

DIFFERENTIAL PREDICTION OF LIFE SATISFACTION IN INDIVIDUALISTIC
AND COLLECTIVISTIC CULTURES:
TOWARDS INTEGRATION OF PERSONALITY AND CULTURAL MODELS

By

DANA FAIRBROTHER

A thesis submitted in partial fulfillment of
the requirements for the degree of

MASTER OF ARTS IN COUNSELING PSYCHOLOGY

WASHINGTON STATE UNIVERSITY
Department of Educational Leadership and Counseling Psychology

MAY 2010

To the Faculty of Washington State University:

The members of the Committee appointed to examine the thesis of
DANA MARIE FAIRBROTHER find it satisfactory and recommend that it be
accepted.

A. Timothy Church, Ph.D., Chair

Brian F. French, Ph.D.

Laurie D. McCubbin, Ph.D.

ACKNOWLEDGEMENTS

I would like to express my deep gratitude to my advisor Tim Church for his support and thorough guidance from the beginning of this project until the end. I learned a great deal from him and this thesis would not have been possible otherwise. Additionally, I would like to thank him for allowing me to use data he had previously collected.

I would like to thank Oliver Corea for all of his support, advice and help, over the past months, without which I would have struggled enormously.

DIFFERENTIAL PREDICTION OF LIFE SATISFACTION IN INDIVIDUALISTIC AND
COLLECTIVISTIC CULTURES:

TOWARDS INTEGRATION OF PERSONALITY AND CULTURAL MODELS

Abstract

by Dana Fairbrother, M.A.
Washington State University
May 2010

Chair: A. Timothy Church

A better understanding of the factors that contribute to life satisfaction has important implications for mental health and for individuals' attempts to live the "good life." The impact of personality and culture-related variables (i.e., self-construals) on life satisfaction has been examined, but rarely in combination or across a broad range of cultures. In this study, structural equations modeling (SEM) was applied to examine how the Big Five personality traits and self-construals impact life satisfaction both separately and jointly through the mediating variables of self-esteem and relationship harmony across six cultures. The findings revealed clear interplay between these two types of predictors, and the mediating effects of relationship harmony and self-esteem in the prediction of life satisfaction. Although the separate cultural model, which contained fewer parameters, exhibited somewhat better goodness-of-fit indices, the personality model explained a greater proportion of variance in the endogenous variables (relationship harmony, self-esteem, life satisfaction). When personality and cultural variables were integrated into the same models, neither a personality-first, nor culture-first model was substantially better than the other. In general, the SEM analyses supported greater cross-cultural equivalence than differences in model structure, indicating that the predictive value of the variables was similar across cultures. Furthermore, those cultural differences that were identified were not explained

by the individualism/collectivism distinction, highlighting the need to explore additional cultural factors. Overall, the results indicate the importance of considering the interaction of personality and culture-related variables as determinants of life satisfaction, as well as the need to further examine the role of additional cultural factors in this process.

TABLE OF CONTENTS

	Page
ACKNOWLEDGEMENTS	iii
ABSTRACT	iv
LIST OF TABLES	viii
LIST OF FIGURES	ix
INTRODUCTION	1
Personality and Life Satisfaction	2
Cultural Variables and Life Satisfaction	3
Towards an Integrated Model of Life Satisfaction	6
Overview of the Present Study	7
METHOD	9
Sample	9
Instruments	11
Procedure	13
RESULTS	13
Overview of Analysis	13
Tests of Measurement Models	16
Tests of the Cultural Models	17

Tests of Personality Model	21
Comparison of Culture and Personality Models	23
Integrated Models	24
DISCUSSION	29
Limitations and Future Research Needs	33
Conclusion	34
APPENDICES	36
A. Correlations Among Latent Constructs	36
B. Pearson Correlations Among Study Variables	37
REFERENCES	40

LIST OF TABLES

1. Fit Indices for Measurement Models	51
2. Fit Indices for Structural Models	52
3. Squared Multiple Correlations in Predicting Endogenous Variables in Various Models	53

LIST OF FIGURES

1. Independent/Relational/Collective Self-Construal Model.....	46
2. Independent/Interdependent Self-Construal Model.....	47
3. Personality Model	48
4. Culture→Personality Model	49
5. Personality→Culture Model	50

Introduction

Life satisfaction refers to the cognitive judgments or evaluations individuals make about the satisfactoriness of their lives. A better understanding of the factors that contribute to life satisfaction will have important implications for mental health and individuals' efforts to live the "good life." In previous studies, successful predictors of life satisfaction have included personality traits, independent and interdependent self-construals, self-esteem, relationship harmony, and positive and negative affects or emotions (Benet-Martinez & Karakitapoglu-Aygun, 2003; Kang, Shaver, Sue, Min, & Jing, 2007; Kwan, Bond, & Singelis, 1997; Schimmack, Radhakrishnan, Oishi, & Dzokoto, 2002; Suh, Diener, & Updegraff, 2008; Wong, Oei, Ang, Lee, Ng, & Lang, 2007). In addition, several researchers have examined whether the strength of some predictors of life satisfaction (e.g. relationship harmony, self-esteem) may vary across cultures (Benet-Martinez & Karakitapoglu-Aygun, 2003; Kang et al, 2007; Kwan et al, 1997; Wong et al, 2007). Some of these researchers have looked at both personality and culture-related variables (e.g., self-construals, individualism, collectivism) as predictors of life satisfaction, but few have looked at their possible interaction in the same model. In addition, different theoretical perspectives, such as the Five Factor Theory of personality (McCrae & Costa, 1996) and cultural psychology (e.g., Markus & Kitayama, 1998), imply different causal pathways for integrated models. The present study aims to replicate and integrate previous personality and cultural models of life satisfaction at the level of individuals and test their cross-cultural generalizability across two individualistic cultures, the United States and Australia, and four collectivistic cultures, Japan, Mexico, Malaysia, and the Philippines.

Personality and Life Satisfaction

One of the most frequently studied predictors of life satisfaction is personality. For example, Five-Factor Theory (FFT; McCrae & Costa, 1996) suggests that personality traits should be a key factor in determining life satisfaction. In FFT, the Big Five traits of Neuroticism, Extraversion, Openness to Experience, Agreeableness, and Conscientiousness are viewed as biologically-based *basic tendencies* that are relatively independent of culture. According to FFT, the Big Five traits directly influence *characteristic adaptations* such as attitudes, beliefs, self-concepts, affects, and relationship qualities that have been found to influence life satisfaction (Diener & Diener, 1995; Diener & Suh, 2000; Kang et al., 2007; Kwan et al., 1997; Suh, 2000). Indeed, McCrae and Costa (1991) found support for their hypothesis that different personality traits may affect life satisfaction in alternative ways. They reported that some Big Five traits, in particular Neuroticism and Extraversion, directly affect individuals' temperament, thus predisposing them to experience more positive or negative affect, which in turn affects life satisfaction. Other Big Five traits may have a more instrumental effect on life satisfaction. For example, conscientious people may have greater life satisfaction because they achieve more, and agreeable people may develop more satisfying relationships, which would also lead to greater life satisfaction.

Consistent with FFT, Steel, Schmidt, and Schultz (2008) emphasized a biological connection between personality and subjective well-being (SWB), including life satisfaction, in their meta-analysis of relevant studies. They argued that SWB has a set point for each individual, which is up to 80% determined by genetic factors (e.g., Nes, Roysam, Tamba, Harris, & Reichborn-Kjennerud, 2006). Furthermore, much of this stability in SWB can be accounted for by heritable personality traits (e.g., Deiner & Lucas, 1999; Lyubomirsky, Sheldon, & Schkade,

2006). Of the Big Five dimensions, Neuroticism and Extraversion are the strongest trait predictors of life satisfaction, but in some studies other Big Five traits have also predicted life satisfaction (e.g., Benet-Martinez & Karakitapoglu-Aygun, 2003; Chen, Tu, & Wang, 2006; Kwan et al., 1997; Schimmack et al., 2002; Steel et al., 2008).

Thus, according to some trait perspectives, such as FFT, personality traits are basic tendencies that should contribute directly or indirectly through temperamental and instrumental means to predict life satisfaction in any culture. Indeed, Kwan et al. (1997) found support in both the United States and Hong Kong for a model in which the Big Five traits predicted life satisfaction through the mediating factors of self-esteem and relationship harmony. Benet-Martinez and Karakitapoglu-Aygun (2003) found support for a very similar model in both Asian American and European American samples.

Cultural Variables and Life Satisfaction

In contrast to personality psychologists, many of whom view traits such as the Big Five as biologically-based cultural universals (Allik & McCrae, 2002; McCrae & Costa, 1997), some cultural psychologists are skeptical about the importance of personality traits in non-Western cultures (e.g. Markus & Kitayama, 1998; Shweder, 1991). In this view, trait theory reflects a Western or individualistic conception of the person as an autonomous or independent entity with internal attributes (e.g., traits) that largely determine behavior. According to cultural psychologists, this *independent* view of self or personality is at odds with *interdependent* conceptions of the person in many non-Western or collectivist cultures. In collectivist cultures, it is argued, people are viewed as more interdependent or interconnected with others, greater value is placed on maintaining harmonious relationships, and behavior is determined less by traits than by one's obligations and responsibilities to others.

While cultures can be assessed along the dimension of individualism-collectivism (e.g., Hofstede, 2001), individuals within these cultures can be assessed in terms of how much they endorse the associated cultural attitudes and values. Ratzlaff, Matsumoto, Kouznetsova, Raroque and Ray (2000) referred to this distinction as ecological culture versus individual culture. The distinction between independent and interdependent views of self or personality represents a central aspect of individual culture associated with cultural individualism and collectivism. Some researchers have referred to these self-construals as “cultural syndromes,” although they are assessed at the level of individuals (Benet-Martinez & Karakitapoglu-Aygun, 2003; Triandis, 2000, 2001).

In the cultural psychology perspective, personality is viewed as developing in large part through one’s interactions and relationships with others, as well as cultural values and norms that underlie or afford the expression of different traits (Benet-Martinez & Karakitapoglu-Aygun, 2003; Markus & Kitayama, 1998). If so, we might predict that cultural syndromes such as independent and interdependent self-construals will predict personality, which in turn will predict life satisfaction. In addition, cultural differences in self-construals could lead to cultural differences in the relative ability of internal (e.g., self-esteem) versus interpersonal (e.g., relationship harmony) factors to predict life satisfaction (e.g., Benet-Martinez & Karakitapoglu-Aygun, 2003; Diener & Diener, 1995; Kang et al., 2003).

Indeed, several studies have tested the differential ability of independent (e.g., independent self-construals, self-esteem) and interdependent (e.g., interdependent self-construals, relationship satisfaction) variables to predict life satisfaction in individualistic versus collectivistic cultures. Oishi (2000), in a study of college students in 39 countries, found that the more individualistic the country the stronger the relationship between independent self-construal

and life satisfaction. Also consistent with cultural psychology theory was Oishi's finding that self-esteem was relatively more important than relationship harmony in predicting life satisfaction in individualistic countries than in collectivistic countries. Diener and Diener (1995) found that both self-esteem and relationship satisfaction predicted life satisfaction in individualistic and collectivistic cultures. However, consistent with Oishi's (2000) findings, self-esteem was relatively less important as a predictor than relationship harmony in collectivistic cultures. Kwan et al. (1997) found that in both the United States and Hong Kong, independent self-construal predicted life satisfaction through the mediating variable of self-esteem, while interdependent self-construal predicted life satisfaction through the mediating variable of relationship harmony. Again, however, self-esteem was relatively more important than relationship harmony in predicting life satisfaction in the United States than in Hong Kong. Benet-Martinez and Karakitapoglu-Aygun (2003) found similar results in Asian American and European American samples, but also found that it might be important to differentiate different types of relationships. For example, while interdependent self-construal predicted harmony in family relationships, independent self-construal predicted harmony in relationships with friends, as well as self-esteem. Kang et al. (2003) also found similar results to those of Kwan et al. (1997). However, Kwan et al. found that self-esteem and relationship harmony were independent or uncorrelated predictors of life satisfaction. In contrast, Kang et al. found that relationship harmony impacted self-esteem in Korea and China, two collectivistic cultures, but not in European American or Asian American samples. Findings by Endo, Heine, and Lehman (2000) suggest, however, that the relationship between relationship harmony and self-esteem may depend on the specific relationships involved, and this may be the case in both individualistic and collectivistic cultures.

In summary, these studies provide generally good support for cultural psychology perspectives, which expect differences in the relative ability of constructs associated with independent versus interdependent views of self and personality to predict life satisfaction in individualistic versus collectivistic cultures. However, most of these studies did not attempt to integrate personality traits into their cultural models of life satisfaction. For example, although Kwan et al. (1997) examined both personality traits and self-construals as predictors of life satisfaction, they did not integrate them into a single model. In addition, FFT would consider independent and interdependent self-construals to be characteristic adaptations that result not only from cultural factors (e.g., culture-level individualism-collectivism), but also from basic tendencies such as personality traits.

Towards an Integrated Model of Life Satisfaction

Benet-Martinez and Karakitapoglu-Aygun (2003) were apparently the only researchers to combine both personality traits and individual-level cultural variables (i.e., self-construals) into integrated models of life satisfaction. They tested two integrated models, a personality model in which the Big Five traits predicted cultural variables (Personality→Self-Construal→Life satisfaction) and a cultural model in which cultural variables predicted the Big Five traits (Self-Construal→Personality→Life satisfaction). In both models, self-esteem and relationship satisfaction were included as mediating variables in the prediction of life satisfaction, and were expected to be associated with independent and interdependent self-construals, respectively. The personality model fit the data poorly (RMSEA=.14; CFI=.82), whereas the cultural model exhibited a good fit (e.g., RMSEA=.06; CFI=.96). In the cultural model, independent self-construal showed indirect effects on life satisfaction through the trait mediators of Conscientiousness, Neuroticism, Openness to Experience, and Extraversion. In turn, the effects

of Conscientiousness, Neuroticism, and Openness to Experience on life satisfaction were mediated by self-esteem, and the effect of Extraversion on life satisfaction was mediated by friend satisfaction. Neuroticism predicted life satisfaction indirectly through its negative effects on both relationship (friend) satisfaction and self-esteem. Interdependent self-construal exhibited an indirect effect on life satisfaction through the trait mediator of Agreeableness. In turn, the effect of Agreeableness on life satisfaction was mediated by friend and family satisfaction.

Benet-Martinez and Karakitapoglu-Aygun (2003) have taken the first step toward an integrated culture-and-personality model of life satisfaction, but the sample only contained two ethnic groups in the United States, Asian Americans and European Americans. In addition, the model did not reveal any ethnic differences in the strength of the path coefficients in the model. This latter finding was inconsistent with cultural psychology perspectives that predict differential prediction of life satisfaction by variables associated with independent and interdependent self-construals. It should be noted, however, that these two ethnic groups are likely more culturally similar than would be members of individualistic and collectivistic cultures in cross-national studies. Thus, there is a need for additional studies that examine the joint influence of cultural variables and personality traits across diverse cultures. Overall, previous studies suggest the possibility of both cultural universals and differences in the predictors of life satisfaction. However, with the exception of the culture-level studies by Oishi (2000) and Diener and Diener (1995), these studies have not sampled a very diverse range of cultures.

Overview of the Present Study

The overall goal of the present study was to achieve a better understanding of the interplay of personality and cultural variables in the prediction of life satisfaction in different cultures. One specific aim was to test and extend Kwan et al.'s (1997) culture and personality

models of life satisfaction (see Figures 2 and 3, respectively) in a larger number of individualistic and collectivistic cultures. Benet-Martinez and Karakitapoglu-Aygun (2003) also based their models and hypotheses on Kwan et al.'s work. I test the fit of the models in data collected previously by Church et al. (2008) for a study on cross-role trait consistency and adjustment, which addressed different research questions. Hofstede (1980) ranked 50 countries on individualism based on a work values measure. The six countries to be investigated in the present study were ranked as follows: United States 1st, Australia, 2nd, Japan, 22nd; Philippines, 31st; Mexico, 32nd and Malaysia, 36th. Based on these rankings, the United States and Australia are among the most individualistic cultures, whereas Japan, the Philippines, Mexico, and Malaysia are relatively collectivistic.

In addition to testing Kwan et al.'s models, I extend and improve on these models by testing models that differentiate relational and collective aspects of interdependent self-construals. Relational self-construal is conceptualized as the extent to which individuals include close relationships in their self-concepts, whereas collective self-construal refers to connectedness with larger groups such as family, ethnic group, or nation (Cross, Bacon, & Morris, 2000). A number of researchers have suggested that it is important to differentiate relational and collective or group-centered self-construals, because the former may be as salient in individualistic cultures as in collectivistic cultures (e.g., Cross et al., 2000; Kagitcibasi, 1997; Kashima, Yamaguchi, Kim, Choi, Gelfand, & Yuki, 1995.). Finally, based on results from the separate personality and cultural models, I specify and test two integrated models, each of which integrates both personality traits and cultural variables in the prediction of life satisfaction, while also incorporating relevant mediator variables (i.e., self-esteem, relationship harmony). In the

integrated personality→culture model, the Big Five traits predict self-construals. In the integrated culture→ personality model, self-construals predict the Big Five traits.

I expected a degree of cultural universality in the predictors of life satisfaction and in the direct and indirect effects in the models tested. In addition, in each of the models tested, I anticipated that the individualistic predictors (i.e., self-esteem, independent self-construal) would be stronger predictors of life satisfaction in the individualistic cultures than in the collectivistic cultures, while the interdependent or collectivistic predictors (i.e., relationship harmony, interdependent self-construal) would be stronger predictors of life satisfaction in the collectivistic cultures than in the individualistic cultures. In comparing the separate personality and cultural models, I expected that the personality model would account for more variance in life satisfaction than the cultural model. This prediction was based on the expected strong temperamental and instrumental affects of personality traits on life satisfaction (McCrae & Costa, 1991). However, no a priori prediction was made regarding the overall fit of the integrated personality and cultural models. Although Five-Factor Theory would predict a better fit for the personality → culture model, Benet-Martinez and Karakitapoglu-Aygun (2003) reported a better fit for their culture→ personality model.

Method

Sample

College students in two individualistic cultures (United States, Australia) and four collectivistic cultures (Japan, Mexico, Philippines, Malaysia) were sampled. The sample from the United States consisted of 230 Washington State University students, including 85 men, 144 women, and 1 who did not report gender. The reported ethnic breakdown was 83% White/Caucasian, 7% bi/multiracial, 4% Asian/Pacific Islander, 2% Chicano/Latino/Hispanic, 0.4% African American, and 4% other or not reporting. The mean age was 19.57 years ($SD =$

2.22). The sample from Australia consisted of 195 students from the University of Western Sydney ($n = 129$) and University of Sydney ($n = 66$), including 45 men, 149 women, and 1 who did not report gender. The ethnic breakdown was 73% Anglo/European, 6% Asian or Pacific Islander, 5% bi/multiracial, 3% Middle Eastern, and 13% other or not reporting. The mean age was 21.81 years ($SD = 4.74$).

The sample from Mexico consisted of 199 students from the Autonomous University of the State of Mexico (AUEM) in Mexico City, including 93 men, 95 women, and 11 who did not report gender. The reported ethnic breakdown was 77% Mestizo (the majority ethnic group in Mexico), 17% Indigenous, and 6% other or not reporting. The mean age was 20.93 years ($SD = 3.45$). The sample from the Philippines consisted of 195 students from De La Salle College in Lipa City, including 85 men and 110 women. The 96% of participants who reported ethnicity all indicated Filipino. Mean age was 18.55 years ($SD = 1.53$).

The sample from Malaysia consisted of 217 students from the National University of Malaysia, including 114 men and 102 women. The ethnic breakdown was 48% Malay, 48% Chinese, and 5% other or not reporting. Mean age was 21.18 years ($SD = 1.45$). Finally, the sample from Japan consisted of 180 students from Kwensai Gakuin University, including 65 men and 115 women. Because of the anticipated ethnic homogeneity of the students, participants were not asked about their ethnicity. However, each student reported growing up in Japan and none were international students. Mean age was 20.52 years ($SD = 3.97$).

Because the instruments were administered over two sessions, there was some missing data. Therefore, the sample sizes varied somewhat for each instrument (in the U.S., $n = 213$ -229; in Australia, $n = 185$ -195; in Mexico, $n = 156$ -199; in the Philippines, $n = 176$ -195; in Malaysia, $n = 178$ -217; in Japan, $n = 115$ -179).

Instruments

Translation. The English language instruments were translated into the relevant languages for Mexico (Spanish), the Philippines (Filipino/Tagalog), Malaysia (Malaysian), and Japan (Japanese), using the backtranslation method. For the Australian sample, a few words were modified to reflect Australian English usage.

Big Five personality traits. The Big Five personality traits were measured using one section of the Trait-Role Questionnaire developed by Church et al. (2008). The instrument contained 40 trait adjectives, with each Big Five trait measured by eight adjectives. The trait adjectives were selected from existing measures of the Big Five dimensions (Goldberg, 1992), also taking into account their ease of translation. The Neuroticism traits were irritable, nervous, jealous, calm (-), self-confident (-), relaxed (-), and moody (- items were reverse-keyed). The Extraversion traits were quiet (-), reserved (-), energetic, extroverted, talkative, shy (-), bold, and cheerful. The Openness to Experience traits were open-minded, imaginative, artistic, intelligent, creative, shallow (-), talented, and wise. The Agreeableness traits were kind, generous, helpful, respectful, sympathetic, boastful (-), selfish (-), and suspicious (-). The Conscientiousness traits were disciplined, industrious, careless (-), organized, sloppy (-), lazy (-), thrifty, and wasteful (-). The items were listed in random order on the questionnaire. Participants were asked to rate their traits in general, that is, *what are you usually or generally like?* Participants made their ratings using a 5-point scale (*not at all descriptive of me, a little descriptive of me, moderately descriptive of me, very descriptive of me, extremely descriptive of me*). For each participant, scores for each Big Five trait were computed by averaging the ratings across the relevant eight trait adjectives, reverse-keying where appropriate. Across the six cultures, the α reliabilities ranged from .58 to .72 for Neuroticism, .66 to .88 for Extraversion, .74 to .80 for Openness, .55

to .81 for Agreeableness, and .62 to .80 for Conscientiousness. Cross-cultural measurement invariance is addressed below.

Self-construal scales. Independent self-construal was measured using the Independent subscale of Singelis' (1994) Self-Construal Scale, which consists of 15 items. Relational self-construal was measured using Cross, Gore, and Morris' (2003) Relational Self-Construal Scale, which contains 11 items. Collective or group-centered self-construal was measured using Yamaguchi's (1994) Collectivism Scale. A sample independent self-construal item is "I do my own thing regardless of what others think." A sample relational self-construal item is "I often have the feeling that my relationships with others are more important than my own accomplishments." A sample collective self-construal item is "It is important for me to maintain harmony within my group." The items in all three instruments, which were randomly interspersed in a single instrument, were rated on a 6-point scale, which ranged from *strongly disagree* to *strongly agree*. Across the six cultures, the α reliabilities ranged from .64 to .79 for the Independent scale, from .61 to .84 for the Relational Self-construal scale, and from .61 to .80 for the Collectivism scale.

Self-esteem. The Rosenberg Self-Esteem Scale (Rosenberg, 1989) was used to measure self-esteem. The original scale contains 10 items, but Church et al. (2008) deleted 1 item because it had poor factor loadings in several cultures. A sample item is "I feel that I have a number of good qualities." Across the six cultures, α reliability estimates ranged from .78 to .87.

Relationship harmony. Relationship harmony was measured using the Interpersonal Relationship Harmony Inventory (IRHI; Kwan et al., 1997). Students were asked to select the 5 two-person relationships that were most important to them and to indicate the relationship partner's gender and relationship to the participant (e.g., mother, friend). Students were then

asked to rate the degree of harmony in each relationship using a 7-point scale that ranged from *very low* to *very high*. Across cultures, the α reliability estimates for the relationship harmony ratings ranged from 0.60 to 0.80.

Life satisfaction. Life satisfaction was measured with the Satisfaction with Life Scale (Diener, Emmons, Larson, & Griffon, 1985). For this 5-item instrument, items were rated on a 7-point scale that ranged from *strongly disagree* to *strongly agree*. A sample item is “In most ways my life is ideal.” Across the six cultures, the α reliability estimates ranged between .60 and .85.

Procedure

The participants filled out the instruments in two sets that were administered one week apart. The first set included a demographic form, the Self-Concept Scale, the Rosenberg Self-Esteem Scale, and the Satisfaction with Life scale. The second set included the general measure of the Big Five traits and the Interpersonal Relationship Harmony Inventory. Additional instruments were administered during the two sessions, but are not relevant to the present study. In the U.S. sample, participants were handed the instruments in class, completed them at home, and returned them the following week. In Australia, participants were recruited from a research participant pool and completed the sets in proctored groups. In Mexico, the Philippines, Malaysia, and Japan the two sets of instruments were completed in regular classes. Students in the U.S. and Australia received research credit for participation.

Results

Overview of Analysis

I used structural equations modeling (SEM), as implemented with the AMOS 16.0 (Arbuckle, 2007) program, to test and compare the separate personality and cultural models of life satisfaction. Subsequently, I used the results of the separate personality and cultural models to specify and test integrated culture and personality models. The cross-cultural equivalence of

the measurement models for the constructs was tested before examining the structural models. As a general strategy in examining both the measurement and structural models, I first estimated models with parameters (i.e., factor loadings, path coefficients) that were freely estimated in each culture, followed by models with these parameters constrained to equality across the six cultural samples. Chi-square difference tests and changes in fit indices (e.g., the CFI index) were used to determine whether the parameters could be constrained across cultures or needed to be freely estimated. AMOS modification indices were also consulted to determine whether substantively meaningful respecifications or changes to the models were appropriate.

In the tests of the structural models, the measurement models (i.e., factor loadings of the observed measures on the latent constructs) were constrained to be equal in both the freely estimated and constrained structural models, whereas the covariances and error variances were freely estimated in all models, as recommended by Kline (1998). Modification Indices (MI) suggested causal paths that lacked equivalence across cultures or new and substantively meaningful paths that were needed in the model to improve fit. By testing respecified models in which single path coefficients with large MI indices were freely estimated across cultures, I determined which parameters (path coefficients) were different across cultures. In addition, path coefficients that were hypothesized a priori to differ across cultures (i.e., the path coefficients relating self-esteem and relationship harmony to life satisfaction) were tested by comparing models in which the coefficients were freely estimated versus constrained to equality.

In drawing conclusions about whether the personality, culture, and integrated models were superior, I compared (a) the fit indices for the respective models, (b) the statistical significance, size, and substantive meaningfulness of the path coefficients in the models; (c) the parsimony or simplicity of the models (e.g., number of parameters); and (d) the proportion of

variance in life satisfaction, self-esteem, and relationship harmony accounted for by the models. To determine the goodness-of-fit of each of the models the following indices were used: χ^2/df ; root mean square error approximation (RMSEA); non-normed fit index (NNFI), also known as the Tucker-Lewis index (TLI); the comparative fit index (CFI); and Akaike's information criterion (AIC).

The overall χ^2 value for each model represents the discrepancy between the restricted (model-produced) and unrestricted (observed) covariance matrices. However, this index has been found to be an unrealistic indicator of goodness-of-fit, because it is very sensitive to sample size. The χ^2/df ratio is more commonly used; values of 2:1 to 5:1 indicate acceptable fit, with lower ratios indicating better fit (Byrne, 2001; Church & Burke, 1994). The RMSEA indicates the discrepancy between the observed and model-estimated covariance matrix. Less than .05 indicates good fit, .05-.08 indicates reasonable fit, .08-.10 indicates mediocre fit, and higher than .10 indicates poor fit (Byrne, 2001). The TLI takes into account degrees of freedom and thus the parsimony of the model. It generally takes on values between 0-1, and values in the range of .90 to .95 indicate good fit (Byrne, 2001; Raykov & Marcoulides, 2006) A range of .88 to .99 for correct models with simple structure and values of .83 to .87 for correct models with more complex structure have also been suggested (Church & Burke, 1994). The CFI is derived by comparing the hypothesized model with the independence model of no covariation between the constructs, and also takes sample size into account. Like the TLI, values range from 0 to 1, with values in the range of .90 to .95 indicating good fit (Byrne, 2001; Church & Burke, 1994). The AIC is used for comparing two or more models that may not be nested, with a smaller score representing a better fit. The AIC takes into account model parsimony, as it assesses both statistical goodness-of-fit and number of estimated parameters.

Tests of Measurement Models

To test the measurement models the items in each instrument were first distributed into three item parcels. This increases the reliability of each observed indicator and decreases the number of parameters to be estimated. The parcels were created by evenly distributing any reverse-scored items among the parcels. The remaining items were also randomly distributed among the parcels. Allocating items to parcels based on their factor loadings was not feasible because the relative sizes of the loadings for particular items frequently differed across cultures. Table 1 shows the fit indices for each of the measurement models. In the measurement models for the self-construal and Big Five measures, the latent constructs in the respective measures were allowed to covary and were not constrained to equality across cultures.

The fits of the freely estimated (unconstrained) and constrained models were good for the life satisfaction, relationship harmony, self-esteem, independent/relational/collective, and independent/interdependent measurement models (see Table 1). (The RMSEA indices for the models that have zero degrees of freedom [i.e., saturated models] are misleading because they are expressed per degrees of freedom.) Although the χ^2 difference tests comparing the constrained and unconstrained models for the life satisfaction and independent/interdependent constructs were statistically significant, the decrements in the fit indices (e.g., CFI) were minimal. The fit of the initial unconstrained measurement model for the Big Five personality measure was fair. Three substantively meaningful parameters were added after consulting the AMOS modification indices and the simple correlations among the observed indicators (i.e., item parcels). An Extraversion indicator/parcel was allowed to load on Big Five Agreeableness and a Neuroticism indicator/parcel was allowed to load (inversely) on Extraversion. In addition, the residual errors (uniquenesses) for two Openness to Experience indicators were allowed to

covary. The fit indices for this respecified model were acceptable. When this respecified model was constrained across cultures, there was a significant loss of fit, but the fit of the model can be described as fair. Given the greater complexity (i.e., number of parameters) in the Big Five model, some loss of fit is to be expected. Overall, the cross-cultural equivalence of the measurement models was judged to be acceptable and the constrained measurement models were used in subsequent tests of the structural models. Table 2 shows the fit indices for all of the structural models tested in the study.

Tests of the Cultural Models

Independent/relational/collective self-construal model. I tested two cultural models, one in which relational and collective self-construals were differentiated and one in which they were not. Both models were based on Kwan et al.'s model and subsequent findings by Benet-Martinez & Karakitapoglu-Aygun (2003). In the first model, which I refer to as the independent/relational/collective self-construal model, it was anticipated that both relational and collective self-construal would predict life satisfaction through the mediating variable of relationship harmony, while independent self-construal would predict life satisfaction through the mediating variable of self-esteem (see Figure 1). The fit of the initial freely estimated (unconstrained) model was good (see Model A in Table 2), but the path coefficient from collective self-construal to relationship harmony was not statistically significant. This path was therefore removed from the model, but collective self-construal was retained and allowed to covary with the other self-construal constructs in the model. The modification indices also indicated the need for an additional path from relationship harmony to self-esteem. This path makes conceptual sense—harmony in valued relationships could influence self-esteem—and has been found previously in similar models (Kang et al., 2003). This unconstrained respecified

model yielded a good fit (see Model B in Table 2). In addition, constraining this respecified model across cultures did not result in a significant loss of fit ($\Delta \chi^2 [25] = 35.30, p > .05$), supporting the cross-cultural equivalence of the model (see Model C in Table 2). In particular, freely estimating the path from relationship harmony to self-esteem did not result in a significant improvement in model fit ($\Delta \chi^2 [10] = 11.68, p > .05$), contrary to Kang et al.'s (2003) findings. This is an interesting finding because one might expect that relationship harmony would have a bigger impact on self-esteem in collectivistic cultures than in individualistic cultures.

Next the paths from relationship harmony and self-esteem to life satisfaction were released individually to test for the hypothesized differences between individualistic and collectivistic cultures in the strengths of these paths. Releasing the relationship harmony path ($\Delta \chi^2 [5] = 8.19, p > .05$) and the self-esteem path ($\Delta \chi^2 [5] = 4.93, p > .05$) did not result in a significant improvement in model fit. That is, contrary to prediction, the strength of the direct effects relating self-esteem and relationship harmony to life satisfaction did not differ for the individualistic and collectivistic cultures. Inspection of the freely estimated path coefficients for these two paths also failed to show a pattern supporting the hypothesized differences between individualistic and collectivistic cultures.

Finally, I introduced direct paths from the three self-construal constructs to life satisfaction to determine whether these predictive relationships are fully mediated by self-esteem and relationship harmony. Inserting direct paths from relational self-construal (range of β 's = .02-.23; $\Delta \chi^2 [11] = 27.58, p < .01$) and collective self-construal (range of β 's = .01-.23; $\Delta \chi^2 [11] = 21.46, p < .05$) improved the fit of the model somewhat, indicating that the relationships between these two self-construal constructs and life satisfaction were not fully mediated by relationship harmony. In contrast, adding a direct freely estimated path from independent self-construal to

life satisfaction did not result in a significant improvement in model fit (range of β 's=-.08-.10 ; $\Delta\chi^2[11]=7.77$, $p>.05$). This indicated that the effect of independent self-construal on life satisfaction was fully mediated by self-esteem. For simplicity, and because the fit of the constrained respecified model was already acceptable without these additional direct paths, I did not include them in the final model. Figure 1 shows the final constrained respecified model, including the range of the standardized regression coefficients for each structural path. Appendix A shows the freely estimated correlations between the three self-construal constructs in each culture, which are not shown in Figure 1 for clarity of presentation. One noteworthy pattern in Appendix A was the generally higher positive correlations among the self-construal constructs in the Philippines and Malaysia, as compared to the other cultures.

Independent/interdependent self-construal model. I referred to the second cultural model as the independent/interdependent self-construal model. This model is the same as the above cultural model except that relational and collective self-construal were combined into a single interdependent self-construal construct by averaging the ratings of the items in both scales. This model was tested to determine whether or not it is advantageous to separate relational and collective self-construal or to combine them, as implicitly done in previous research relating self-construals to life satisfaction. The fit of the initial unconstrained model was good (see Model D in Table 2) and none of the path coefficients were non-significant.

As in the first cultural model, an additional path from relationship harmony to self-esteem resulted in a significant improvement in the model ($\Delta\chi^2[1]=18.26$, $p<.01$) and freely estimating this path across cultures did not significantly improve the model ($\Delta\chi^2[25]=35.47$, $p>.05$). This unconstrained respecified model also fit the data well (see Model E in Table 2). A fully constrained respecified model with this additional path had a good fit (see Model F in Table 2)

and was not significantly worse than the respecified freely estimated model ($\Delta\chi^2[25]=35.47$, $p>.05$).

As with the first cultural model, releasing the paths from self-esteem to life satisfaction ($\Delta\chi^2[5]=4.93$, $p>.05$), and from relationship harmony to life satisfaction ($\Delta\chi^2[5]=8.04$, $p>.05$) did not improve model fit. Again, direct paths from each self-construal construct to life satisfaction were tested individually and only the direct path from interdependent self-construal to life satisfaction resulted in a small but significant improvement in the fit of the model (range of β 's = .01-.22; $\Delta\chi^2[6]=21.11$, $p<.01$). This modest size path was not included in the final model. Figure 2 shows the final (respecified) constrained model, including the range of the standardized regression coefficients for each structural path. Appendix A shows the freely estimated correlations between the two self-construal constructs in each culture, which for simplicity are not shown in Figure 2.

Overall, both cultural models fit the data well based on conventional fit criteria, even after constraining the path coefficients to be equal across cultures. In addition, the significant path coefficients made substantive sense. The fit indices, including the AIC, favored the simpler independent/interdependent self construal model over the independent/relational/collective model, presumably in large part because fewer parameters (and thus opportunities for misfit) were estimated. However, a strong argument can be made in favor of the independent/relational/collective self-construal model, because it revealed that only relational self-construal, and not collective self-construal, predicted relationship harmony. Finally, the expected cross-cultural difference in prediction of life satisfaction by individualistic (i.e., self-esteem) versus collectivistic (i.e., relationship harmony) variables was not supported, contrary to

some previous studies (Kang et al., 2003; Kwan et al., 1997). Indeed, in all six cultures self-esteem was a stronger predictor of life satisfaction than was relationship harmony.

Tests of the Personality Model

Like the cultural models, the hypothesized personality model was based on Kwan et al.'s (1997) model and a subsequent replication (Benet-Martinez & Karakitapoglu-Aygun, 2003). Big Five Neuroticism, Extraversion, Openness, and Conscientiousness were expected to predict life satisfaction through the mediating variable of self-esteem, and Extraversion and Agreeableness were expected to predict life satisfaction through the mediating variable of relationship harmony (see Figure 3). The initial freely estimated (unconstrained) model exhibited a fair fit to the data (see Model G in Table 2). The path from Conscientiousness to self-esteem was not statistically significant, and was thus eliminated, but Conscientiousness was retained in the model and allowed to covary with the other Big Five traits (see Model H in Table 2). This slightly respecified model was then constrained across cultures. The fit of this constrained model was fair, although significantly worse than the freely estimated model ($\Delta \chi^2[35]=60.556, p<.01$).

As in the cultural models, the personality model failed to show a significant improvement when the path coefficients relating self-esteem to life satisfaction ($\Delta \chi^2[5]=6.04, p>.05$) and relationship harmony to life satisfaction ($\Delta \chi^2[5]=7.27, p>.05$) were freely estimated across cultures. However, as suggested by the MI values, releasing the constraint on the Extraversion to self-esteem path resulted in a significant improvement in model fit ($\Delta \chi^2[5]=18.95, p<.01$), as did releasing the Openness to self-esteem path ($\Delta \chi^2[5]=12.84, p<.05$). This final partially constrained model had acceptable fit (see Model I in Table 2) and was not significantly different than the model with all structural coefficients freely estimated across cultures (see Model H in Table 2) ($\Delta \chi^2[25]= 28.77, p>.05$).

Finally, I tested for direct freely estimated paths between each of the Big Five traits and life satisfaction to determine whether the ability of the Big Five traits to predict life satisfaction was fully mediated by self-esteem and relationship harmony. For Neuroticism (range of β 's = -.28-.08; $\Delta\chi^2[6]= 20.42, p<.01$), Agreeableness (range of β 's= -.04-.28; $\Delta\chi^2[6]= 27.37, p<.01$), and Conscientiousness (range of β 's=.09-.18; $\Delta\chi^2[6]= 14.77, p<.05$), the direct paths to life satisfaction were statistically significant and each improved model fit. However, as with the culture models, these direct paths were not included in the final model for the purposes of parsimony; easier comparison with models in previous studies, which did not include such paths (Benet-Martinez & Karakitapoglu-Aygun, 2003; Kwan et al., 1997); and because the fit of the final partially constrained model was fairly good without these additional paths (see Model I in Table 2). Nonetheless, the presence of these direct paths does indicate that the impact of Neuroticism on life satisfaction was not fully mediated by self-esteem, nor was the impact of Agreeableness on life satisfaction fully mediated by relationship harmony.

The final personality model is shown in Figure 3. For those paths that were constrained to be equal across cultures, only the ranges of the standardized path coefficients are shown and all paths were significant. For those paths that were freely estimated, the path coefficients in each of the six cultures are shown. As seen in the figure, the hypothesized personality model was largely supported. In particular, Neuroticism and Openness to Experience (in four of the six cultures) impacted life satisfaction via the mediating variable of self-esteem, and Agreeableness impacted life satisfaction via the mediating variable of relationship harmony. Contrary to expectations, Conscientiousness did not impact life satisfaction via relationship harmony and Extraversion only predicted self-esteem in one of the six cultures (i.e., Australia). The Extraversion finding is fairly consistent with previous studies in which Extraversion has been a modest or non-

significant predictor (Benet-Martinez & Karakitapoglu-Aygun, 2003; Kwan et al., 1997). As in the cultural models, self-esteem and relationship harmony did not differentially predict life satisfaction across cultures and self-esteem was again a better predictor of life satisfaction than relationship harmony in all six cultures. Also, while the paths relating Extraversion and Openness to self-esteem showed some variation across cultures, the pattern of differences did not correspond to the individualism-collectivism distinction.

Comparison of Culture and Personality Models

As noted earlier, one can draw on several criteria in judging whether the cultural or personality models are superior. These include (a) the model fit indices, (b) the significance, size, and substantive meaningfulness of the path coefficients; (c) the parsimony or simplicity of the models (e.g., number of parameters); and (d) the proportion of variance in the endogenous variables accounted for by the models. The cultural models involve fewer parameters and are thus more parsimonious than the personality model. This probably largely accounts for the somewhat better fit indices in the cultural models. The path coefficients in the cultural and personality models are similar in size and substantively meaningful in both cases. In terms of parsimony, the cultural models did require an additional path between relationship harmony and self-esteem. This path makes substantive sense, but the personality model was able to account for this covariation without an additional path. In the personality model, two of the paths from Big-Five traits to self-esteem and relationship harmony could not be constrained to equality across cultures, indicating that the personality model involves more culture-specific elements than the cultural models. All three models accounted for a comparable proportion of variance in life satisfaction (see squared multiple correlations in Table 3), but the personality model predicted the mediating variables of self-esteem and relationship harmony much better than did the cultural

models. Indeed, about twice as much variance in self-esteem, and three times as much variance in relationship harmony, was explained by the personality model, as compared to the two cultural models. All of the models predicted relationship harmony substantially less well than self-esteem, consistent with previous findings (Benet-Martinez & Karakitapoglu-Aygun, 2003; Kang et al., 2003; Kwan et al., 1997, Steel et al., 2008). Overall, the personality model is superior in terms of variance accounted for, but may involve more culture-specific elements (i.e., reduced universality). Of the two cultural models, the independent/relational/collective self-construal model is probably superior to the independent/interdependent model because it clarifies which aspect of interdependence (i.e., relational versus collective self-construal) is most important in the prediction of life satisfaction via the mediating variables.

Integrated Models

To specify the integrated culture→personality and personality→culture models (see Figures 4 and 5) all significant paths from the separate personality and independent/relational/collective self-construal models were retained, and variables that were allowed to covary in the separate models were allowed to covary where possible in the combined models. I retained collective self-construal in the models to maintain a stronger link with the existing literature, as it is more comparable to the interdependent self-construal construct tested in previous studies (Kwan et al., 1997; Benet-Martinez Karakitapoglu-Aygun, 2003). I also retained the originally hypothesized path from collective self-construal to relationship harmony, although it had not been significant in the cultural model above. In fact, unlike in the separate cultural model, the path between collective self-construal and relationship harmony was significant in the integrated models. In order to determine which paths to include in predicting the Big Five from self-construals, and vice versa, I relied on links identified previously in the

literature (Church & Ortiz, 2005; Kwan et al., 1997; Markus & Kitayama, 1991), as well as the correlations among the observed variables in the present data (see Appendix B).

Culture → personality model. In the culture → personality model (see Figure 4), the personality traits cannot directly covary with each other because they are endogenous variables. However some Big Five traits, in particular, Neuroticism, Conscientiousness, and Agreeableness (Alpha group) and Extroversion and Openness (Beta group) are known to covary with the other traits in their group. These two groups define higher-order dimensions that are sometimes referred to as the Big Two (Blackburn, Renwick, Donnelly, & Logan, 2004). These sources of covariation were represented in the model by allowing the residuals for the associated traits to covary.

The freely estimated culture → personality model yielded good values for the χ^2/df and RMSEA indices, but only fair fits as evaluated by the TLI and CFI indices (see Model J in Table 2). When the model was constrained across cultures there was a significant loss of fit, although the changes in fit indices were small ($\Delta \chi^2[80]=163.13$, $p<.01$, $\Delta \chi^2/df =.01$, $\Delta TLI=.00$, $\Delta CFI=.01$, $\Delta RMSEA=.00$). When the paths from Extraversion and Openness to self-esteem were released as in the separate personality model, there was a significant improvement in fit, although the changes in the fit indices were again negligible ($\Delta \chi^2[10]=20.78$, $p<.05$, $\Delta \chi^2/df =.00$, $\Delta TLI=.00$, $\Delta CFI=.00$, $\Delta RMSEA=.00$). For consistency with the separate personality models, these freely estimated paths were retained in the final partially constrained model (see Model K in Table 2).

The path from relationship harmony to self-esteem that was included in the separate cultural models was tested, but was not needed to improve model fit ($\Delta \chi^2[6]=7.58$, $p>.05$). Also, the hypothesized cross-cultural differences in the paths from relationship harmony (Δ

$\chi^2[5]=7.97, p>.05$) and self-esteem ($\Delta \chi^2[5]=5.93, p>.05$) to life satisfaction were again not supported. The direct paths to life satisfaction from Agreeableness, Neuroticism, Conscientiousness, relational self-construal, and collective self-construal that were identified in the separate culture and personality models were again tested. Each path resulted in small but significant improvements in model fit, again indicating that the respective effects were not fully mediated by relationship harmony or self-esteem. The largest difference was associated with the direct path from Agreeableness to life satisfaction. While it resulted in a significant change in the goodness-of-fit ($\Delta \chi^2[6]= 33.16, p<.01$), the change in the χ^2/df was only .01 and the differences in the CFI, TLI, and RMSEA indices were all .00. As in the separate personality and cultural models, these direct paths were left out of the integrated models, but it is acknowledged that the effects are not fully mediated. Although the final partially constrained model (see Figure 4 and Model K in Table 2) had a significantly worse fit than a model with freely estimated structural parameters (Model J in Table 2) ($\Delta \chi^2[6]= 33.16, p<.01$), the final model was not further modified, as its fit indices were similar in fit to those of the freely estimated model.

The integrated culture→personality model revealed that self-construals predicted each of the Big Five traits a modest to moderate extent. However, only four of the Big Five traits (i.e., Neuroticism, Extraversion, Openness, and Agreeableness, but not Conscientiousness) predicted self-esteem and relationship harmony. The predictive paths from the self-construal constructs to self-esteem and relationship harmony were largely, but not entirely, mediated by the Big Five as the direct paths from independent self-construal to self-esteem, and from relational and collective self-construals to relationship harmony, remained significant. Overall, while the various mediation effects incorporated in the model were largely supported, they did not involve full mediation of the various predictive relationships.

Personality → *culture model*. Although Singelis (1994) argued that independent and interdependent self-construals are relatively uncorrelated, this was not the case for some cultures in our test of the simple cultural models. Therefore, to account for this covariation in the *personality* → *culture model*, I allowed the residuals for the endogenous self-construal constructs to covary. The freely estimated *personality* → *culture model* (see Figure 5) yielded good values for the χ^2/df and RMSEA indices, but only fair values for the TLI and CFI indices (see Model L in Table 2). There was a significant loss in goodness-of-fit when the model was constrained, but the change in fit indices was negligible ($\Delta \chi^2[75]=127.99, p<.01, \Delta \chi^2/df = .00, \Delta TLI= .00, \Delta CFI= .00, \Delta RMSEA= .00$). When the paths from Extraversion and Openness to self-esteem were released there was a significant increase in fit accompanied by a similarly negligible improvement in fit indices ($\Delta \chi^2[10]= 25.91, p<.01, \Delta \chi^2/df = .00, \Delta TLI=.00, \Delta CFI=.00, \Delta RMSEA=.00$). Nonetheless, for consistency with the separate personality model, these two paths were left released in the final partially constrained model (see Model M in Table 2).

There was again no significant improvement in model fit with the addition of the path from relationship harmony to self-esteem ($\Delta \chi^2[6]=6.78, p>.05$), or the release of the paths from relationship harmony to life satisfaction ($\Delta \chi^2[5]=7.86, p>.05$), or from self-esteem to life satisfaction ($\Delta \chi^2[5]=5.97, p>.05$). The direct paths to life satisfaction from Agreeableness, Neuroticism, Conscientiousness, relational self-construal, and collective self-construal were again tested and all were found to improve model fit significantly, but negligibly. The path that made the biggest difference ($\Delta \chi^2=29.00, \Delta df=6, p>.05$) related Agreeableness to life satisfaction but the change in the χ^2/df was only .01 and the differences in the CFI, TLI, and RMSEA indices were all .00. Therefore, as in previous models, these direct paths were not added to the final partially constrained model. The path from Neuroticism to independent self-

construal was significant in the Philippines and therefore retained in the final model (Model M in Table 2) However, the path is not shown in Figure 5 because it was not significant when constrained to be equal across cultures. The fair fit of the final partially constrained model likely reflects, in part the complexity of the integrated models.

The personality→culture model provides a viable representation of the interplay of the Big Five traits and self-construals in predicting life satisfaction with self-esteem and relationship harmony as additional mediating variables. In the personality→culture model various Big Five traits predict particular self-construals and, in turn, the self-construals predict life satisfaction through the mediating variables of relationship harmony and self-esteem. The relationships between the Big Five traits and self-esteem and relationship harmony were largely, but not entirely, mediated by the self-construals. Overall, while the various predictive relationships were not fully mediated, the hypothesized mediation effects were largely supported.

Comparison of integrated models. No *a priori* prediction was made regarding the superiority of the culture-first and personality-first integrated models. The SEM analysis supported the two models about equally. While some fit indices for the two integrated models were acceptable, the TLI and CFI indices were fair at best, probably in part because of the complexity of the models. Model fit could have been improved by using the observed rather than latent variables to test the models as has been done in previous studies (Benet-Martinez & Karakitapoglu-Aygun, 2003). However, I chose to include latent variables, in part to maintain comparability with the separate personality and cultural models, and also to control for measurement error in the tests of the models. The two integrated models are very similar in parsimony (i.e., number of parameters), and both explain similar amounts of variance in life satisfaction, relationship harmony, and self-esteem (see Table 3). It is noteworthy that the

separate personality model, but not the separate cultural models, predicted these endogenous variables as well as the integrated models.

Taking into account the various criteria of model quality (i.e., fit indices, parsimony, variance explained) both integrated models seem equally viable. Thus, the comparison of the two models does not enable a definitive choice of either model over the other, nor definitive support for Five Factor Theory over cultural perspectives.

Discussion

The overarching goal of this study was to examine how personality traits and culture-related variables (i.e., self-construals), both separately and in combination, influence life satisfaction in diverse cultures. The hypothesized personality and cultural models, with minimal respecification, were supported by the SEM analyses. Personality and self-construals were found to influence life satisfaction through the mediating variables of self-esteem and relationship harmony, as hypothesized, with the exceptions of collective self-construal, which did not predict relationship harmony, and Big Five Conscientiousness, which did not predict self-esteem. Aside from these exceptions, the pathways were consistent with previous studies (Benet-Martinez & Karakitapoglu-Aygun, 2003; Kwan et al. 1997). These separate models were also integrated into two competing models that demonstrated the interplay of the cultural and personality variables in predicting life satisfaction. Both integrated models had fair to acceptable fit indices. While the separate personality and culture models are more parsimonious and have better fit indices than the integrated models, only the integrate models revealed the interaction of the personality and culture-related variables. Thus, the two integrated models appear to give the most complete picture, at a cost in model fit and parsimony. Although all of the models, both simple and integrated, explained a similar amount of the variance in life satisfaction, the three models that

included the Big Five (i.e., all but the separate cultural models) did a better job of accounting for variability in the mediating variables of self-esteem and relationship harmony. Thus the separate cultural models appear to be the weakest overall.

One specific hypothesis involving the mediating variables of self-esteem and relationship harmony was tested. It was expected that self-esteem would be a better predictor of life satisfaction in individualistic cultures than in collectivistic ones, whereas relationship harmony would be a better predictor of life satisfaction in collectivistic cultures than in individualistic ones. However, in all of the models, when the paths from self-esteem and relationship harmony to life satisfaction were released (i.e., freely estimated in each culture) there was no significant improvement in model fit. This result was unexpected because several other studies have found cross-cultural differences in the strength of these relationships (Diener & Diener, 1995; Kang et al., 2003; Kwan et al., 1997; Oishi, 2000). The one other study that failed to find this cultural difference is easier to explain because it used samples from the same country (i.e., Asian-Americans versus Euro-Americans) (Benet-Martinez & Karakitapoglu-Aygun, 2003). A possible explanation for this cross-cultural invariance in the present study might be the Westernizing effect of attending university, although it should be noted that previous studies have also sampled university students (Benet-Martinez & Karakitapoglu-Aygun, 2003; Kang et al., 2003; Kwan et al., 1997). Another possible explanation is that my sample included a variety of individualistic and collectivistic cultures, whereas previous studies have primarily compared East Asian samples with American samples. Thus, the findings of previous studies may not generalize to other individualistic and collectivistic cultures. On the other hand, similar to past research, self-esteem was a stronger predictor of life satisfaction in every model in every culture (Benet-Martinez & Karakitapoglu-Aygun, 2003; Kang et al., 2003; Kwan et al., 1997). This

finding may provide indirect support for Gaertner, Sedikides, Vevea, and Iuzzini's (2002) individual-self-primary hypothesis, which proposes that the individual or personal self is motivationally primary over the collective self.

In the simple cultural models, an additional path was specified between relationship harmony and self-esteem. This path makes conceptual sense, as valuing and achieving harmonious relationships would likely increase self-esteem. Furthermore, it would seem reasonable that in cultures where harmonious relationships are valued more (i.e., collectivist cultures), relationship harmony would be more strongly related to self-esteem, and in fact this pattern was found by Kang et al. (2003). However in the present study, no decrease in model fit was found when this path was constrained to be equal across cultures. This indicates that relationship harmony is also important for self-esteem in individualistic cultures, and that cultural differences in the strength of the relationship may not be robust or replicable. It should also be noted that this path was no longer needed when personality traits were included in the model.

Another important aim of the current study was to determine whether it would be beneficial to conceptualize interdependent self-construal as two separate variables (collective self-construal, relational self-construal), as recommended by some researchers (Cross et al., 2000; Kashima et al., 1995). Importantly, collective self-construal, as compared to relational self-construal, was a non-significant (in the separate model) or relatively weak predictor of relationship harmony. This supports the distinction between collective and relational self-construal, and highlights the value of treating them separately. It also suggests that the ability of interdependent self-construal to predict or correlate with relationship harmony in previous studies (Benet-Martinez & Karakitapoglu-Aygun, 2003; Kwan et al., 1997; Oishi, 2000) may

have been largely due to the relational rather than collective aspects of interdependent self-construal. I recommend that researchers incorporate this distinction in future studies.

A primary goal of this study was to create and compare two competing integrated culture and personality models. Greater support of the culture→personality model would have favored a phenotypic view of the Big Five, with personality as an adaption rooted in cultural variables (Saucier & Goldberg, 1996). In contrast, support for the personality→culture model would be consistent with the FFT view of personality traits as basic tendencies that are not strongly influenced by culture (McCrae & Costa, 1996). As neither model was clearly supported more than the other, my findings did not favor either theoretical perspective over the other. They did, however, demonstrate that personality and culture work jointly to predict relationship harmony, self-esteem, and life satisfaction. This finding has important applied implications. For example, if you are working with someone in a counseling setting who is having problems with relationship harmony, it will be important to consider the value they place on close relationships (i.e., relational self-construal), but also their personality traits, especially their level of Big Five Agreeableness. My findings are only partially consistent with those of Benet-Martinez and Karakitapoglu-Aygun (2003). On the other hand, the results of the present study supported Benet-Martinez and Karakitapoglu-Aygun's (2003) finding that personality traits and self-construals predict life satisfaction through the mediating variables of relationship harmony and self-esteem. However, unlike in the present study, Benet-Martinez and Karakitapoglu-Aygun concluded that their culture→personality model was superior to their personality→culture model. These authors used a narrower range of cultures (Asian Americans and Euro Americans) and based their conclusions solely on goodness-of-fit indices. In the present study, both the fit

indices and the variance explained by the two models were similar, indicating that neither model was clearly superior.

In summary, while this study demonstrated that personality and culture can be conceptualized together in the prediction of life satisfaction, more work is needed to better understand exactly how they work together. There is some question whether definitive directionality or universality can be achieved with these integrated models and researchers may need to explore cultural factors that go beyond the individualism/collectivism distinction. It seems clear that personality and culture jointly impact people's satisfaction in their daily lives across cultures, but it remains to be seen what additional cultural similarities and differences might affect these processes.

Limitations and Future Research Needs

As with most studies of life satisfaction, the present study utilized university populations, which may not be representative of the populations as a whole. This could be especially so in collectivist countries, where the university setting may be particularly subject to Westernized influences. Alternatively, more individualistic students may self-select for university-level education. This could account, at least in part, for not finding the expected cultural differences in the relative strength of self-esteem and relationship harmony in predicting life satisfaction. As noted previously, however, other similar studies (Kwan et al., 1997; Kang et al., 2003) did find these cultural differences in university samples. Not finding this cross-cultural difference draws attention to the fact that this and previous studies focused only on individualism and collectivism. There are other cultural dimensions that were not explored in this study. Several researchers have started to criticize the individualism-collectivism construct as being too broad

and have suggested the need to examine additional and more refined cultural distinctions (Church, 2010; Kitayama, 2004).

Another limitation of this study was the reliance on self-report data which may be influenced by different response styles across cultures. Also, the data was cross-sectional rather than longitudinal, inhibiting conclusions about direction of effects. Finally, gender was not examined in this study, but may be particularly pertinent as some literature indicates that relationships and relationship harmony are more important than self-esteem in predicting life satisfaction in females as compared to males, a pattern that parallels previously supported cultural differences (Ma & Huebner, 2008; Reid, 2004).

Conclusion

The findings revealed clear interplay between the Big Five traits and self-construals, and the mediating effects of relationship harmony and self-esteem, in the prediction of life satisfaction. In judging which separate model was better, the separate cultural model contained fewer parameters and exhibited somewhat better goodness-of-fit indices, while the personality model explained a greater proportion of the variance in the endogenous variables (relationship harmony, self-esteem, life satisfaction). When personality and cultural variables were integrated into the same models, neither the personality-first nor the culture-first model was substantially better than the other, and therefore differential support for a phenotypic view of the Big Five versus Five Factor Theory was not definitively established. In general, the SEM analyses supported greater cross-cultural equivalence than differences in model structure, indicating that the predictive value of the variables was similar across cultures. Furthermore, those cultural differences that were identified were not explained by the individualism/collectivism distinction, highlighting the need to explore additional cultural factors. Overall, the results point to the

importance of considering the interaction of personality and culture-related variables as determinants of life satisfaction, as well as the need to further examine the role of additional sociocultural factors in this process.

Appendix A

Correlations Among Latent Constructs

Latent construct	Latent construct	US	Australia	Mexico	Philippines	Japan	Malaysia
Personality							
Agreeableness	↔ Conscientiousness	.48**	.47**	.57	.75**	.52**	.72**
Openness	↔ Conscientiousness	.55**	.32*	.42**	.33**	.55**	.66**
Extraversion	↔ Agreeableness	.14	-.01	.29**	-.06	.41**	.53**
Extraversion	↔ Openness	.51**	.27*	.49**	.32**	.24*	.81**
Openness	↔ Agreeableness	.54**	.40**	.60**	.38**	.46**	.70**
Extraversion	↔ Conscientiousness	.13	.06	-.03	-.18	-.02	.33**
Extraversion	↔ Neuroticism	-.17*	-.12	-.14	-.12	-.16	-.45**
Agreeableness	↔ Neuroticism	-.56**	-.58**	-.46**	-.58**	-.69**	-.62**
Conscientiousness	↔ Neuroticism	-.35**	-.20	-.34*	-.59**	-.23*	-.54**
Openness	↔ Neuroticism	-.39**	-.42**	-.27*	-.24*	-.31*	-.38**
Openness Parcel 3	↔ Openness Parcel 1	.46**	.56**	.29*	.18	.20	.46**
Self-Constraint							
Independent	↔ Collective	.07	.05	.41**	.48**	-.05	.39**
Independent	↔ Relational	.38**	.21*	.35**	.38**	.30*	.43**
Relational	↔ Collective	.62**	.48**	.49**	.52**	.34**	.69**
Independent	↔ Interdependent	.26**	.16	.42**	.48**	.14	.43**

Appendix B

Pearson Correlations Among Study Variables in Each Country

	<i>M^a</i>	<i>SD^b</i>	1	2	3	4	5	6	7	8	9	10	11
United States (<i>N</i> =212)													
1. Extraversion	3.62	.67	–										
2. Openness	3.59	.55	.36**	–									
3. Agreeableness	3.84	.47	.14*	.29**	–								
4. Conscientiousness	3.50	.49	.12	.29**	.31**	–							
5. Neuroticism	2.43	.53	-.22**	-.26**	-.36**	-.24**	–						
6. Relationship Harmony	5.73	.73	.17*	.24**	.17*	.10	-.15*	–					
7. Relational SC ^c	4.52	.71	.19**	.12	.32**	.05	-.09	.09	–				
8. Collective SC	4.17	.51	-.06	-.01	.27**	-.03	.11	.02	.42**	–			
9. Independent SC	4.27	.63	.37**	.38**	.15*	.03	-.30**	.18**	.33**	.00	–		
10. Interdependent SC	4.26	.59	.09	.08	.35**	.03	.00	.07	.86**	.82**	.22**	–	
11. Life Satisfaction	5.34	.89	.28**	.19**	.26**	.25**	-.35**	.26**	.18**	.04	.19**	.14*	–
12. Self Esteem	3.28	.45	.31**	.34**	.13	.22**	-.46**	.21**	.02	-.15*	.32**	-.07	.47**
Australia (<i>N</i> =189)													
1. Extraversion	3.35	.66	–										
2. Openness	3.4	.58	.23**	–									
3. Agreeableness	3.8	.46	.08	.18*	–								
4. Conscientiousness	3.31	.52	.08	.13	.33**	–							
5. Neuroticism	2.57	.56	-.29**	-.33**	-.42**	-.17*	–						
6. Relationship Harmony	5.51	.85	.17*	.06	.19**	.14	-.30**	–					
7. Relational SC	4.5	.70	.20**	.00	.10	.09	.01	.16*	–				
8. Collective SC	3.98	.63	.04	.06	.26**	.02	.02	.02	.38**	–			
9. Independent SC	4.06	.57	.47**	.29**	.04	.30**	-.25**	.10	.14	-.01	–		
10. Interdependent SC	4.25	.56	.15*	.04	.22**	.07	.02	.13	.86**	.79**	.09	–	
11. Life Satisfaction	4.91	1.06	.18*	-.01	.14	.18*	-.35**	.34**	.16*	.02	.17*	.11	–
12. Self Esteem	2.99	.52	.40**	.27**	.15*	.20**	-.51**	.20**	.02	-.14	.43**	-.06	.50**

<i>(continued)</i>	<i>M^a</i>	<i>SD^b</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>	<i>8</i>	<i>9</i>	<i>10</i>	<i>11</i>
Mexico (<i>N</i> =148)													
1. Extraversion	3.2	.63	–										
2. Openness	3.48	.58	.40**	–									
3. Agreeableness	3.95	.50	.28**	.41**	–								
4. Conscientiousness	3.69	.57	.08	.33**	.47**	–							
5. Neuroticism	2.4	.53	-.33**	-.28**	-.34**	-.20*	–						
6. Relationship Harmony	5.71	.82	.25**	.30**	.34**	.15	-.02	–					
7. Relational SC	4.18	.64	.10	.06	.20*	.05	.05	.21*	–				
8. Collective SC	4.31	.50	.08	.24**	.38**	.18*	-.15	.13	.30**	–			
9. Independent SC	4.64	.52	.20*	.38**	.26**	.14	-.12	.21**	.25**	.27**	–		
10. Interdependent SC	4.08	.51	.11	.19*	.35**	.15	-.04	.22**	.83**	.78**	.33**	–	
11. Life Satisfaction	5.28	.92	.31**	.29**	.41**	.25**	-.30**	.28**	.08	.26**	.18*	.21**	–
12. Self Esteem	3.35	.41	.32**	.36**	.29**	.31**	-.29**	.28**	-.07	.09	.22**	.01	.45**
Philippines (<i>N</i> =164)													
1. Extraversion	3.51	.46	–										
2. Openness	3.38	.54	.22**	–									
3. Agreeableness	3.9	.46	.07	.25**	–								
4. Conscientiousness	3.75	.50	-.04	.28**	.63**	–							
5. Neuroticism	2.54	.53	-.22**	-.22**	-.41**	-.42**	–						
6. Relationship Harmony	6.02	.74	.09	.03	.04	.08	-.20*	–					
7. Relational SC	4.44	.43	.21**	.17*	.33**	.10	-.02	.07	–				
8. Collective SC	4.36	.40	.05	.12	.31**	.18*	-.13	-.03	.40**	–			
9. Independent SC	4.25	.47	.12	.32**	.20*	.18*	-.24**	.08	.31**	.36**	–		
10. Interdependent SC	4.41	.37	.15*	.18*	.38**	.17*	-.08	.03	.85**	.83**	.41**	–	
11. Life Satisfaction	5.07	.68	-.02	.04	.28**	.26**	-.16*	.12	.30**	.11	.19*	.25**	–
12. Self Esteem	3.05	.38	.08	.23**	.15	.24**	-.36**	-.01	.21**	.09	.34**	.18*	.34**

(continued)	<i>M^a</i>	<i>SD^b</i>	1	2	3	4	5	6	7	8	9	10	11
Japan (<i>N</i> =127)													
1. Extraversion	2.97	.80	–										
2. Openness	2.83	.61	.20*	–									
3. Agreeableness	3.13	.47	.39**	.24**	–								
4. Conscientiousness	2.98	.61	.03	.27**	.37**	–							
5. Neuroticism	2.8	.59	-.26**	-.24**	-.50**	-.26**	–						
6. Relationship Harmony	5.68	.91	.37**	.04	.25**	.03	-.19*	–					
7. Relational SC	4.21	.60	.29**	.18*	.23*	.01	-.10	.19*	–				
8. Collective SC	3.71	.53	.13	.01	.32**	.10	.00	-.04	.25**	–			
9. Independent SC	3.76	.59	.40**	.24**	.14	.10	-.23*	-.03	.16	-.15	–		
10. Interdependent SC	3.92	.51	.26**	.12	.35**	.08	-.06	.09	.77**	.81**	.00	–	
11. Life Satisfaction	4.62	.94	.36**	.13	.36**	.25**	-.32**	.34**	.25**	.08	.20*	.21*	–
12. Self Esteem	2.57	.46	.31**	.36**	.39**	.28**	-.49**	.15	.15	-.04	.26**	.06	.52**
Malaysia (<i>N</i> =210)													
1. Extraversion	3.45	.55	–										
2. Openness	3.36	.53	.56**	–									
3. Agreeableness	3.77	.51	.51**	.44**	–								
4. Conscientiousness	3.56	.57	.31**	.43**	.56**	–							
5. Neuroticism	2.5	.51	-.41**	-.28**	-.50**	-.41**	–						
6. Relationship Harmony	5.97	.76	.15*	.14*	.25**	.20**	-.20**	–					
7. Relational SC	4.43	.51	.20**	.20**	.21**	.12	-.04	.24**	–				
8. Collective SC	4.32	.39	.07	.13	.14*	.02	.01	.15*	.44**	–			
9. Independent SC	4.18	.50	.44**	.48**	.24**	.32**	-.14	.14*	.29**	.20**	–		
10. Interdependent SC	4.34	.41	.18*	.20**	.22**	.09	-.02	.24**	.88**	.81**	.31**	–	
11. Life Satisfaction	4.73	.75	.19**	.21**	.16*	.35**	-.20**	.26**	.20**	.03	.13	.15*	–
12. Self Esteem	3.06	.44	.33**	.41**	.34**	.42**	-.32**	.20**	.27**	-.01	.35**	.18*	.47**

N-Values: United States, 212; Australia, 189; Mexico, 148; Philippines, 164; Japan, 127; and Malaysia, 210.

* $p < 0.05$. ** $p < 0.01$. ^a*M* = Mean. ^b*SD* = Standard Deviation. ^c*SC* = Self Construal.

References

- Allik, J., & McCrae, R. R. (2004). Toward a geography of personality traits: Patterns of profiles across 36 cultures. *Journal of Cross-Cultural Psychology, 35*, 13–28.
- Arbuckle, J.L. (2007). AMOS 16.0 user's guide. Chicago: AMOS Development Corporation.
- Benet-Martinez, V., & Karakitapoglu-Aygun, Z. (2003). The interplay of cultural syndromes and personality in predicting life satisfaction. *Journal of Cross-Cultural Psychology, 34*, 38-60.
- Blackburn, R., Renwick, S. J. D., Donnelly, J. P., & Logan, C. (2004). Big Five or Big Two? Superordinate factors in the NEO Five Factor Inventory and the Antisocial Personality Questionnaire. *Personality and Individual Difference, 37*, 957-970.
- Boski, P. (2004). Culture and subjective well-being. [Review of the book *Culture and subjective well-being*]. *Journal of Cross-Cultural Psychology, 35*, 242-246.
- Byrne, B. M. (2001). *Structural equations modeling with AMOS: Basic concepts, applications, and programming*. Mahwah, NJ:Lawrence Erlbaum Associates.
- Chen, L. S., Tu, H. H., & Wang, E. S. (2007). Personality traits and life satisfaction among online game players. *Cyber Psychology & Behavior, 11*, 145-149.
- Chen, S. X., Chan, W., Bond, M. H., & Stewart, S. M. (2006). The effects of self-efficacy and relationship harmony on depression across cultures; applying level-oriented and structure-oriented analysis. *Journal of Cross-Cultural Psychology, 37*, 643-658.
- Church, A. T. (2010). Measurement issues in cross-cultural research. In G. Walford & E. Tucker (Eds.), *Handbook of measurement* (pp. 151-177). Thousand Oaks, CA: Sage.
- Church, A. T., Anderson-Harumi, C. A., del Prado, A. M., Curtis, G. J., Tanaka-Matsumi, J., Valdez Medina, J. L., et al. (2008). Culture, cross-role consistency, and adjustment:

- Testing trait and cultural psychology perspectives. *Journal of Personality and Social Psychology*, 95, 739–755.
- Church, A. T., & Burke, P. J. (1994) Exploratory and confirmatory tests of the Big Five and Tellegen's three and four-dimensional models. *Journal of Personality and Social Psychology*, 66, 93-114.
- Church, A.T., & Ortiz, F.A. (2005). Culture and Personality. In V.J. Derlega, B.A., Winstead, & W.H. Jones (Eds.). *Personality: Contemporary theory and research* (2nd ed.) (pp. 420-456). Belmont, CA: Wadsworth.
- Cross, S. E., Bacon, P. L., & Morris, M. L. (2000). The relational-interdependent self-construal and relationships. *Journal of Personality and Social Psychology*, 78, 791-808.
- Diener, E., & Diener, M. (1995). Cross-cultural correlates of life satisfaction and self-esteem. *Journal of Personality and Social Psychology*, 68, 653-663.
- Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The satisfaction with life scale. *Journal of Personality Assessment*, 49, 71–75.
- Diener, E., & Suh, E. M. (2000). Measuring subjective well-being to compare the quality of life of cultures. In E. Diener & E.M. Suh, (Eds.), *Culture and subjective well-being* (pp. 3-12). Cambridge, MA: Bradford.
- Endo, Y., Heine, S. J., & Lehman, D. R. (2000). Culture and positive illusions in close relationships: How my relationships are better than yours. *Personality and Social Psychology Bulletin*, 26, 1571-1586.
- Gaertner, L., Sedikides, C., Vevea, J. L., & Iuzzini, J. (2002). The “I,” the “We,” and the “When”: a meta-analysis of motivational primacy in self-definition. *Journal of Personality and Social Psychology*, 83, 574-591.

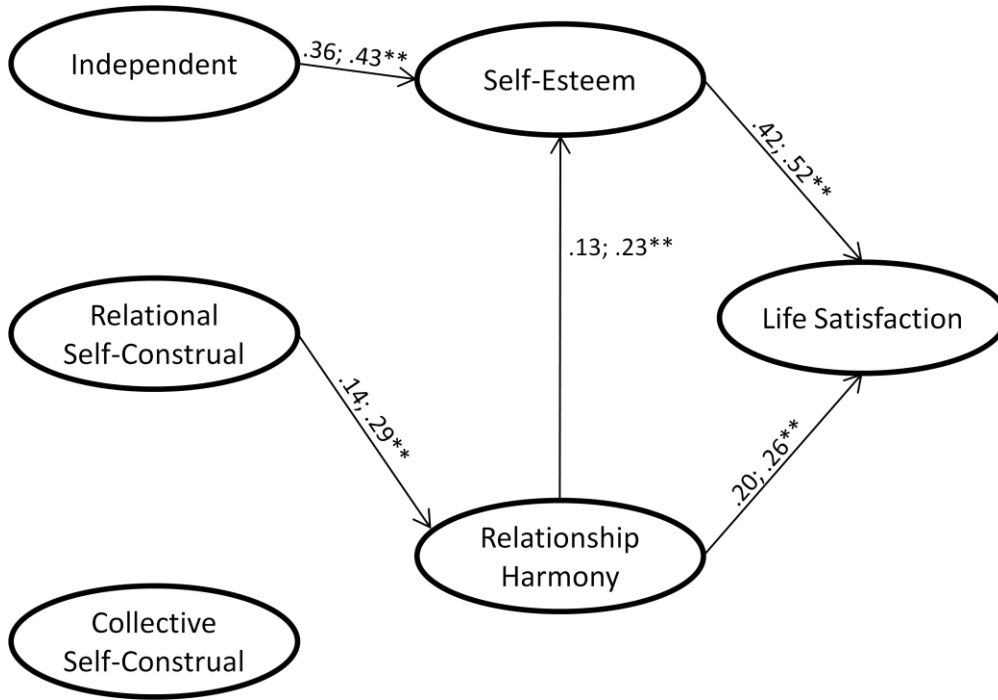
- Goldberg, L. R. (1992). The development of markers for the Big-Five factor structure. *Psychological Assessment, 4*, 26–42.
- Hofstede, C. (1980). *Culture's consequences: International differences in work-related values*. Beverly Hills, CA: Sage.
- Kagitcibasi, C. (1997). Whither multiculturalism? *Applied Psychology: An International Review, 46*, 44-49.
- Kang, S., Shaver, P. R., Sue, S., Min, K. & Jing, H. (2007). Culture-specific patterns in the prediction of life satisfaction: roles of emotion, relationship quality, and self-esteem. *Personality and Social Psychology Bulletin, 29*, 1596-1608.
- Kashima, Y., Yamaguchi, S., Kim, U., Choi, S., Gelfand, M. J., & Yuki, M., (1995). Culture, gender, and self: A perspective from individualism-collectivism research. *Journal of Personality and Social Psychology, 29*, 925-937.
- Kitayama, S. (2002). Culture and basic psychological processes- Toward a system view of culture: Comment on Oyserman et al. (2002). *Psychological Bulletin, 128*:89-96.
- Kwan, V. S. Y., Bond, M. H., & Singeles, T. M. (1997). Pancultural explanations for life satisfaction: Adding relationship harmony to self esteem. *Journal of Personality and Social Psychology, 73* 1038-1051.
- Lyubomirsky, S., Sheldon, K. M., & Schkade, D. (2005). Pursuing happiness: The architecture of sustainable change. *Review of General Psychology, 9*, 111-131.
- Ma, C. Q. & Huebner, E. S. (2008). Attachment relationships and adolescents' life satisfaction: Some relationships matter more to girls than boys, *Psychology in the Schools, 42*, 170-190.

- Markus, H. R., & Kitayama, S. (1998). The cultural psychology of personality. *Journal of Cross-Cultural Psychology, 29*, 63-87.
- Markus, H. R. & Kitayama, S. (1991). Culture and self: Implications for cognition, emotion, and motivation. *Psychological Review, 98*, 224-253.
- McCrae, R. R., & Costa, P. T., Jr. (1991) Adding *Leibe und Arbeit*: The full five-factor model and well-being. *Personality and Social Psychology Bulletin, 17*, 227-232.
- McCrae, R. R., & Costa, P. T. Jr. (1996). Toward a new generation of personality theories: theoretical contexts for the five-factor model. In J.S. Wiggins (Ed.), *The five-factor model of personality: Theoretical perspectives* (pp. 51-87). New York: Guilford.
- Nes, R. B. Roysamb, E., Tambs, K., Harris, J.R., & Reichborn-Kjennerud, T. (2006). Subjective well-being: genetic and environmental contributions to stability and change. *Psychological Medicine, 36*, 1033-1042.
- Oishi, S. (2000). Goals as cornerstones of subjective well-being: Linking individuals and cultures. In E. Diener & E. M. Suh (Eds.), *Culture and subjective well-being* (pp. 87-112). Cambridge, MA: Bradford.
- Oishi, S., Deiner, E., Lucas, R. E., & Suh, E. M. (1999). Cross-cultural variations in predictors of life satisfaction: Perspectives from needs and values. *Personality and Social Psychology Bulletin, 25*, 980-990.
- Ratzlaff, C., Matsumoto, D., Kouznetsova, N., Raroque, J., & Ray, R. (2000). Individual psychological culture and subjective well-being. In E. Diener & E. M. Suh (Eds.), *Culture and subjective well-being* (pp. 37-60). Cambridge, MA: Bradford.
- Raykov, T., & Marcoulides, G. A. (2006). A first course in structural equation modeling (2nd ed.). Mahwah, NJ: Lawrence Erlbaum.

- Rosenberg, M. (1989). *Society and the adolescent self-image* (Rev. ed.). Middletown, CT: Wesleyan University Press.
- Saucier, G., & Goldberg, L. R. (1996). The language of personality: Lexical perspectives on the five-factor model. In J. S. Wiggins (Ed.), *The five-factor model of personality: Theoretical perspectives* (pp. 21-50). New York: Guilford.
- Schimmack, U., Radhakrishnam P., Oishi, S., & Dzokoto, V. (2002). Culture, personality, and subjective well-being: Integrating process models of life satisfaction. *Journal of Personality and Social Psychology, 82*, 582-593.
- Shweder, R. A. (1991). *Thinking through culture: Expeditions in cultural psychology*. Cambridge, MA: Harvard University Press.
- Steel, P., Schmidt, J., & Shultz, J. (2008) Refining the relationship between personality and subjective well-being. *Psychological Bulletin, 134*, 138-161.
- Suh, E. M., Deiner, E., Oishi, S., & Triandis, H. C. (1998). The shifting basis of life satisfaction judgments across cultures: emotions versus norms. *Journal of Personality and Social Psychology, 74*, 482-493.
- Suh, E. M., Deiner, E., Oishi, S., & Updegraff, J. A. (2008). From culture to priming conditions; self-construal influences on life satisfaction judgments. *Journal of Cross-Cultural Psychology, 39*, 3-15.
- Triandis, H. C. (2000). Cultural syndromes and subjective well-being. In E. Diener & E. M. Suh (Eds.), *Culture and subjective well-being* (pp. 13-36). Cambridge, MA: Bradford.
- Triandis, H. C. (2001). Individualism and collectivism. In D. Matsumoto (Ed.), *The handbook of culture and psychology* (pp. 35-50). New York: Oxford University.

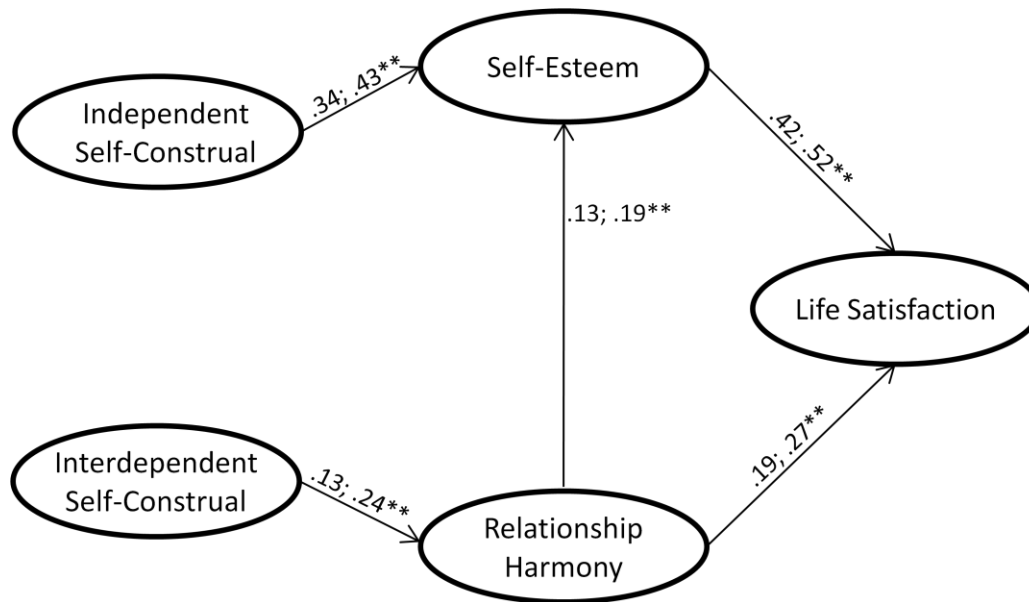
Wong, S. S., Oei, T. P. S., Ang, R. P., Boon, O. L., Ng, A. K., & Leng, V. (2007). Personality, meta-mood experience, life satisfaction, and anxiety in Australian versus Singaporean students. *Current Psychology*, 26, 109-120.

Figure 1: Independent/Relational/Collective Self-Construal Model



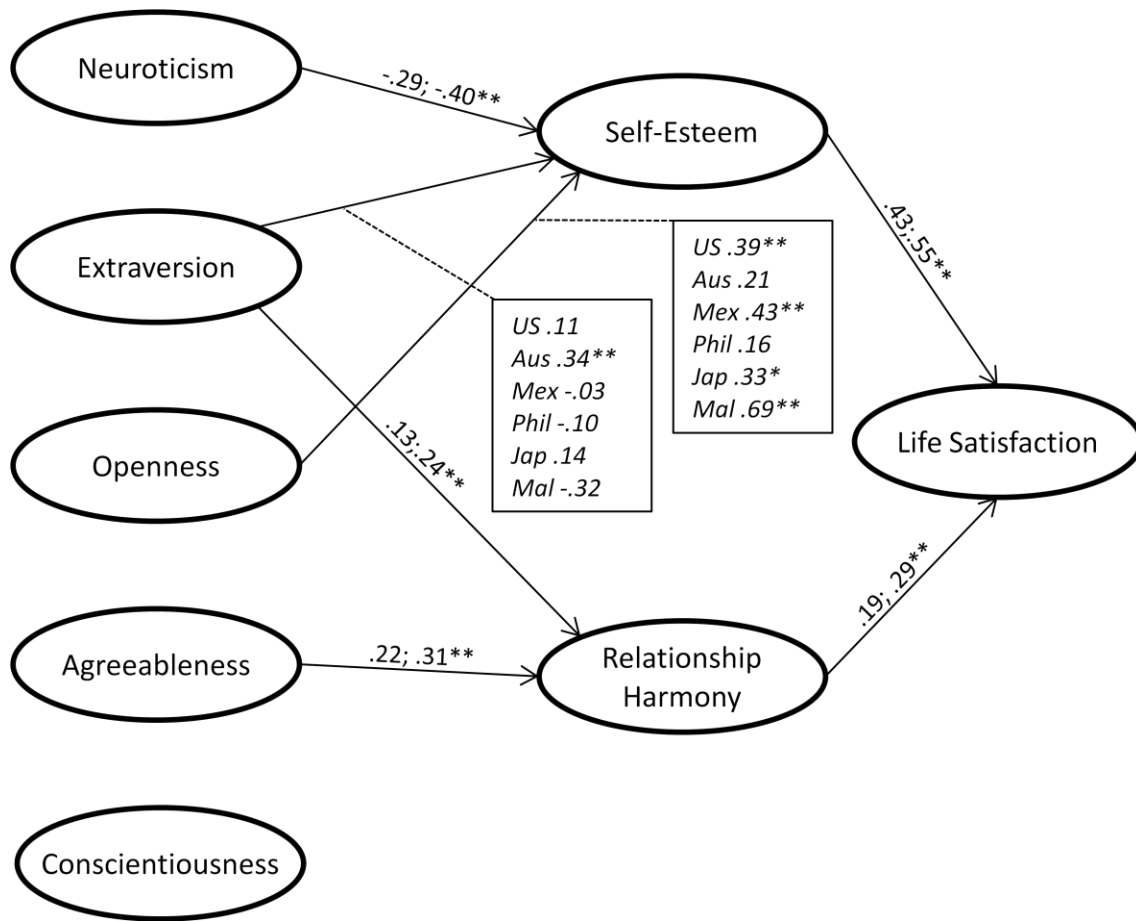
NOTE: * $p < 0.05$. ** $p < 0.01$. Covariance, observed variables, and errors are not shown here for clarity of the figure.

Figure 2: Independent/Interdependent Self-Construal Model



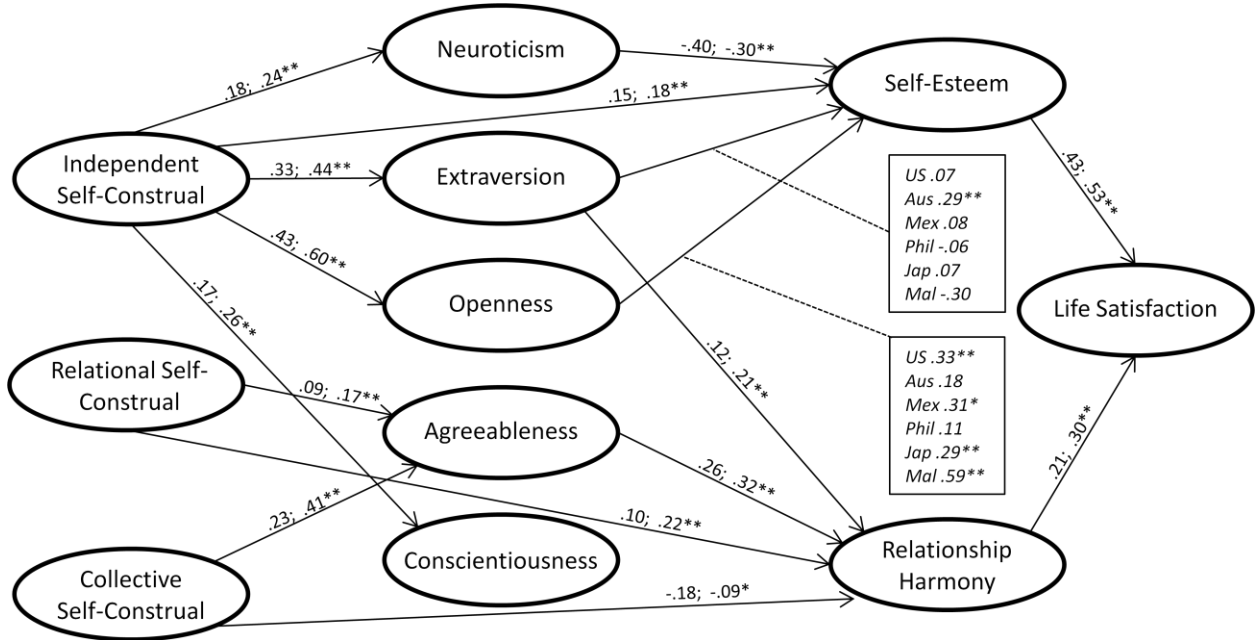
NOTE: * $p < 0.05$. ** $p < 0.01$. Covariance, observed variables, and errors are not shown here for clarity of the figure.

Figure 3: Personality Model



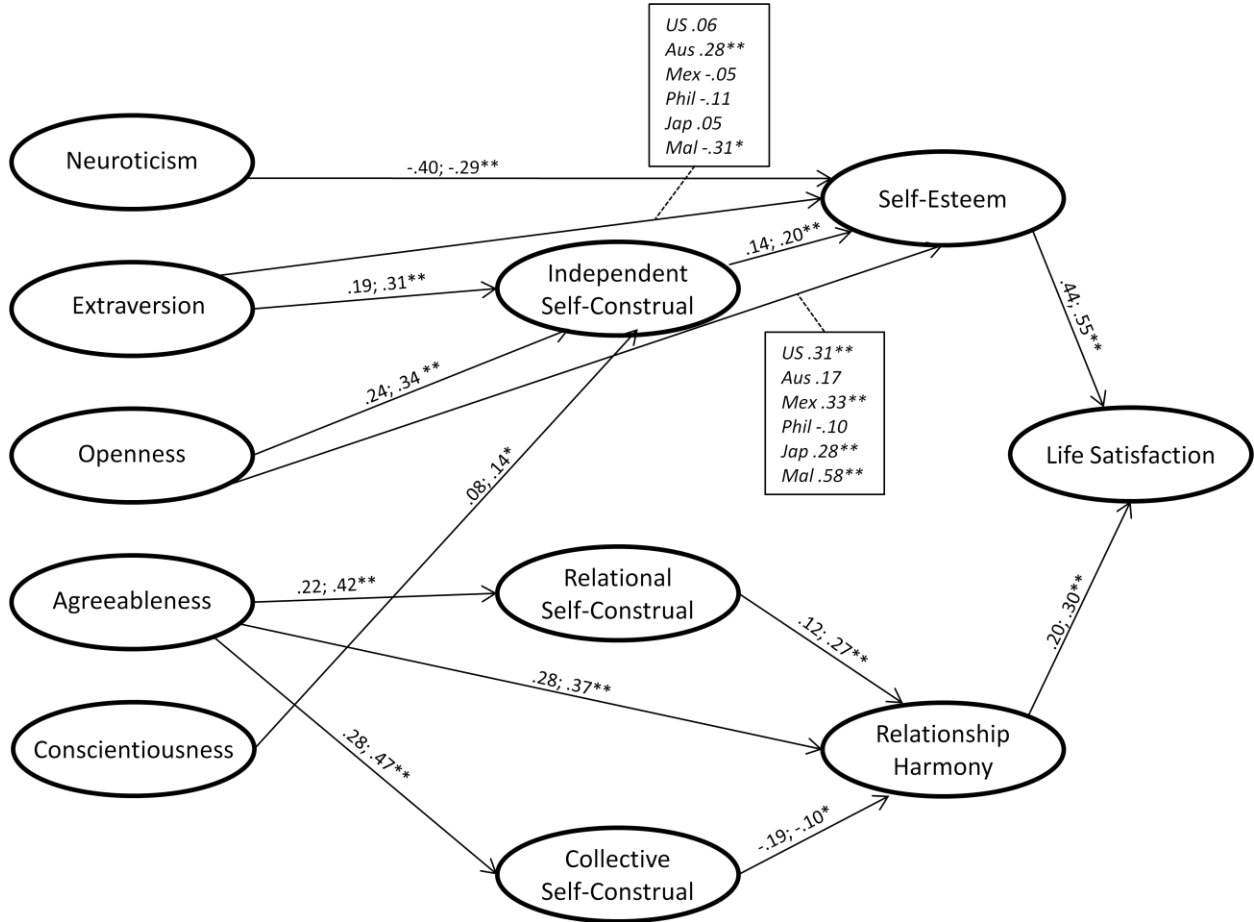
NOTE: * $p < 0.05$. ** $p < 0.01$. Covariance, observed variables, and errors are not shown here for clarity of the figure.

Figure 4: Culture → Personality Model



NOTE: * $p < 0.05$. ** $p < 0.01$. Covariance, observed variables, and errors are not shown here for clarity of the figure.

Figure 5: Personality → Culture Model



NOTE: The path between Neuroticism and independent self-construal was non-significant in the constrained model and is not shown here. * represents $\text{sig} \leq .05$ ** represents $\leq .01$. Covariance, observed variables, and errors are not shown here for clarity of the figure.

Table 1: Fit Indices for Measurement Models

Construct	χ^2	<i>df</i>	χ^2/df	TLI	CFI	RMSEA	AIC
Life Satisfaction							
Unconstrained	0	0	NA	NA	1.00	0.264	72.00
Constrained	26.51	10	2.65	0.98	0.99	0.04	78.51
Relationship Harmony							
Unconstrained	0.00	0	NA	NA	1.00	0.21	72.00
Constrained	7.93	10	0.79	1.00	1.00	0.00	59.93
Self Esteem							
Unconstrained	0.00	0	NA	NA	1.00	0.26	72.00
Constrained	9.71	10	0.97	1.00	1.00	0.00	61.71
Independent/Relational/Collective							
Unconstrained	345.63	144	2.40	0.90	0.93	0.04	597.63
Constrained	423.02	174	2.43	0.89	0.91	0.04	605.02
Independent/Interdependent							
Unconstrained	133.92	48	2.79	0.93	0.96	0.04	289.92
Constrained	183.24	68	2.69	0.93	0.95	0.04	299.24
Personality							
Initial Unconstrained	1348.45	480	2.81	0.83	0.87	0.04	1828.45
Final Unconstrained	1104.31	462	2.39	0.87	0.90	0.04	1620.31
Final Constrained	1520.30	531	2.86	0.82	0.85	0.04	1898.30

Note: In unconstrained models, factor loadings for the observed indicators (e.g., item parcels) are freely estimated in each culture. In constrained models, the factor loadings are constrained to be equal across the six cultures. NA = these fit indices are not computed for saturated models.

Table 2: Fit Indices for Structural Models

	χ^2	df	χ^2/df	TLI	CFI	RMSEA	AIC
<u>Separate Models</u>							
Relational/Collective/Independent							
A. Unconstrained initial	1474.20	822	1.79	0.89	0.90	0.03	1882.20
B. Unconstrained respecified	1450.69	822	1.78	0.90	0.91	0.03	1858.69
C. Constrained respecified	1485.99	847	1.75	0.90	0.91	0.03	1843.99
Independent/Interdependent							
D. Unconstrained initial	988.99	560	1.77	0.92	0.93	0.03	1308.99
E. Unconstrained respecified	963.32	554	1.74	0.92	0.93	0.03	1295.31
F. Constrained respecified	998.78	579	1.73	0.93	0.93	0.03	1280.78
Personality							
G. Unconstrained initial	2620.19	1466	1.79	0.87	0.89	0.03	3288.19
H. Unconstrained respecified	2626.21	1472	1.78	0.87	0.89	0.03	3282.21
I. Final partially constrained	2654.97	1497	1.77	0.88	0.89	0.03	3260.97
<u>Integrated Models</u>							
Culture-->Personality Model							
J. Unconstrained	5154.60	2416	1.76	0.83	0.84	0.03	6034.6
K. Final partially constrained	5296.95	2996	1.77	0.83	0.84	0.03	6036.95
Personal-->Culture Model							
L. Unconstrained	4987.94	2896	1.72	0.84	0.85	0.03	5927.94
M. Final partially constrained	5090.02	2961	1.72	0.84	0.85	0.03	5900.02

Table 3: Squared Multiple Correlations in Predicting Endogenous Variables in Various Models

Endogenous variables	US	Australia	Mexico	Philippines	Japan	Malaysia	Mean
Relational/ Collective/ Independent Model							
Life Satisfaction	0.33	0.31	0.27	0.38	0.36	0.39	0.34
Self-Esteem	0.21	0.14	0.20	0.19	0.19	0.17	0.18
Relationship Harmony	0.08	0.06	0.04	0.02	0.03	0.03	0.04
Interdependent/ Independent Model							
Life Satisfaction	0.32	0.30	0.27	0.38	0.35	0.39	0.34
Self-Esteem	0.21	0.14	0.20	0.19	0.18	0.17	0.18
Relationship Harmony	0.06	0.03	0.03	0.02	0.02	0.02	0.03
Personality Model							
Life Satisfaction	0.34	0.32	0.29	0.36	0.34	0.44	0.35
Self-Esteem	0.42	0.37	0.41	0.20	0.41	0.40	0.37
Relationship Harmony	0.17	0.10	0.17	0.08	0.14	0.15	0.13
Culture First Combined Model							
Life Satisfaction	0.33	0.31	0.26	0.36	0.32	0.40	0.33
Self-Esteem	0.41	0.36	0.38	0.24	0.39	0.39	0.36
Relationship Harmony	0.19	0.14	0.16	0.10	0.12	0.13	0.14
Neuroticism	0.06	0.04	0.04	0.03	0.04	0.04	0.04
Extraversion	0.17	0.15	0.11	0.19	0.13	0.21	0.16
Openness	0.36	0.32	0.19	0.19	0.23	0.28	0.26
Agreeableness	0.27	0.22	0.14	0.10	0.22	0.09	0.17
Conscientiousness	0.07	0.05	0.03	0.03	0.03	0.03	0.04
Personality First Combined Model							
Life Satisfaction	0.33	0.31	0.28	0.37	0.34	0.43	0.34
Self-Esteem	0.42	0.38	0.42	0.25	0.43	0.41	0.39
Relationship Harmony	0.17	0.13	0.17	0.10	0.11	0.14	0.14
Collective Self-Construal	0.08	0.09	0.20	0.20	0.08	0.22	0.14
Relational Self-Construal	0.05	0.05	0.11	0.18	0.09	0.14	0.10
Independent Self-Construal	0.21	0.27	0.31	0.21	0.25	0.41	0.28