints among psychiatric patients: The Chinese case. *Comprehensive Psychiatry*, 16, 237-245. doi: 10.1016/0010-440X(75)90050-4
- U.S. Census Bureau (2010). Race. Retrieved on May 14, 2013 at: http://quickfacts.census.gov/qfd/meta/long_RHI505210.htm
- U.S. Census Bureau (2013). Asian/Pacific Heritage Month: May 2013. Accessed online on July 10, 2014 at: http://www.census.gov/newsroom/releases/archives/facts_for_features_special_editions/cb13-ff09.html

- U.S. Department of Health and Human Services. (2001). *Mental health: Culture, race, and Ethnicity – A supplement to mental health: A report of the Surgeon General*. Rockville, MD: U.S. Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, Center for Mental Health Services.
- Walker, S., O'Connor, D. B., & Schaefer, A. (2011). Brain potentials to emotional pictures are modulated by alexithymia during emotion regulation. *Cognitive, Affective, and Behavioral Neuroscience*, 11, 463-475. doi: 10.3758/s13415-011-0042-1
- Watson, D., & Friend, R. (1969). Measurement of social-evaluative anxiety. *Journal of Consulting and Clinical Psychology*, 33, 448-457.
- Weissman, M. M., Bland, R. C., Canino, G. J., Faravelli, C., Greenwald, S., Hwu, H-G., et al. (1996). Cross-national epidemiology of major depression and bipolar disorder. *JAMA: Journal of the American Medical Association*, 276, 293-299. doi:10.1001/jama.1996.03540040037030
- Wong, R., Wu, R., Guo, C., Lam, J. L., & Snowden, L. R. (2012). Culturally sensitive depression assessment for Chinese American immigrants: Development of a comprehensive measure and a screening scale using an item response approach. *Asian American Journal of Psychology*, 3, 230-253. doi: 10.1037/a0025628
- Wong Stokem, N. A. E. (1997). Acculturation in relation to somatization and mental health attitudes among Asian-Americans (Doctoral dissertation). Retrieved from ProQuest Information and Learning (AAM9806938).
- Wool, C. A., & Barsky, A. J. (1994). Do women somatize more than men? Gender differences in somatization. *Psychosomatics*, 35, 445-452. doi: 10.1016/S0033-3182(94)71738-2
- World Health Organization (2008). The Global Burden of Disease 2004 update. Accessed online on April 28, 2013 at: http://www.who.int/healthinfo/global_burden_disease/GBD_report_2004update_full.pdf
- Yen, S., Robins, C. J., & Lin, N. (2000). A cross-cultural comparison of depressive symptom manifestation: China and the United States. *Journal of Consulting and Clinical Psychology*, 68, 993-999. doi: 10.1037/0022-006X.68.6.993
- Ying, Y. (1988). Depressive symptomatology among Chinese-Americans as measured by the CES-D. *Journal of Clinical Psychology*, 44, 739-746. doi: 10.1002/1097-4679(198809)44:5
- Young, C. B., Fang, D. Z., & Zisook, S. (2010). Depression in Asian-American and Caucasian undergraduate students. *Journal of Affective Disorders*, 125, 379-382. doi: 10.1016/j.jad.2010.02.124

- Yuan, J., Liu, Y., Ding, N., & Yang, J. (2013). The regulation of induced depression during a frustrating situation: Benefits of expressive suppression in Chinese individuals. *PLoS ONE*, 9, e97420. doi:10.1371/journal.pone.0097420
- Zane, N. (1991). An empirical examination of loss of face among Asian Americans. Unpublished manuscript, Graduate School of Education, University of California, Santa Barbara.
- Zane, N., & Yeh, M. (2002). The use of culturally based variables in assessment: Studies on loss of face. In K. S. Kurasaki, S. Okazaki & S. Sue (Eds.), *Asian American mental health: Assessment theories and methods* (pp. 123–137). New York, NY: Kluwer. doi:10.1007/978-1-4615-0735-2_9
- Zhu, X., Yi, J., Yao, S., Ryder, A., Taylor, G.J., & Bagby, R.M. (2007). Cross-cultural validation of a Chinese translation of the 20-item Toronto Alexithymia Scale. *Comprehensive Psychiatry*, 48, 489-496. doi: 10.1016/j.comppsy.2007.04.007