

# Sociocultural Differences in Self-Construal and Subjective Well-Being: A Test of Four Cultural Models

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## Abstract

In this study, the authors tested four cultural models—*independence*, *interdependence*, *conflict*, and *integration*—that describe the hypothesized relationships between dimensions of self-construal and components of subjective well-being among individualistic and collectivistic countries. Collectivistic countries that have undergone rapid socioeconomic changes (i.e., East Asian countries) and those with limited changes (i.e., African countries) were differentiated. Participants were 791 university students from four Western countries, 749 university students from three East Asian countries, and 443 university students from three African countries. Findings provided some support for the applicability of (a) the independence model to individuals from Western countries and (b) the integration model to individuals from East Asian countries. Mixed results were found among the African countries. The interdependence model is more applicable to African participants from the sub-Saharan region, but the integration model is more applicable to those from the North African region.

## Keywords

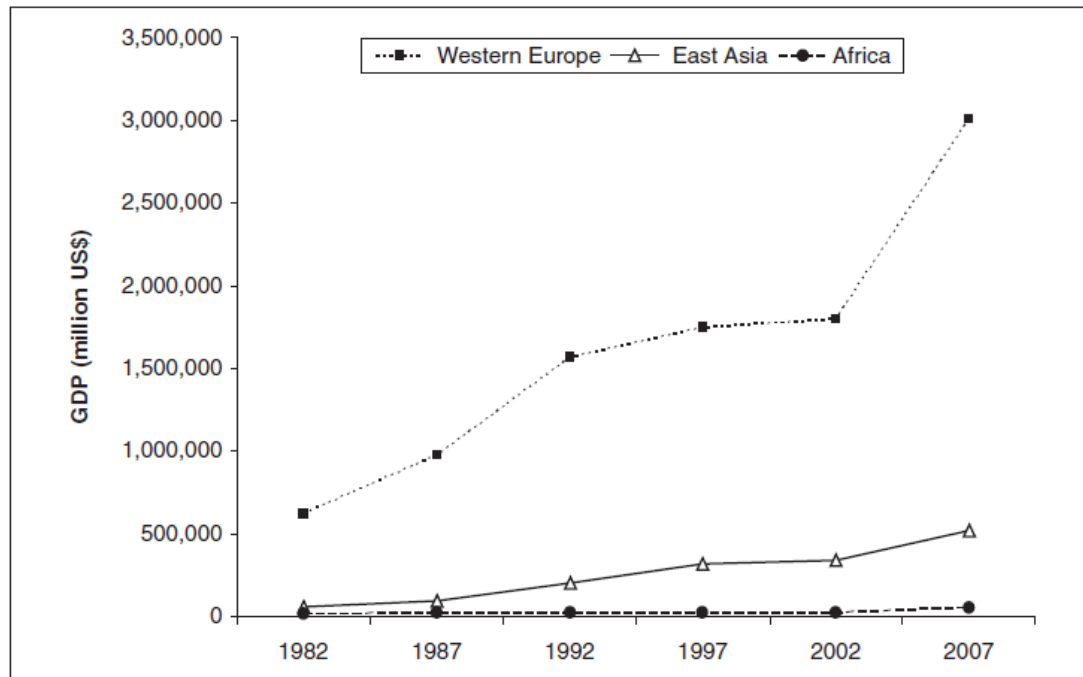
culture, self-construal, societal modernization, subjective well-being

Researchers (e.g., Argyle, 2001; Diener & Lucas, 2000; Furnham & Petrides, 2003; Veenhoven, 1994) commonly conceive of subjective well-being as positive evaluations of one's life. Such evaluations encompass both cognitive and affective aspects. For the cognitive aspect, the key indicator of subjective well-being is life satisfaction. For the affective aspect, positive and negative affect are the major indicators. According to the tripartite conceptualization of subjective well-being (Diener & Lucas, 2000), a high level of subjective well-being comprises a combination of three factors: (a) global life satisfaction, (b) experience of pleasant emotions, and (c) relative absence of negative emotions. This tripartite conceptualization was proposed by researchers from individualistic cultures, but this conceptualization has also been found applicable to individuals from several collectivistic cultures (e.g., Cha, 2003; H. Cheng & Furnham, 2001; Goodman & Silverstein, 2005; Lu, Gilmour, & Kao, 2001).

Despite this support for the universal conceptualization of subjective well-being, the sources of subjective well-being may differ in strength among individuals due to distinct norms and values, both of which are molded by their unique cultural tradition (see, e.g., Kitayama, Markus, & Matsumoto, 1995; Uchida, Norasakkunkit, & Kitayama, 2004). Individualism-collectivism is one of the most important overarching dimensions for explaining cultural variations in self-construal and social behavior (see, e.g., Hofstede, 2001; Triandis, 1996, for reviews). Specifically, individuals from individualistic countries (e.g., North America, Australia) value self-actualizing goals and strive to gratify individualized needs. By contrast, individuals from collectivistic countries (e.g., China, South Korea) value social harmony and strive to maintain harmonious interpersonal relations.

Since the 1960s, some collectivistic countries, particularly those in East Asia, have undergone drastic transformation from subsistence- to industrial-based societies. The rapid economic growth in these collectivistic countries is reflected by an escalation of the annual percentage change of gross domestic product (GDP), the most widely adopted cross-national indicator of a country's productive capacity and standard of living (see, e.g., Lewis, 1955; Sundrum, 1991). As shown in Figure 1, the GDP of the East Asian region has soared approximately 10-fold over the past 25 years. According to classic modernization theories and theories of social change (e.g., Moore, 1963; Weiner, 1966), the process of societal modernization involves not only economic but also social changes such as increase in educational levels, rising importance of personal achievement, changes in gender role, and fragmentation of traditional extended families into nuclear ones (see, e.g., Billet, 1993; Inglehart & Welzel, 2005). Such social changes have an impact on these collectivistic societies by reducing indigenous values while simultaneously breeding new ones, which are more individualistic in nature. Hwang (1989) assessed the psychological needs of Taiwan university students in the 1960s, 1970s, and 1980s, respectively. Results revealed a consistent increase in needs for autonomy and exhibition and a concomitant decline in needs for deference and nurturance. Such value changes can be summarized into two major themes: greater individualistic orientation and stronger desire for autonomous social participation.

Societal modernization has aroused researchers' interest in exploring cultural value changes among individuals in collectivistic countries that have undergone drastic socioeconomic transformation. However, no studies to date have included individuals from collectivistic countries with limited modernization as a comparison group. Individuals from modernized collectivistic countries may differ from not only those from individualistic countries but also those from collectivistic countries that have just begun to modernize, such as countries in Africa (Inglehart, 1997). The present study aimed to fill this gap by distinguishing the source of subjective well-being among individuals from three types of countries with distinct sociocultural



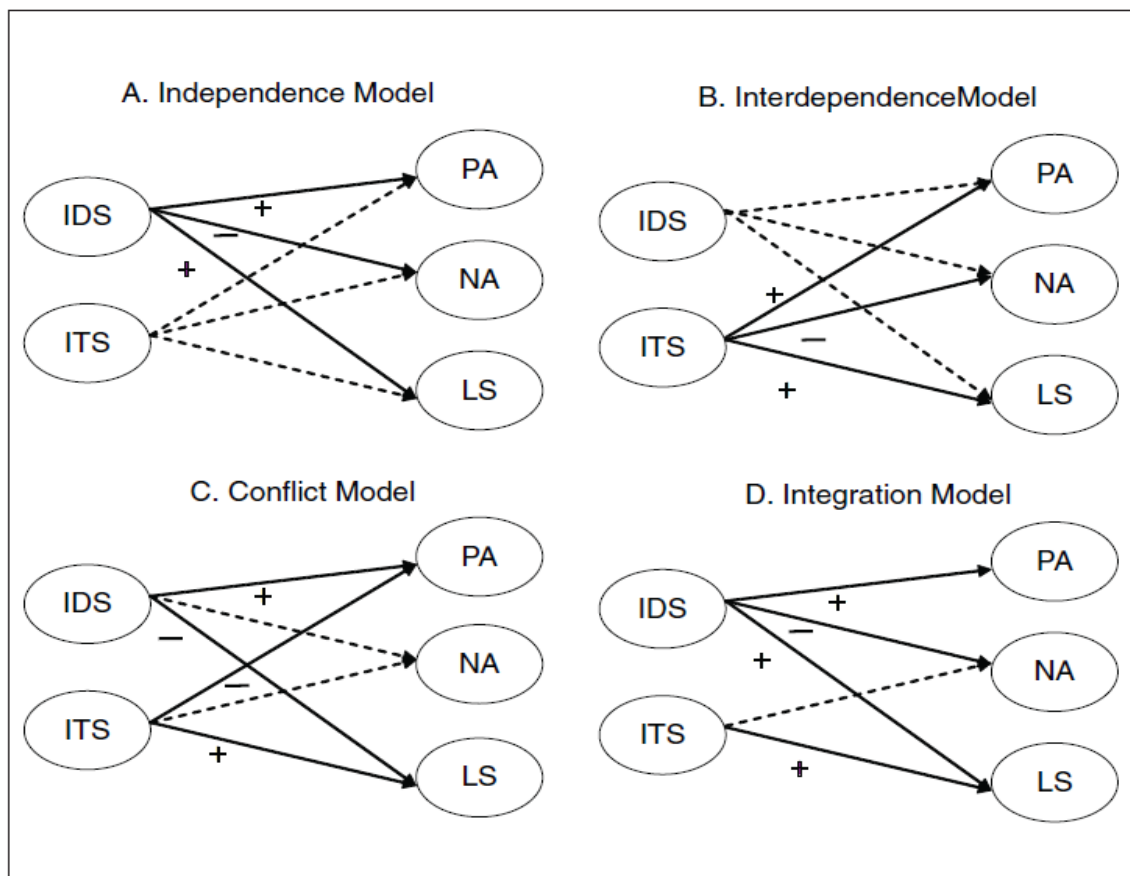
**Figure 1.** The Gross Domestic Product (GDP) Data of Three Selected Regions From the Year 1982 to 1997. Source: World Development Indicators database (World Bank Group, 2008).

backgrounds: (a) Western countries (representing individualistic cultures), (b) East Asian countries (representing collectivistic cultures with individualistic influences), and (c) African countries (representing collectivistic cultures with limited individualistic influences).

We tested four theory-based models that account for the differences in the source of subjective well-being among the three sociocultural groups. Figure 2 presents these conceptual models that delineate the process underlying the relationships between dimensions of self-construal and components of subjective well-being.

### *Independence Model*

The first model to be tested is the independence model. Its major tenet is that the well-being of the self constitutes the fundamental source of subjective well-being. This model proposes that independent self-construal, rather than interdependent self-construal, is related to subjective well-being. This proposal originated from classical humanistic theories of personality (Maslow, 1968; Rogers, 1961). Both Maslow's and Rogers' theories are essentially theories of personal growth, with an emphasis on the self-actualizing tendency of individuals. Specifically, individuals are motivated to realize their inner potentials, fulfill their needs, and enrich their experience of living. These theories hold a holistic view of the self. A fully functioning person is characterized by an integrated, unique, and organized self. Hence, individuals constantly strive to attain a unity of self and self-consistency. Rogers (1980) further posited that individuals having a "good life" are self-fulfilling, autonomous, and creative. They actively engage in positive experiences from which they can derive a sense of satisfaction.



**Figure 2.** Conceptual Models and Predicted Pathways of the Three Cultural Models.

Solid lines indicate predicted significant paths, whereas dashed lines indicate predicted nonsignificant paths.

IDS = independent self-construal; ITS = interdependent self-construal; LS = life satisfaction; NA = negative affect; PA = positive affect.

Although these classical theories emphasize the universality of individual agency in need gratification, Bandura (2002) maintained that adaptive psychological functioning requires a blend of individual and collective modes of agency. The relative weight of these two modes of agency seems to vary across cultures. People from individualistic cultures are more likely to emphasize individual agency, whereas those from collectivistic cultures are more likely to place weight on collective agency in their daily functioning. Chirkov, Ryan, Kim, and Kaplan (2003) further expanded the self-determination theory, which postulates that psychological needs for autonomy and relatedness are universal, by documenting subjective well-being is experienced only when these universal needs are compatible with cultural values.

In light of these notions, we proposed that independent self-construal would play a key role in subjective well-being among individuals from individualistic cultures. According to Markus and Kitayama (1991), an independent self-construal emphasizes the wholeness and separateness of one's configuration of internal attributes. Individuals with greater orientations toward independence focus on self-related life tasks, such as striving for one's goals and being straightforward in interpersonal relations. To achieve these life tasks, they exercise their agency to control the environment

and influence others. If their self-oriented needs are gratified, these individuals will experience an increase in subjective well-being.

Based on these analyses, the independence model proposed that independent self-construal is related to subjective well-being; that is, independent self-construal should be (a) positively associated with positive affect, (b) inversely associated with negative affect, and (c) positively associated with life satisfaction (see Figure 2a). This model is proposed as being more applicable to explaining the sources of subjective well-being among individuals from individualistic cultures than the other two models.

### *Interdependence Model*

The second model to be tested is the interdependence model. A major tenet of this model is that the welfare of the group constitutes the fundamental source of subjective well-being. This model postulates that interdependent self-construal, but not independent self-construal, is associated with subjective well-being. This postulation is predicated on the cultural theories of happiness (Diener & Lucas, 2000; Uchida et al., 2004). The major premise of these theories is that subjective well-being is influenced by culture. The self-in-relation-with-others constitutes the cultural core of collectivistic cultures. Individuals in these cultures are motivated to adjust themselves to fit into the expectations of others, demands of social situations, or both. Instead of realizing one's inner potentials as posited in classical theories of personal growth, cultural theories of happiness postulate that the realization of harmonious interpersonal relations is crucial to subjective well-being for individuals in collectivistic cultures.

In light of the cultural theories of happiness, the interdependence model proposed in this study predicts that interdependent self-construal plays a key role in subjective well-being among individuals from collectivistic cultures. According to Markus and Kitayama (1991), an interdependent self-construal emphasizes individuals' connectedness to members of their interpersonal network. Individuals with greater orientation toward interdependence focus on social-related life tasks, such as promoting others' goals and being indirect in interpersonal relations. To achieve such life tasks, individuals are motivated to adapt to social situations so as to create and preserve relational harmony. If their social-oriented needs are gratified, individuals with greater orientation toward interdependence will experience a higher level of subjective well-being (e.g., Kwan, Bond, & Singelis, 1997; Oishi & Diener, 2001).

Based on these analyses, the interdependence model predicted that interdependent self-construal is related to subjective well-being; that is, interdependent self-construal should be (a) positively related to positive affect, (b) inversely related to negative affect, and (c) positively related to life satisfaction (see Figure 2b). Although interdependent self-construals are prevalent among individuals from collectivistic cultures, the pattern of self-construal may be different among collectivistic countries with different extents of societal modernization. In the late 20th century, rapid economic changes mainly involved collectivistic countries in Asia (Leong & Chang, 2003; K. S. Yang, 1996), but the pace of economic development has been slow in collectivistic countries in Africa (Fischer, 2003; Tiliouine, Cummins, & Davern, 2004; see also Figure 1). Because economic growth is accompanied by social changes, it is reasonable to infer that individuals from African countries may experience a smaller extent of change in traditional cultural values than do those from East Asian countries, though countries in both geographic regions have been widely regarded as collectivistic (Hofstede, 2001). Hence, we proposed that the interdependence model may be more applicable to individuals from African countries.

### *Two Hybrid Models: Conflict Versus Integration*

The third model to be tested is the hybrid model, whose major tenet is that both the well-being of the self and the group's welfare are possible sources of subjective well-being. Although these two types of self-construal seem to contradict each other, it is theoretically possible that they can coexist within an individual. Because studies revealed a coexistence of indigenous (e.g., relational harmony, filial piety) and Western (e.g., autonomy, individual-oriented achievement) values among the Chinese and Singaporeans (e.g., Chang, Wong, & Koh, 2003; Lu & Kao, 2002; Pek & Leong, 2003; X. Zhang, Zheng, & Wang, 2003), the hybrid model may be more applicable to individuals from collectivistic countries with rapid societal modernization.

The idea of the coexistence of independent and interdependent self-construals parallels Marar's (2004) theoretical notion of the "happiness paradox." Marar posited that bicultural individuals in modern societies are exposed to two sets of competing values. One set is related to the self, which emphasizes self-expression, achievement, and fulfillment of one's goals. Fulfillment of these self-oriented needs require individuals to turn away from people, be one's own self, and break inherited rules. The other set is related to external standards, which emphasize responsibility and accountability. Fulfillment of these social-oriented needs require individuals to turn towards people, seek others' approval, and adhere to social norms.

In the current literature on the bicultural self, two types of hybrid models were proposed. The first type refers to a conflict model, which postulates that biculturals in modern societies are faced with a self-actualization-versus-others'-approval dilemma (Benet-Martinez & Haritatos, 2005; C. Cheng, Lee, & Benet-Martinez, 2006). Although these individuals identify with both traditional and modern values, they tend to perceive these systems of values as conflicting. They often feel caught between the two value systems and experience high levels of anxiety and depression (Benet-Martinez & Haritatos, 2005).

In line with these theoretical views, the study by Deutsch (2004) showed that many Chinese participants reported that they struggled between attaining their personal goals (i.e., to find their desired job in a city farther from home) and gratifying their affiliative needs (i.e., to find a job located closer to their family). When making a decision, some pursued their own goal by seeking a desired job wherever it might be. They felt happy because their need for achievement had been gratified but also less satisfied with their decision because they had to stay away from their family. Others lowered their job aspiration by seeking a job located closer to where their parents resided. Although these individuals felt less happy for failing to attain their goals of achievement, they were still satisfied with the less desirable choice that pleased their parents. Taken together, the conflict model puts forward that bicultural individuals may experience either (a) high level of positive affect, low level of negative affect, and low level of life satisfaction, or (b) low level of positive affect, high level of negative affect, and high level of life satisfaction (see Figure 2c).

The second type refers to an integration model, which postulates that the apparent conflicts between traditional and modern values may be well integrated within a functional self-system (Sui, Zhu, & Chiu, 2007). Instead of viewing the two value systems as conflicting, biculturals tend to regard both systems as congruent and compatible. Such a notion stems from theories of biculturalism (e.g., Hong, Ip, Chiu, Morris, & Menon, 2001; Lu & Yang, 2006), which postulate the existence of a traditional-modern bicultural self among individuals exposed to both Western and indigenous values. The bicultural self is made up of two components: the individual- and the social-oriented self. In a modern pluralistic society, individuals characterized by a bicultural self tend to vary the display of these two aspects of self according to specific situational demands and social expectations (Hong, Morris, Chiu, & Benet-Martinez, 2000). To illustrate, when these individuals are in situations that emphasize achievement (e.g., at work), their individual-oriented self may be more influential in guiding social behavior. Conversely, their social-oriented self

may become more influential when they are in situations in which communal needs are valued (e.g., at home).

In light of these theoretical perspectives, the integration model proposes that neither independent nor interdependent self-construal alone is sufficient to account for subjective well-being. Instead of viewing these self-construals as contradictory, they are proposed as two separate mechanisms that complement each other. First, independent self-construal may contribute to personal affect because it refers to self-directed emotions related to hedonism (see Berenbaum, 2002; Egloff, Schmukle, Burns, Kohlmann, & Hock, 2003). Individuals striving to gratify self-oriented goals may experience higher levels of subjective well-being: more positive affect, less negative affect, and greater life satisfaction. Second, interdependent self-construal may also contribute to life satisfaction but not personal affect. Such a notion stems from Dien's (1983) dialectical theory of the self, which puts forward that the individual-oriented self (i.e., the "little me") is subsumed under the social-oriented self (i.e., the "big me"). When there is a conflict between these two aspects of the self, individuals who strive to attain social-oriented goals may disregard their individual-oriented needs, at least temporarily. These individuals may experience life satisfaction due to gratification of their affiliative needs. However, their personal affect may remain unchanged because their individual-oriented goals have been discarded.

Taken together, the integrative model proposes that the independent self-construal of bicultural individuals should be associated with subjective well-being; that is, independent self-construal should have (a) a positive relationship with positive affect, (b) a negative relationship with negative affect, and (c) a positive relationship with life satisfaction. In addition, their interdependent self-construal should also have a positive relationship with life satisfaction (see Figure 2d).

In summary, four models—*independence*, *interdependence*, *conflict*, and *integration*—were tested in this study. We proposed that the independence model may be more applicable to account for the source of subjective well-being among individuals from individualistic countries. The interdependence model may be more applicable to explain the source of subjective well-being among individuals from African countries, which experienced limited societal modernization in the recent past (Inglehart, 1997). The conflict or integration model may be more applicable to explicate the source of subjective well-being among individuals from East Asian countries that have undergone rapid socioeconomic changes since the 1960s.

Before we tested these hypothesized models, it was necessary to examine two assumptions from which the various models were derived. First, we proposed that societal modernization, in addition to individualism-collectivism, would be a dimension relevant to cross-cultural comparison of subjective well-being. Second, and in particular, societal modernization was expected to play a moderating role on cultural differences in subjective well-being. To address these issues, Study 1 was conducted to test these hypotheses using the World Values Survey (WVS) data set. The WVS is the most extensive multinational investigation of the impact of sociocultural changes on various aspects of social life.

## Study 1

### *Method*

**Participants and Procedures.** The current analyses were conducted with aggregated data derived from the 2005-2008 (fifth) wave of the WVS (WVS Organization, 2009). We selected data from countries that met three inclusion criteria. First, the country should be from one of the three clusters of countries involved in our research. Second, the item of life satisfaction should be included in the WVS interview protocol of that country. Third, both the individualism and the economic-modernization indices should be available for that country. We analyzed the data of

all 17 countries that met the three criteria. Specifically, Western (Finland, Germany, Sweden, Switzerland, United States), African (Burkina Faso, Ethiopia, Mali, Rwanda, Zambia), and Asian (China, India, Indonesia, Malaysia, Taiwan, Thailand, Vietnam) countries were included in the analyses. The final sample consisted of 25,609 participants (50% males), with an average age of 40.40 years ( $SD = 16.15$ ). The surveys were carried out by professional researchers through face-to-face interviews with representative samples in each country.

### Measures

In the present analyses, life satisfaction was included as a person-level (Level 1) criterion variable, whereas Individualism Index Value (IDV) and Economic Modernization Index (EMI) were included as country-level (Level 2) predictors. The WVS interview protocol was translated into the native language(s) of people from each country.

*Person-level life satisfaction.* The WVS assesses respondents' general life satisfaction using a single item: "All things considered, how satisfied are you with your life as a whole these days?" Respondents answered the question by giving a rating along a 10-point Likert-type scale. A higher rating reflects a higher level of personal satisfaction with life.

*Individualism-collectivism.* Hofstede's (2001) IDV was adopted in the present analyses as an indicator of a country's extent of individualism. The IDV ranges from 1 to 100, with a higher value revealing a particular country as more individualistic.

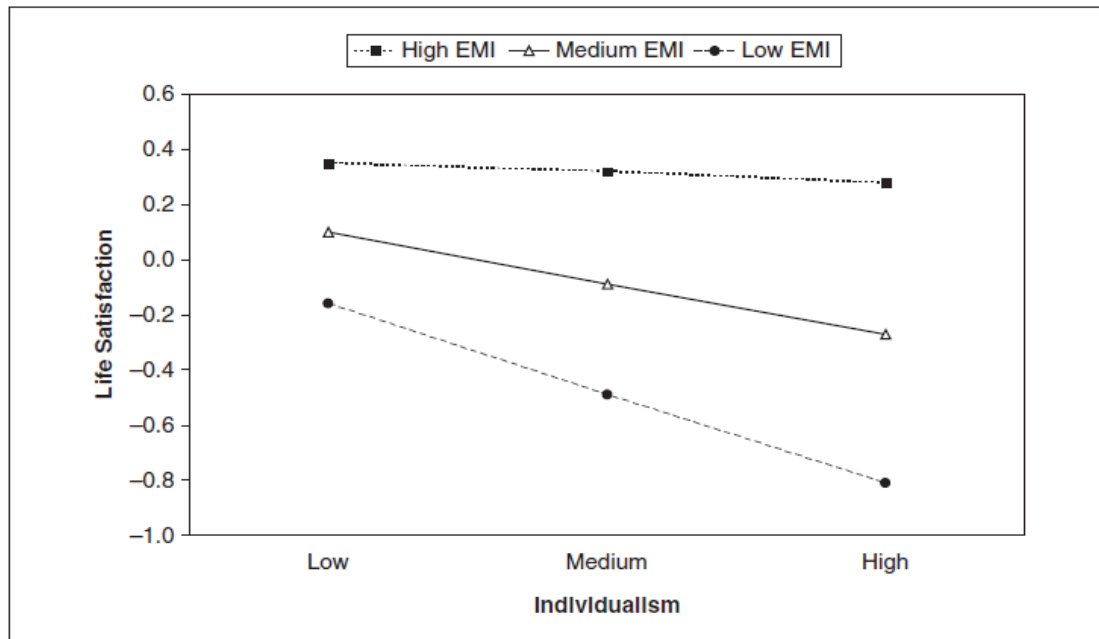
*Economic modernization.* The EMI (Organisation for Economic Co-operation and Development, 2009) was used as an indicator of a country's pace of economic change. The EMI was compiled based on the following statistics: gross national product (GNP) per capita, agricultural productivity rate, manufacturing productivity rate, service industry productivity rate, knowledge capital input, Internet popularization rate, energy consumption efficiency, quantum of international trade per capita, ratio of agricultural workforce, agricultural value-added ratio (VAR), ratio of manufacturing workforce, manufacturing VAR, ratio of service industry workforce, and service industry VAR. The EMI also ranges from 1 to 100. A higher EMI value reflects a faster pace of economic modernization.

### Results and Discussion

Hierarchical linear modeling was computed with HLM 6.06 (Raudenbush, Bryk, & Congdon, 2008) because the WVS data set constitutes nested data (i.e., individuals nested within countries). The unconditional model indicated that sufficient variance existed in life satisfaction scores to proceed. The next step was to determine whether individualism (vs. collectivism) at the national level was predictive of Level 1 life satisfaction. The next model indicated that country-level individualism was a relatively weak positive predictor of Level 1 life satisfaction,  $B = .016$ ,  $SE = .006$ ,  $p = .02$ . It is worth noting that we were mainly interested in determining whether societal modernization (i.e., Level 2 EMI scores) moderated the link between individualism and life satisfaction. Hence, we next entered the main effects of EMI and individualism scores as well as the product term of these two variables as Level 2 predictors of life satisfaction at Level 1. Results showed that individualism ceased to be a statistically significant predictor of life satisfaction, and EMI was found not to be a statistically significant predictor either. However, a statistically significant Individualism  $\times$  EMI interaction term was obtained,  $B = .0003$ ,  $SE = .0002$ ,  $p < .05$ . The results are summarized in Figure 3.

Figure 3 shows that individualism is not a statistically significant predictor of life satisfaction in countries with high EMI ratings, but it is a statistically significant negative predictor in countries that receive low EMI ratings. We made two conclusions based on the present results. First,





**Figure 3.** The Prediction of Individual-Level Life Satisfaction by Country-Level Individualism (vs. Collectivism) as Moderated by Country-Level Societal Modernization  
EMI = economic modernization index.

this statistically significant interaction effect provides support for the moderating role of EMI, an indicator of societal modernization. These findings indicate that both country-level dimensions of individualism and societal modernization should be included in the present research. Second, the strength of the relationship between life satisfaction and individualism is most prominent among countries with low EMI, thus providing evidence for the necessity to include countries with low EMI (such as African countries).

## Study 2

Results from Study 1 provided some evidence that apart from individualism, societal modernization was also a relevant dimension in the study of subjective well-being. Now we proceed to examine four explanatory models for the hypothesized relationships between self-construals and subjective well-being for different clusters of countries. These clusters of countries differed from each other in the extent of individualism (vs. collectivism) and societal modernization.

### Method

**Inclusion Criteria of Individualistic and Collectivistic Countries.** We categorized countries as individualistic and collectivistic based on two criteria, namely the IDV and the Individualism-Collectivism rating (Suh, Diener, Oishi, & Triandis, 1998). For both indices, a greater value indicates that the country is categorized as more individualistic. All the Western countries have an IDV greater than 65 and an Individualism-Collectivism rating greater than 7, indicating that these countries can be categorized as individualistic. All the African and East Asian countries have an IDV smaller than 30 and an Individualism-Collectivism rating smaller than 4.8, indicating that these countries can be categorized as collectivistic.

**Table 1.** Sociocultural Indices of Three Clusters of Countries

Country	Questionnaire Language	IDV (1-100)	ICR (1-10)	GDP (million US\$) <sup>a</sup>	GDP Rank <sup>a</sup>	EMI
Cluster 1: Western countries						
Germany	German	67	7.35	3,322,147	3	95
New Zealand	English	79	—	128,141	51	74
United Kingdom	English	89	8.95	2,772,570	5	98
United States	English	91	9.55	13,843,825	1	97
Cluster 2: African countries						
Algeria	Arabic	20 <sup>b</sup>	3.00 <sup>c</sup>	131,568	50	25
Botswana	English	27 <sup>b</sup>	3.00 <sup>c</sup>	12,313	104	37
Rwanda	English	27 <sup>b</sup>	3.00 <sup>c</sup>	3,320	145	10
Cluster 3: East Asian countries						
Hong Kong	Chinese	25	4.75	206,707	36	96
South Korea	Korean	18	2.40	957,053	13	58
Taiwan	Chinese	17	3.85	383,307	24	74

Dash indicates that the data were not available. EMI = Economic Modernization Index; ICR = Individualism-Collectivism Rating; IDV = Individualism Index Value.

a. The GDP data refer to the year 2007 from the World Economic Outlook Database (International Monetary Fund, 2008).

b. In Hofstede's (2001) multinational study, no IDV was assigned to individual countries in Africa. The IDV of East African countries is 27, whereas the IDV of West African countries is 20.

c. In the multinational study by Suh et al. (1998), no ICR were given to these African countries, but a rating of 3.00 was given to all the African countries in their study.

We performed hierarchical cluster analysis to classify the 10 countries into discrete groups based on their IDV and EMI. In clustering the data, the squared Euclidean distance was employed as the proximity measure because this measure reflects the elevation (level), shape, and scatter of the profile (e.g., Cronbach & Gleser, 1953; Skinner, 1978). The between-groups linkage method was adopted as the grouping method. A series of hierarchical clusters were generated to partition the data into optimally homogeneous groups. In comparison with other possible solutions, the three-cluster solution was deemed the most meaningful (see Introduction). Table 1 shows the sociocultural indices of the three clusters of countries.

### Participants From Western Countries (Cluster 1)

**Germany.** Participants were 186 undergraduates (40 men, 146 women) from the Chemnitz University of Technology. Their average age was 22.67 years ( $SD = 4.68$ , range = 18 to 42).

**New Zealand.** Participants were 120 undergraduates (41 men, 79 women) from the Victoria University of Wellington. Their average age was 19.33 years ( $SD = 2.90$ , range = 18 to 35).

**United Kingdom.** Participants were 171 undergraduates (33 men, 134 women, 4 did not specify) from the Middlesex University. Their average age was 23.17 years ( $SD = 6.42$ , range = 18 to 60).

**United States.** Participants were 186 undergraduates (44 men, 138 women, 4 did not specify) from the California State University, Chico and 128 undergraduates (44 men, 83 women, 1 did not specify) from the University of Missouri–Columbia. Their average age was 20.52 years ( $SD = 3.63$ , range = 18 to 48).

### Participants From African Countries (Cluster 2)

**Algeria.** Participants were 60 undergraduates (18 men, 42 women) from the University of Oran, 78 undergraduates (27 men, 51 women) from the National School of Technical Teachings,

and 55 undergraduates (28 men, 27 women) from the University of Belabbes. Their average age was 21.39 years ( $SD = 2.01$ , range = 18 to 35).

**Botswana.** Participants were 50 undergraduates (15 men, 34 women, 1 did not specify) from the University of Botswana. Their average age was 21.32 years ( $SD = 2.39$ , range = 19 to 25).

**Rwanda.** Participants were 50 undergraduates (18 men, 32 women) from the National University of Rwanda, 50 undergraduates (21 men, 29 women) from the Kigali Health Institute, 50 undergraduates (17 men, 33 women) from the Kigali Independent University, and 50 undergraduates (22 men, 28 women) from the Kigali Institute of Science, Technology and Management. Their average age was 25.27 years ( $SD = 4.42$ , range = 19 to 36).

### *Participants From East Asian Countries (Cluster 3)*

**Hong Kong.** Participants were 63 undergraduates (16 men, 47 women) from the University of Hong Kong and 140 undergraduates (56 men, 83 women, 1 did not specify) from the Hong Kong University of Science and Technology. Their average age was 20.00 years ( $SD = 1.07$ , range = 18 to 25).

**South Korea.** Participants were 194 undergraduates (99 men, 95 women) from the Hallym University. Their average age was 20.73 years ( $SD = 2.23$ , range = 18 to 29).

**Taiwan.** Participants were 33 undergraduates (16 men, 17 women) from the National Taiwan University, 132 undergraduates (72 men, 60 women) from Tamkang University, 21 undergraduates (1 men, 20 women) from Taipei Medical College, 47 undergraduates (18 men, 29 women) from National Chung-San University, 15 undergraduates (all women) from Chang-Kan University, 21 undergraduates (1 men, 20 women) from National Normal University, 25 undergraduates (13 men, 12 women) from National Chung-Cheng University, and 53 undergraduates (18 men, 35 women) from National Cheng-Chi University. The average age of this sample was 20.73 years ( $SD = 2.23$ , range = 18 to 29).

**Measures.** Participants completed a set of questionnaires in their native language, with the exception of those from Botswana and Rwanda. Because a variety of African and European languages are used in these two African countries, the English version of the questionnaire was used because English is the only language common among all the participants in these countries.

If any of the measures was not available in a particular language, the measures were back-translated (see Brislin, 1986) to ensure that the particular version had equivalent meanings (i.e., conceptual equivalence) with the validated English measures. A translator translated the items from English into that language. Another translated the items back into English. As recommended by Brislin (1986), the two translators worked independently and then discussed the translated work together in a post hoc meeting. The two versions were reviewed and compared for equivalence. The co-investigator of that country then reviewed the translated measures and independently commented on the meaning, clarity, and choice of words.

**Self-construal.** The revised Self-Construal Scale (SCS; Singelis, 1994; Singelis, Bond, Sharkey, & Lai, 1999) is a 30-item measure developed on Markus and Kitayama's (1991) conceptualization of cultural self-construal. This measure consists of two 15-item subscales: Independence and Interdependence. The SCS was selected because it is the most common measure of self-construal and has been frequently adopted in cross-cultural studies (e.g., Friedlmeier, Schafermeier, Vasconcellos, & Trommsdorff, 2008; Thomsen, Sidanius, & Fiske, 2007; Wang & Mallinckrodt, 2006; R. P. Yang, Noels, & Saumure, 2006). Respondents are instructed to give ratings to each item along a 7-point Likert-type scale (1 = *strongly disagree*, 7 = *strongly agree*). Each subscale ranges from 15 to 105, with higher scores indicating a greater orientation towards independence or interdependence.

**Positive and negative affect.** The Positive Affect and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988) is a 20-item measure of the affective component of subjective

well-being. This measure was selected because it is a popular measure of affect and has been widely used in cross-cultural studies (e.g., Ayyash-Abdo & Alamuddin, 2007; Dierk et al., 2006; Kim & Hatfield, 2004; W. Zhang, Jing, & Schick, 2004). The PANAS comprises two 10-item subscales: Positive Affect (e.g., “interested,” “excited”) and Negative Affect (e.g., “ashamed,” “nervous”). Respondents indicate how they have been feeling during the past month by giving a 5-point rating (1 = *very slightly or not at all* to 5 = *extremely*). Each subscale ranges from 10 to 50, with higher scores indicating a greater level of a particular mood state.

*Life satisfaction.* The Satisfaction With Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985) is a 5-item measure of the cognitive component of subjective well-being that assesses one’s overall satisfaction with life. This measure was chosen because it is a popular measure of life satisfaction and has been commonly adopted by cross-cultural researchers (e.g., Dorahy et al., 1998; Goodwin, Cook, & Yung, 2001; Inumiya, Choi, Yoon, Seo, & Han, 1999; Vitterso, Biswas-Diener, & Diener, 2005). Respondents indicate their degree of agreement with each item along a 7-point scale (1 = *strongly disagree*, 7 = *strongly agree*). The SWLS scores range from 5 to 35, with higher scores indicating greater life satisfaction.

### Procedures

The set of questionnaires was group administered in the university or institute in which the participants were recruited. Participants had to sign a consent form before the study began. Those who did not give written consent were excluded.

### Results and Discussion

In this study, differences in mean levels of self-construal and subjective well-being were compared among the three sociocultural groups: Western countries, African countries, and East Asian countries. This study also tested four cultural models—*independence, interdependence, conflict, and integration models*—that may account for the relationships between dimensions of self-construal (*independent, interdependent*) and components of subjective well-being (*positive affect, negative affect, life satisfaction*) for these sociocultural groups. The extent to which these models fit the sample data was evaluated.

When comparing psychological constructs in multinational research, it is important to explore configural and metric invariance. An examination of the measurement models of the two separate sets of variables was performed using confirmatory factor analysis (CFA). In particular, we performed two CFAs, one for each set of variables (i.e., one set featured the two independent variables of independent self-construal and interdependent self-construal, and the second set featured the three dependent variables of life satisfaction, positive affect, and negative affect). Following Byrne (2001), the CFAs were constructed in a conventional manner by estimating all items of a given measure for the respective latent construct (no multiple loadings were allowed and no second order constructs were created). As recommended by Cheung and Rensvold (2002), we sought to determine whether the CFI model fit index deteriorated by more than .01 once equality constraints were placed on the model. A baseline model was first obtained, and then equality constraints were placed on estimates in two separate runs with the three regions identified on (a) covariances between latent constructs (i.e., configural invariance) and (b) factor loadings for each item on each latent construct (item-level metric invariance). For the outcome variables, CFI deteriorated from .908 (baseline) to .907 for configural invariance and to .901 for item-level metric invariance. For the independent variables, CFI deteriorated from .836 (baseline) to .828 for configural invariance and to .817 for item-level metric invariance. These results suggest that both configural and item-level metric invariance was obtained for the outcome measures.

Configural invariance was also obtained for the self-construal measures, and item-level metric invariance was very nearly obtained for the self-construal constructs (expected: .01; obtained: .019). Examination of the factor loadings showed that African respondents yielded generally lower values than the other two groups, but not markedly so. F. F. Chen (2008) warns that poor factor loadings by a measure imported into a particular culture may artificially generate statistical interactions, but the differences in loadings in the present case were not sufficiently large to merit such a concern. In short, these results indicate that these five measures were comprehended and responded to very similarly by individuals from these 10 diverse countries.

Before conducting the major analyses, a preliminary analysis was performed to examine possible sex differences in levels of self-construal and subjective well-being. Results from the multivariate analysis of variance (MANOVA) revealed a statistically significant effect of sex,  $F(5, 1,874) = 7.88, p < .0001$  (partial  $\eta^2 = .02$ ). It is worth noting that a statistically significant sex difference was only found in life satisfaction,  $F(1, 1,878) = 24.08, p < .0001$  (partial  $\eta^2 = .01$ ). Female participants ( $M = 21.18, SD = 6.17$ ) generally reported higher levels of life satisfaction than their male counterparts ( $M = 19.74, SD = 5.76$ ). Because results from the preliminary analysis revealed a statistically significant sex difference in only one of the five major variables, this demographic variable was excluded in subsequent statistical analyses. Table 2 shows the descriptive statistics of the samples for all 10 countries.

### *Sociocultural Differences in Self-Construal and Subjective Well-Being*

A MANOVA was performed to examine the hypothesized effects of sociocultural group on the major variables. The MANOVA results revealed a statistically significant group effect,  $F(10, 3,778) = 100.87, p < .0001$  (partial  $\eta^2 = .21$ ). Statistically significant differences were consistently found in all five variables among the three sociocultural groups,  $F_s(2, 1,892) > 52.45, ps < .0001$  (partial  $\eta^2$  ranged from .05 to .25).

Post hoc Bonferroni tests were performed to further analyze the source of differences for this statistically significant group effect. For self-construal, results revealed that participants from Western countries reported a greater orientation toward independent self-construal than those from East Asian countries, who in turn reported a greater orientation toward independent self-construal than participants from African countries,  $ps < .0001$ . An opposite pattern was found for interdependent self-construal. Specifically, participants from African countries reported a greater orientation toward interdependent self-construal than their counterparts from East Asian countries, who in turn reported a greater orientation toward interdependent self-construal than participants from Western countries,  $ps < .0001$ .

For subjective well-being, participants from Western countries reported a higher level of positive affect than East Asian participants, who in turn reported a higher level than African participants,  $ps < .0001$ . Participants from African countries reported a higher level of negative affect than their counterparts from East Asian countries and those from Western countries,  $ps < .0001$ . Participants from Western countries reported a higher level of life satisfaction than those from both African countries and East Asian countries,  $ps < .0001$ . Taken together, these results provided some support for the need to differentiate among collectivistic countries.

### *Testing of Cultural Models*

Path analysis was performed using EQS 6.1 (Bentler & Wu, 2004) to evaluate the extent to which the proposed cultural models fit the sample data. One set of path analyses was conducted at the group level. Before conducting the path analyses, all the variables were centered to reduce the dependence in the data introduced by pooling the data from different countries. Another set

**Table 2.** Descriptive Statistics of Major Variables by Sociocultural Group and Country

Country	n	IDS			ITS			PA			NA			LS		
		M	SD	$\alpha$	M	SD	$\alpha$	M	SD	$\alpha$	M	SD	$\alpha$	M	SD	$\alpha$
<b>Western countries</b>																
Germany	186	70.78	8.71	.67	66.44	8.28	.66	35.75	6.11	.83	22.78	6.49	.80	24.09	5.60	.83
New Zealand	120	68.55	8.75	.64	67.82	8.62	.65	32.80	5.82	.80	21.87	6.20	.80	21.77	6.15	.83
United Kingdom	171	73.13	9.76	.71	66.06	9.34	.67	36.18	6.28	.81	23.99	7.28	.81	21.60	5.96	.77
United States	314	71.02	10.48	.76	68.36	8.76	.66	34.89	6.97	.86	23.29	7.27	.85	23.72	6.25	.86
<b>African countries</b>																
Algeria	193	65.02	11.33	.70	77.82	10.53	.73	27.71	6.86	.80	26.44	7.67	.81	20.03	5.95	.74
Botswana	50	64.78	11.81	.66	73.31	11.86	.71	25.33	6.36	.81	28.00	7.09	.77	20.06	6.66	.82
Rwanda	200	60.32	10.82	.72	76.01	12.64	.76	24.06	4.09	.73	27.16	3.33	.72	17.44	3.35	.77
<b>East Asian countries</b>																
Hong Kong	203	66.23	8.72	.64	70.34	8.72	.67	29.86	6.21	.81	23.12	6.90	.84	20.09	6.07	.82
South Korea	194	68.08	8.34	.65	69.02	8.32	.70	29.72	7.02	.83	22.33	7.51	.85	18.75	5.80	.82
Taiwan	352	66.37	8.84	.67	71.07	9.53	.76	29.77	5.91	.82	23.42	6.50	.82	19.09	5.49	.75

IDS = independent self-construal; ITS = interdependent self-construal; LS = life satisfaction; NA = negative affect; PA = positive affect.

**Table 3.** Summary of Path Analytic Results by Socio-Cultural Group and Country

	<i>n</i>	IDS→PA	ITS→PA	IDS→NA	ITS→NA	IDS→LS	ITS→LS
Western Countries							
Predictions		+	<i>ns</i>	–	<i>ns</i>	+	<i>ns</i>
Group	791	.39**	.01	–.16**	.07	.29**	.04
Germany	186	.34**	–.11	–.30**	.06	.17*	–.01
New Zealand	120	.40**	.08	–.19	–.13	.25**	.07
United Kingdom	171	.40**	–.06	–.12	.14	.29**	–.01
United States	314	.43**	.10	–.11	.09	.36**	.09
African Countries							
Predictions		<i>ns</i>	+	<i>ns</i>	–	<i>ns</i>	+
Group	443	.18**	.20**	–.01	–.08	.04	.30**
Algeria	193	.33**	.06	–.07	.01	.13	.31**
Botswana	50	–.12	.51**	.07	–.12	.12	.34*
Rwanda	200	–.01	.41**	.14	–.25**	–.05	.37**
East Asian countries							
Predictions		+	<i>ns</i>	–	<i>ns</i>	+	+
Group	749	.32**	.06	–.12	.12	.21**	.22**
Hong Kong	203	.32**	.06	–.09	.20**	.17*	.23**
South Korea	194	.30**	.04	–.07	.01	.17*	.28**
Taiwan	352	.35**	.07	–.13	.12	.26**	.19*

IDS = independent self-construal; ITS = interdependent self-construal; LS = life satisfaction; NA = negative affect; PA = positive affect.

\* $p < .05$ . \*\* $p < .01$ .

of path analyses was performed at the country level. Apart from the hypothesized models, alternative models were also tested. For instance, although the independence model was proposed to be found in Western countries, the data derived from these countries were tested with both the hypothesized independence model and other alternative (i.e., interdependence, conflict, and integration) models. Table 3 summarizes the predictions of each model and the results of path analyses at both group and country levels. The goodness of fit indices for the hypothesized and alternative models are presented in Table 4.

For Western countries, results from path analysis provided support for the independence model in revealing positive links between independent self-construal and positive affect as well as independent self-construal and life satisfaction. The pattern of results among all the Western countries was largely consistent. The goodness of fit indices further showed that the independence model ( $M_1$ ) fit the data of this sociocultural group well.

For East Asian countries, the path analytic results supported the integration model in revealing positive links between independent self-construal and positive affect, independent self-construal and life satisfaction, as well as interdependent self-construal and life satisfaction. This pattern of results was found among all of the East Asian countries. The goodness of fit indices further indicated that the integration model ( $M_{4.1}$ ) fit the data of this sociocultural group well.

For African countries, results from path analysis provided support for the interdependence model in revealing positive links between interdependent self-construal and positive affect as well as interdependent self-construal and life satisfaction. Yet an unexpected positive relationship was found between independent self-construal and positive affect. As a result, a poor fit was found for the interdependence model ( $M_{2.1}$ ) among participants from the three African countries.

As shown in the country-level analysis, the pattern of results for Algeria was very different from the pattern for Botswana and Rwanda. Results for the latter two countries were largely

**Table 4.** Goodness of Fit Indices for Four Cultural Models and Alternative Models

Cultural Model	<i>n</i>	$\chi^2$	<i>df</i>	<i>p</i>	CFI	RMSEA
Hypothesized models						
$M_1$ : Independence	791 <sup>a</sup>	1.42	2	.49	1.00	.00
$M_{2,1}$ : Interdependence	443 <sup>b</sup>	12.02	2	.002	.95	.11
$M_{2,2}$ : Interdependence	250 <sup>c</sup>	1.97	2	.37	1.00	.00
$M_{3,1}$ : Conflict	749 <sup>d</sup>	49.06	1	< .001	.81	.25
$M_{3,2}$ : Conflict	942 <sup>e</sup>	66.95	1	< .001	.79	.27
$M_{4,1}$ : Integration	749 <sup>d</sup>	2.90	1	.09	.99	.05
$M_{4,2}$ : Integration	942 <sup>e</sup>	3.59	1	.06	.99	.05
Alternative models <sup>f</sup>						
$M_{A,11}$ : Interdependence	791 <sup>a</sup>	279.20	2	< .001	.01	.35
$M_{A,12}$ : Conflict	791 <sup>a</sup>	111.73	1	< .001	.64	.38
$M_{A,13}$ : Integration	791 <sup>a</sup>	218.83	1	< .001	.50	.24
$M_{A,21}$ : Independence	443 <sup>b</sup>	94.57	2	< .001	.36	.27
$M_{A,22}$ : Conflict	443 <sup>b</sup>	49.06	1	< .001	.77	.34
$M_{A,23}$ : Integration	443 <sup>b</sup>	98.55	1	< .001	.61	.21
$M_{A,31}$ : Independence	749 <sup>d</sup>	87.27	2	< .001	.60	.20
$M_{A,32}$ : Interdependence	749 <sup>d</sup>	128.00	2	< .001	.35	.24

a. Including participants from Germany, New Zealand, United Kingdom, and the United States.

b. Including participants from Algeria, Botswana, and Rwanda.

c. Including participants from Botswana and Rwanda.

d. Including participants from Hong Kong, South Korea, and Taiwan.

e. Including participants from Algeria, Hong Kong, South Korea, and Taiwan.

f. Alternative models refer to models other than the hypothesized model that was proposed to fit a particular data set of a country.

consistent with the predictions of the interdependence model ( $M_{2,2}$ ). For Algeria, however, positive links between independent self-construal and positive affect as well as interdependent self-construal and life satisfaction were found. This pattern of results seemed to be more similar to the East Asian countries included in this study than to the other two countries within the same geographical region (i.e., Africa), and so the interdependence model was tested again with the Algerian data removed. Results showed that the interdependence model fit the data well for Botswana and Rwanda but not for all three African countries combined. The integration model ( $M_{4,2}$ ) was also tested again with the Algerian data combined with the East Asian countries, and results provided support for a good fit of data for the integration model. It is worth noting the data did not support any of the alternative models, thus providing stronger evidence for the explanatory power of the proposed models.

## General Discussion

The present study extended the existing body of cross-cultural comparisons of self-construals and subjective well-being in two ways. First, this study proposed that differences in sociocultural characteristics should be made within the broad and heterogeneous category of collectivistic countries. Results indicate that individuals from African countries and those from East Asian countries differ in levels of independent self-construal, interdependent self-construal, positive affect, and negative affect. Such results provide some empirical support for distinguishing among collectivistic countries with different extents of societal modernization.

Second, we tested three cultural models that explicate the relationship between dimensions of self-construal and components of subjective well-being for Western, African, and East Asian



countries. An independence model, which emphasizes the role of independent self-construal on subjective well-being, was proposed to be relevant to the Western countries. An interdependence model, which emphasizes the role of interdependent self-construal on subjective well-being, was proposed to be relevant to the African countries. An integration model, which emphasizes that both independent and interdependent self-construals are important, was proposed to be relevant to East Asian countries.

The present results were largely consistent with the predictions of the independence model and the integration model in revealing that self-construal was related to both positive affect and life satisfaction. However, it is important to note that the hypothesized link between self-construal and negative affect was not found. This result may be accounted for by the two-factor model of affect (e.g., Diener & Lucas, 2000; Watson & Tellegen, 1985), which proposes that positive affect and negative affect are separate entities rather than two opposite poles within the same continuum. Positive affect and negative affect are produced by distinct psychological processes and are associated with different sets of correlates. Consistent with the two-factor model of affect, the present study shows that self-construal is associated with positive affect but a reliable link between self-construal and negative affect is absent in most of the countries.

### *Regional Differences in Psychological Characteristics Among African Countries*

It is important to note that the interdependence model was largely applicable to Botswana and Rwanda but not to Algeria. It is noteworthy that Algeria, which is located in northern Africa, is different from the two sub-Saharan African countries in significant ways. Specifically, Algeria is geographically located near the Southern European coasts. The social and political development of Algeria has historically experienced stronger European influences than the two sub-Saharan African countries. More importantly, Algeria has embarked on industrialization programs as a major policy since the 1970s. Such economic reform has resulted in a transformation of an agrarian economy to a largely industrial one. Industrialization has created more opportunities for state-sponsored education and employment among people in Algeria, including women who traditionally took up family and domestic roles (Moghadam, 1993). The economic changes in Algeria has brought about a gradual weakening of the patriarchal social system and blurring of traditional gender roles as people become more receptive to modern values, such as individual rights and gender equality (Mehdid, 1993). Because Algeria has undergone socioeconomic development in the past decades, both traditional collectivistic values and modern individualistic values may influence its people in a way similar to that of East Asia.

By contrast, the economic growth of sub-Saharan African countries has been slow in the recent past (Inglehart, 1997). The low rate of industrialization in these countries is attributed to a myriad of obstacles, such as a dearth of trained human resources and political instability (Ghosh, 1984). Although World Bank data have revealed a global trend of economic growth and decline in poverty rate, it is noteworthy that such trends are found in most countries in the world, including the North African region, but not the sub-Saharan African region (Fischer, 2003). Economic underdevelopment may impede social changes in Botswana and Rwanda. In these sub-Saharan countries, the group rather than the individual still remains a major force determining what constitutes a "good life." In these societies, the group refers to not only the family but also the clan or tribe (see, e.g., Allen & Williams, 1982; Green, 1986). The group can have influences on various major life tasks, such as family decision-making, marriage, conflict resolution among couples, and even choice of business and business associates (see, e.g., Iliffe, 1995; Mair, 1969). The influence of the group or the extended family system still prevails in most sub-Saharan countries (Iliffe, 1995), and this may explain in part why the interdependence model is more relevant to Botswana and Rwanda than to Algeria.

It is also possible that the present unexpected results are attributable to the language of the questionnaire. A variety of African and European languages were used in the two sub-Saharan African countries. Questionnaires in English, a common language among university students in Botswana and Rwanda, were administered in these countries. These respondents' greater tendency toward interdependence could possibly be explained by the ethnic affirmation hypothesis (K. S. Yang & Bond, 1980), which proposes that participants' awareness of their own ethnicity may be aroused when they complete a questionnaire written in a nonnative language. As a consequence of increased sensitivity to their ethnic uniqueness, participants may give more extreme responses in a direction valued by their own culture when they answer a questionnaire in a nonnative language.

In light of the ethnic affirmation hypothesis, the English language of the questionnaire may function as a cue that directs the attention of participants from Botswana and Rwanda to their ethnicity as well as the beliefs and attitudes emphasized by their collectivistic culture. Although participants from Algeria also completed their questionnaires in a nonnative (i.e., Arabic) language, the ethnic affirmation effects of the Arabic language may be weaker than those of the English language, which is the native language of many Western countries. Such a possibility remains unknown because the ethnic affirmation hypothesis has not been tested in any studies that compared the use of African and English questionnaires. Future studies may be conducted to examine the ethnic affirmation effects on African participants who complete questionnaires in English or other European languages and those who complete questionnaires in their native African language.

### *Theoretical and Research Implications for Cross-Cultural Comparison*

The present results may have broader theoretical and research implications. Triandis's (1994, 1995) theory of individualism-collectivism has been widely adopted to explicate cultural differences in social behavior. Individualism-collectivism is postulated as a major dimension along which individuals from distinct cultural background vary. When making cross-cultural comparisons, the psychological characteristics of people from individualistic countries are compared to those of people from collectivistic countries. Instead of viewing individualism and collectivism as two extreme poles within a single dimension, the present findings suggest a more complex view of the cultural syndrome. For some countries, the two clusters of seemingly opposing cultural values may be regarded as more or less equal in importance. The socioeconomic context of a country may play a role in influencing whether one of the cultural values dominates or both coexist in a well-integrated manner.

The present findings shed light on the process of modernization as another important dimension on which individuals differ systematically. To date, the degree and types of socioeconomic development have received scant attention in the existing literature. Future theorizing and research on cross-national comparison may benefit from an integration of the cross-cultural theories of individualism-collectivism and sociological theories of modernization. Recent studies have provided some evidence demonstrating how such an integration can take place in the age of globalization when individuals are exposed to a variety of cultural stimuli. For instance, the study by Fu and Chiu (2007) documented that Hong Kong students tend to associate traditional Chinese cultural values with exemplary figures from China but to associate Western cultural values with those from the West. C. Cheng and Chun (2008) also found that although Hong Kong students were generally less assertive than their North American counterparts, Hong Kong students displayed similar levels of assertive responses in agentic events. In another study (J. Chen, Chiu, & Chan, in press), Chinese students were found to place more weight on role personalities

when predicting job performance than their North American counterparts. However, when North American students were asked to imagine themselves working in a country with a different set of cultural values (i.e., low job mobility), they became motivated to meet cultural expectations by placing greater emphases on role personalities. A recent study further indicates that Chinese students can flexibly switch their cultural frames when processing distinct culture-related information (C. Cheng, Wang, & Golden, in press).

This integrative approach allows a more refined categorization of countries, such as further dividing collectivistic countries into modern and traditional subcategories. An index should be developed to reflect differences in the pace of socioeconomic transformation among countries, and this new index should be included together with existing cultural indices in future multinational comparisons. Such nuanced distinctions among countries may enhance the explanatory and predictive power of findings yielded from these studies.

Adopting the proposed integrative approach, future work on multinational research should be devoted to explore the usefulness and predictive ability of cultural index values for understudied countries such as those in Africa. Cultural index values have been developed by psychologists (e.g., Hofstede, 2001; Suh et al., 1998) to reflect the characteristics of the cultural value system of a country. Such a value is useful for multinational studies in comparing the value systems among different countries. However, only regional index values have been given for African countries. For instance, Hofstede (2001) assigned cultural index values to the two broad groupings of Eastern and Western African countries. As discussed previously, the pace and pattern of development of countries within the same region can vary considerably. Such regional indices may be too broad to provide an accurate description of individual African countries from a region. The present results revealed considerable differences in psychological mechanisms underlying subjective well-being among three African countries that were studied, indicating a need to distinguish the cultural values among the many countries in the African continent. In light of these results, we propose that a cultural index value should be assigned for each individual African country to allow for a better understanding of the sociocultural dynamisms that have taken place in this large, multi-ethnic continent in the past decades.

### *Research Caveats and Concluding Remarks*

Before concluding, several research caveats should be observed. Caution should be taken when interpreting the present results because a cross-sectional design was adopted in this study. The directionality of associations among variables thus remains inconclusive. Although it is tempting to conclude that cultural self-construal may exert an influence on components of subjective well-being, it is equally possible that individuals' level of subjective well-being may influence the way they construe themselves. For instance, individuals from Western countries who experience a high level of subjective well-being may tend to think about themselves in a way consistent with their cultural values (i.e., independence). To clarify the predictive relationships among the psychological variables, future studies should adopt a longitudinal or cross-lagged panel design. Although this research design cannot make strong conclusions about the direction of causality, using such a design together with partial correlation methods allows inferences to be made about the directionality of relationships.

It is also worth noting that each broad sociocultural group consisted of three to four countries in this study. The scope of each sociocultural group may be expanded by including a greater number and variety of countries. Although societal modernization has generally taken place in most Asian countries over the past few years, it will be worthwhile to explore the small number of Asian countries in which socioeconomic development has just started, such as North Korea

and Cambodia. Moreover, the present study revealed considerable sociocultural differences among individuals from various African countries. Such intracontinental differences should be further explored by including more African countries.

It is important to reiterate that the present results were derived from a single method of self-report questionnaires. Also, participants were all university students, who are relatively homogeneous in age and educational level. The sources of subjective well-being of university students may differ from the sources of subjective well-being of people in different age groups or those who received less education. Because the university attendance rates are much lower in sub-Saharan African countries than the Western and East Asian countries (UNESCO, 2007), the present samples of African university students may not be representative of African adults in general. The present results should be replicated with studies that adopt alternative methods (e.g., peer report, observation) with samples having more heterogeneous demographic characteristics.

To conclude, this study tested four cultural models—*independence, interdependence, conflict, and integration models*—that explicate the relationships between dimensions of self-construal and components of subjective well-being among countries with distinct sociocultural characteristics. Findings provided some support for the applicability of the independence model to individuals from several Western countries and the applicability of the integration model to individuals from some East Asian countries. However, more complex patterns have been identified among the African countries. The interdependence model seems to be more applicable to individuals from sub-Saharan countries such as Botswana and Rwanda but not to individuals from Algeria in northern Africa. The patterns of results for Algeria, which has embarked on industrialization programs, seem to be more similar to those for the East Asian countries.

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