Indigenous Chinese Personality Constructs: Is the Five-Factor Model Complete?

Fanny M. Cheung, Kwok Leung, Jian-Xin Zhang, Hai-Fa Sun, Yi-Qun Gan, Wei-Zhen Song and Dong Xie

Journal of Cross-Cultural Psychology 2001 32: 407
DOI: 10.1177/0022022101032004003

The universality and sufficiency of the five-factor model in the Chinese context were investigated. In Study 1, analysis of the Revised NEO Personality Inventory (NEO-PI-R) and the Chinese Personality Assessment Inventory (CPAI) taken by Chinese students showed four joint factors similar to the domains of the NEO-PI-R. Two unique factors were obtained. The Interpersonal Relatedness factor was defined only by CPAI scales. The Openness domain, however, was not represented in the CPAI scales. In Study 2, involving Chinese managers, the robustness of the Interpersonal Relatedness factor was demonstrated. In Study 3, the six-factor model was confirmed with Hawaiian students. Further analyses showed that the six-factor models were superior to the five-factor models and that the Interpersonal Relatedness scales could not be consistently explained by a combination of the Big Five factors. Implications for the universality of the five-factor model and the cross-cultural relevance of the CPAI Interpersonal Relatedness factor are discussed.

INDIGENOUS CHINESE PERSONALITY CONSTRUCTS
Is the Five-Factor Model Complete?

FANNY M. CHEUNG
The Chinese University of Hong Kong

KWOK LEUNG
City University of Hong Kong

JIAN-XIN ZHANG
Institute of Psychology, Academia Sinica

HAI-FA SUN
South China Normal University

YI-QUN GAN
Peking University

WEI-ZHEN SONG
Institute of Psychology, Academia Sinica

DONG XIE
The Ohio State University

One of the value conflicts that has been identified in psychology's growing concern toward cultural pluralism is the *etic* versus *emic* approach (Sue, 1983). The etic approach emphasizes "universals," or "core similarities," in all human beings, whereas the emic approach "utilizes a culture-specific orientation" (p. 584). Sue (1983) criticized the strong dominance of the etic approach in psychology at the expense of the emic approach. Similar criticism has also been raised by proponents of cultural psychology (e.g., Shweder, 1990).

The etic dominance is particularly evident in studies of cross-cultural personality assessment, which has traditionally relied on translating and adapting English-language tests and assumed that the traits these tests measure were adequate and sufficient representatives of the

AUTHORS' NOTE: We thank Michael Bond for his support and comments on an earlier draft of this article. We also thank Veronica S. K. Leung for conducting further analyses on her thesis results for use in this article. This project was partially supported by the Hong Kong Government Research Grants Council earmarked grant project #CU11113 and by the South China Programme of the Hong Kong Institute of Asia-Pacific Studies, and Direct Grant #2020304 of The Chinese University of Hong Kong. Correspondence concerning this article and permission for the use of the Chinese Personality Assessment Inventory scales should be addressed to Fanny M. Cheung, Department of Psychology, The Chinese University of Hong Kong, Hong Kong; e-mail: fmcheung@cuhk.edu.hk.

JOURNAL OF CROSS-CULTURAL PSYCHOLOGY, Vol. 32 No. 4, July 2001 407-433

personality dimensions in other cultures. Recent attempts to confirm the five-factor model of personality (Goldberg, 1990; Norman, 1963) on the basis of imported tests in non-Western cultures (M. H. Bond, 1994; Katigbak, Church, & Akamine, 1996; McCrae & Costa, 1997; Narayanan, Menon, & Levine, 1995) have revived the interest in the emic-etic issue in personality assessment (Berry, 1969).

Although there is evidence of universality for the Big Five, it was noted that the sets of emic and etic factors obtained might "cut the social-perceptual world differently" (Yik & Bond, 1993, p. 92). In particular, K. S. Yang and Bond (1990) pointed out that the

> construct validation of the imported and indigenous instruments is likely to yield somewhat different theories about the local reality (often construed as reality) even if they are both true (i.e., useful). And it is this broader area of indigenous theory development that the use of imported instruments may especially compromise. (p. 1094)

THE CHINESE PERSONALITY ASSESSMENT INVENTORY

The Chinese Personality Assessment Inventory (CPAI) (Cheung et al., 1996) was developed as an omnibus indigenous personality inventory for the Chinese people using a combined emic-etic approach. The CPAI covers personality characteristics for normal and diagnostic assessment. The intention was to construct an inventory suited to local needs by identifying culturally unique dimensions as well as cross-cultural universals. It was developed as a collaborative project between psychologists in Hong Kong and China, which covers the majority of the Chinese population. (Please refer to Cheung et al.'s 1996 paper for a full description of the development and the psychometric properties of the CPAI.) The personality constructs included in the CPAI were derived from groups of personality adjectives or person-descriptions reflecting daily life experiences. These constructs were derived from reviews of contemporary Chinese novels, Chinese proverbs, and the psychological literature on Chinese personality. In addition, statements of self-descriptions and other-descriptions were obtained in informal surveys of professionals and people in the street. In particular, the emic personality characteristics that were deemed to be of specific interest to the Chinese culture but were not covered in imported personality inventories include

- Harmony, which refers to one's inner peace of mind, contentment, interpersonal harmony, avoidance of conflict, and maintenance of equilibrium;
- *Ren Qing* (relationship orientation), which covers adherence to cultural norms of interaction based on reciprocity, exchange of social favors, and exchange of affection according to implicit rules;
- Modernization, which is reflected by personality change in response to societal modernization and attitudes toward traditional Chinese beliefs;
- Thrift versus Extravagance, which highlights the traditional virtue of saving rather than wasting and carefulness in spending, in contrast to the willingness to spend money for hedonistic purposes;
- *Ah-Q* Mentality (defensiveness), which is based on a character in a popular Chinese novel in which the defense mechanisms of the Chinese people, including self-protective rationalization, externalization of blame, and belittling others' achievements, are satirized;
- Face, which depicts the pattern of orientations in an interpersonal and hierarchical connection and social behaviors to enhance one's face and to avoid losing one's face.

Each CPAI item is a statement describing a personal characteristic or typical behavior to which the respondent will answer in a yes-or-no format. The language fluency, comprehension level, and content relevance of the items were checked in a pilot study. The items in each CPAI scale were selected on the basis of item analysis results in a preliminary study with

1,167 adults in China and 580 adults in Hong Kong. Except for the Infrequency scale, items with low item-total correlations and with extreme endorsement rates (over 90% or under 10%) were discarded. For the Infrequency scale, only those items that were endorsed by over 90% or under 10% of the respondents were selected. Scales that were highly correlated with each other, as well as having similar patterns of intercorrelations with other scales, were combined. The revised version of the CPAI was then standardized on a representative sample of 1,998 Chinese from different regions in China and 446 Chinese from Hong Kong (the final sample size is slightly larger than that originally reported in the Cheung et al. 1996 paper). Given the literacy requirement for the testing, the educational level of the respondents was set at Grade 6 or above. To screen out invalid protocols, 118 respondents who left more than 30 items unanswered or who scored 4 or above on the Infrequency scale were discarded from the final sample. The screening criteria were formulated on the basis of careless test-taking patterns found in the preliminary study. Carelessness in test taking is not uncommon in large-scale data collection of this kind.

The final version of the CPAI consists of 510 items that make up 22 personality scales, 12 clinical scales (with 1 clinical scale also listed as a personality scale), and 3 validity scales or indexes. The average Cronbach's alpha coefficients for the personality scales are .69 for the Chinese sample and .70 for the Hong Kong sample. Those for the clinical scales are .75 and .78, respectively. The results obtained for the People's Republic of China (PRC) and Hong Kong were very similar. Four comparable factors were extracted from the 22 personality scales in both China and Hong Kong standardization samples. The average congruence coefficient between the two sets of factors was .88. Therefore, the data of the two samples were combined in a unitary factor analysis. The four personality factors were Dependability, Chinese Tradition, Social Potency, and Individualism, which together explained 58.9% of the total variance (Table 1). The factor structure of the CPAI personality scales for the combined PRC and Hong Kong standardization sample is described below.

Dependability is characterized by high positive loading on responsibility, practical mindedness, graciousness versus meanness, optimism versus pessimism, veraciousness versus slickness, family orientation, and meticulousness, and negative loading on emotionality, inferiority versus self-acceptance, and external versus internal locus of control. Factor 1 explains 22.1% of the total matrix variance.

Chinese Tradition is characterized by high positive loading on harmony, ren qing (relationship orientation), thrift versus extravagance, and face (which has a double loading on dependability), and negative loading on flexibility, modernization, and adventurousness (which has a double loading on social potency). This factor was given the label *Chinese Tradition* because it includes many of the emic scales developed specifically to reflect the traditional values, orientations, and behavioral norms in the Chinese culture. Factor 2 explains 15.06% of the variance.

Social Potency is characterized by high loading on leadership and adventurousness and negative loading on introversion-extraversion. Factor 3 explains 11.6% of the variance.

Individualism is characterized by high positive loading on self- versus social orientation, logical versus affective orientation, and Ah-Q mentality/defensiveness (which has a double loading on Chinese Tradition). Factor 4 explains 10.1% of the total variance.

With the current interest in the cross-cultural validity of the Big Five structure in personality, one of the next steps in examining the construct validity of the CPAI is to investigate the plausible similarity of the CPAI factors and those based on the Big Five. In this article, the factor structure of the CPAI personality scales is compared with the Revised NEO

TABLE 1
Factor Structure of the CPAI Personality Scales for the Chinese Standardization Sample (*N* = 2,444)

	Factor			
Personality Scales	*1 Dependability*	*2 Chinese Tradition*	*3 Social Potency*	*4 Individualism*
Practical Mindedness	**.75**	.14	–.30	–.11
Emotionality	**–.73**	.00	–.17	.00
Responsibility	**.73**	.28	.00	.23
Inferiority vs. Self-Acceptance	**–.66**	.36	–.39	.00
Graciousness vs. Meanness	**.65**	–.21	.00	**–.44**
Veraciousness vs. Slickness	**.61**	.00	–.18	–.31
Optimism vs. Pessimism	**.59**	–.20	**.51**	.00
Meticulousness	**.57**	.32	.00	.25
External vs. Internal Locus of Control	**–.57**	.20	–.19	.00
Family Orientation	**.54**	.21	.19	**–.42**
Ren Qing (relationship orientation)	–.11	**.73**	.12	.00
Harmony	.26	**.71**	.00	.00
Flexibility	.00	**–.60**	.00	**–.47**
Modernization	.00	**–.57**	.16	.00
Face	**–.54**	**.55**	.00	.17
Thrift vs. Extravagance	.27	**.49**	–.36	.17
Introversion vs. Extraversion	.00	.00	**–.73**	.17
Leadership	.00	.15	**.73**	.40
Adventurousness	.26	**–.41**	**.67**	.10
Self vs. Social Orientation	–.15	.00	.00	**.81**
Logical vs. Affective Orientation	.24	.38	.31	**.53**
Defensiveness (*Ah-Q* mentality)	–.38	**.44**	.18	**.45**
Eigenvalue	4.87	3.31	2.55	2.22
Variance explained (%)	22.11	15.06	11.59	10.10

NOTE: CPAI = Chinese Personality Assessment Inventory. Values in bold indicate factor loadings ≥ .40.

Personality Inventory (NEO-PI-R) (Costa & McCrae, 1992) and the NEO–Five Factor Inventory (NEO-FFI) (Costa & McCrae, 1992) among Chinese respondents.

The question that may be raised with the factor structure of the CPAI is whether it may be subsumed under the Big Five structure, which is purported to be universal (McCrae & Costa, 1997). The comparison of the CPAI factor structure with the Big Five is conducted by investigating the joint factor structure of the CPAI and measures of the Big Five. Three independent studies involving Chinese respondents from China and Hong Kong and a mixed ethnic group of respondents from Hawaii are reported, using exploratory and confirmatory factor analyses as well as multiple regression analyses.

STUDY 1

The objective of Study 1 is to explore the structure of the CPAI scales and NEO-PI-R facets in a joint factor analysis.

Method

Respondents. Chinese university students from Beijing and Guangzhou, two major cities in the PRC were recruited to participate in the study. Respondents who left more than 30 items unanswered on the CPAI or over 20 items unanswered on the NEO-PI-R were discarded. A total of 279 valid protocols (56% men and 44% women) were used in this study. The age of the respondents ranged from 17 to 30, with the mean age at 21.3. All of the students volunteered to participate in the study.

Instruments: CPAI. Form B of the CPAI, which consists of only the 22 personality scales in addition to the three validity indices, was used. This shorter form has a total of 352 items. The names of the 22 personality scales as grouped according to the factor structure are listed in Table 1. The average Cronbach's alpha coefficient of the personality scales obtained in this study was .66.

NEO-PI-R. (Costa & McCrae, 1992). The NEO-PI-R improves upon the earlier version of NEO-PI (Costa & McCrae, 1985) that measured the Big Five factors: Neuroticism (N), Extraversion (E), Openness (O), Agreeableness (A), and Conscientiousness (C). Each domain is represented by six facet scales with eight items in each scale. The total number of items is 240. The NEO-PI-R was translated into Chinese by Bond and his associates (Michelle Yik, Eddie Ho, F. Y. Liu, and Kwok Leung; see McCrae, Costa, & Yik, 1996) and has been used with Chinese students in Hong Kong. The Hong Kong version was adapted for use in China by J. X. Zhang (this version was later modified for use in China; see J. Yang et al., 1999). The internal consistency of the Hong Kong version was reported to be comparable to that of the original English version, with the exception of the Values (O6) facet ($\alpha = .36$) (McCrae, Costa, et al., 1996). Equivalence of the Chinese translation with the original English version is very good except for two facet scales, Tender Mindedness (A6) and Values (McCrae, Yik, Trapnell, Bond, & Paulhus, 1998). Factor analysis of the Hong Kong version of the Chinese NEO-PI-R provided five factors that replicated the facet loading on the intended factor. The reliability of the five global domain scales was also found to be good (McCrae, Costa, et al., 1996).

The internal consistency and the factor structure of the Chinese NEO-PI-R for the current group of respondents has been analyzed in another study (K. Leung, Cheung, Zhang, Song, & Xie, 1997). The average Cronbach's alpha coefficient for the NEO-PI-R facets is .53. The alpha values for the five factors are .83 for N, .66 for E, .53 for O, .63 for A, and .80 for C. Two procedures were used to evaluate the factor structure—Procrustes rotation and confirmatory factor analysis (CFA). Even with the more stringent CFA, the five-factor model was identifiable in this Chinese student sample. However, in both analyses, three facet scales were commonly found to be nonequivalent: Action in the Openness domain, and Modesty and Straightforwardness in the Agreeableness domain.

Procedure. All students took both the CPAI and the NEO-PI-R. The order of presentation of the two inventories was reversed for half of the sample. The students completed the questionnaires in small groups, anonymously. They received a payment of 10 yuan (US $1.25) each for participating in the study.

Analysis. A joint factor analysis was performed on the CPAI personality scales and the NEO-PI-R facet scales. Based on principal components analysis with varimax rotation, different models consisting of four, five, six, and seven factors were tried. The model with six factors provided the best fit of the scree plot and explanation of the factors (Cattell, 1966). The eigenvalues for all the six factors exceeded 1.0. The six-factor model is reported here. For comparison, the five-factor model is also presented.

Results

The results of the six-factor model from the joint factor analysis of the CPAI personality scales and the NEO-PI-R facet scales are shown in Table 2. Factor loadings above .40 are in bold type. The total variance explained by the six factors is 50%.

Factor 1 is defined by five CPAI personality scales—Inferiority versus Self-Acceptance, External versus Internal Locus of Control, and Emotionality from the Dependability factor, and Leadership (negative) and Adventurousness (negative) from the Social Potency factor, and four NEO-PI-R facets—Anxiety, Depression, Vulnerability, and Self-Consciousness from the Neuroticism factor. This factor may fit into the Neuroticism domain of the five-factor model.

Factor 2 is loaded on three CPAI personality scales—Responsibility, Meticulousness, and Practical Mindedness from the Dependability factor, and seven NEO-PI-R facets—Self-Discipline, Deliberation, Order, Achievement Striving, Dutifulness, and Competence from the Conscientiousness factor, and Impulsiveness (negative) from the Neuroticism factor. This factor falls neatly into the Conscientiousness domain of the Big Five.

Factor 3 is characterized by three CPAI scales from the Dependability factor—Graciousness versus Meanness, Veraciousness versus Slickness, and Family Orientation, and five NEO-PI-R facets—Compliance, Straightforwardness, Trust, and Altruism from the Agreeableness factor, and Angry Hostility (negative) from the Neuroticism factor. This factor is similar to the Agreeableness domain of the Big Five.

Factor 4 consists of two CPAI scales—Introversion versus Extraversion (negative) and Self- versus Social Orientation (negative), and five NEO-PI-R facets from the Extraversion factor—Gregariousness, Warmth, Activity, Assertiveness, and Positive Emotions. This is compatible with the Extraversion domain on the Big Five.

Factor 5 is a unique CPAI factor without any loading on the NEO-PI-R facets. The CPAI scales are Optimism versus Pessimism (negative), Ren Qing, Flexibility (negative), Ah-Q Mentality (Defensiveness), Harmony, Face, and Logical versus Affective Orientation. This is the typical Chinese Tradition factor found in the CPAI. With its focus on relationship concern and interdependence, this factor was renamed Interpersonal Relatedness.[1]

Factor 6, on the other hand, is a unique NEO-PI-R factor without any loading on the CPAI scales. The facets include Feelings, Aesthetics, and Fantasy from the Openness factor, and Tender Mindedness from the Agreeableness factor of the Big Five. This factor defines the Openness domain of the Big Five.

In contrast, the five-factor model from the exploratory factor analysis (EFA) produced a varied version for the original Big Five factors (Table 3). The CPAI Interpersonal Relatedness scales did not hold together in the same factor. Although the Conscientiousness and Openness factors of the Big Five were more clearly defined in the first and the fifth factors, the facets of the Neuroticism, Extraversion, and Agreeableness factors were intermixed. Factor 2 may be interpreted as the Surgency factor (Katigbak et al., 1996) or the Submission versus Dominance factor (McCrae, Zonderman, Costa, Bond, & Paunonen, 1996) found in

TABLE 2

Six-Factor Solution of the Joint Factor Analysis of CPAI Personality Scales and NEO-PI-R Facets for the Chinese Student Sample (N = 279)

	Factor					
Scales/Facets	*1 Neuroticism*	*2 Conscientiousness*	*3 Agreeableness*	*4 Extraversion*	*5 Interpersonal Relatedness*	*6 Openness*
Adventurousness	**–.76**	–.02	–.03	.24	–.11	.11
Inferiority vs. Self-Acceptance	**.69**	–.13	–.12	–.10	.35	–.06
N1: Anxiety[a]	**.63**	–.11	–.17	–.16	.04	.13
N3: Depression[a]	**.62**	–.25	–.13	–.17	.16	.08
N6: Vulnerability[a]	**.60**	**–.46**	.03	–.19	.03	–.08
N4: Self-Consciousness[a]	**.59**	–.12	.05	–.34	.21	.08
External vs Internal Locus of Control	**.58**	–.11	–.33	.00	–.02	.05
Leadership	**–.51**	.08	–.34	.32	**.40**	.01
Emotionality	**.48**	**–.42**	–.34	.07	–.01	.22
O5: Ideas[a]	**–.41**	.07	–.19	.00	.14	.36
C5: Self-Discipline[a]	–.20	**.72**	–.06	.15	–.06	.18
C6: Deliberation[a]	**–.04**	**.71**	–.03	–.08	.08	.06
C2: Order[a]	.01	**.68**	.03	–.03	–.03	.10
Responsibility	–.20	**.66**	.10	–.02	.16	–.19
C4: Achievement Striving[a]	–.16	**.62**	–.26	.27	.04	.09
Meticulousness	.03	**.59**	.09	–.16	.21	–.02
C3: Dutifulness[a]	–.06	**.59**	.25	.15	.14	.22
N5: Impulsiveness[a]	.29	**–.57**	–.22	.07	.12	.25
C1: Competence[a]	–.24	**.52**	–.09	.30	.18	.19
Practical Mindedness	–.22	**.45**	**.41**	–.10	–.06	–.12
Graciousness vs. Meanness	–.29	.09	**.65**	.02	**–.40**	.12
A4: Compliance[a]	.21	.14	**.63**	–.00	.01	–.11
Veraciousness vs. Slickness	–.09	.02	**.61**	–.07	–.17	.11
A2: Straightforwardness[a]	.10	–.10	**.58**	–.18	.00	–.02
A1: Trust[a]	–.09	–.02	**.58**	.27	.15	.19
Family Orientation	.22	–.05	**.50**	–.11	–.04	–.08
N2: Angry Hostility[a]	.34	–.28	**–.47**	–.15	.00	.21

(continued)

TABLE 2 Continued

Scales/Facets	Factor 1 Neuroticism	2 Conscientiousness	3 Agreeableness	4 Extraversion	5 Interpersonal Relatedness	6 Openness
A3: Altruism[a]	.06	.34	**.44**	.33	.18	**.43**
E2: Gregariousness[a]	–.04	–.04	.15	**.72**	–.04	–.18
Introversion vs Extraversion	.36	.11	.10	**–.66**	–.09	.01
E1: Warmth[a]	–.09	.06	.27	**.60**	.04	.36
E4: Activity[a]	–.28	.29	–.15	**.57**	–.04	.10
E3: Assertiveness[a]	–.35	–.03	–.32	**.53**	.08	–.01
E6: Positive Emotions[a]	–.16	–.08	.11	**.51**	–.04	.32
Self vs Social Orientation	–.37	.04	**–.41**	**–.41**	.30	.11
Optimism vs Pessimism	–.15	–.02	.05	–.14	**–.63**	–.07
Ren Qing (relationship orientation)	.00	.06	.27	–.08	**.59**	.28
Flexibility	–.11	–.28	.24	.05	**–.58**	.15
Defensiveness (*Ah-Q* mentality)	.10	–.03	–.51	–.04	**.57**	–.08
Harmony	.15	.35	.39	–.02	**.57**	–.05
Face	**.41**	–.03	–.25	.09	**.56**	–.03
Logical vs Affective Orientation	–.35	.35	–.08	–.16	**.53**	.08
O3: Feelings[a]	.15	.15	–.04	.16	.03	**.74**
O2: Aesthetics[a]	–.07	.11	.02	–.06	–.06	**.69**
O1: Fantasy[a]	.12	–.39	.03	–.14	.03	**.54**
A6: Tender Mindedness[a]	.13	.02	.22	.24	.21	**.41**
A5: Modesty[a]	.37	–.02	.30	–.26	–.02	–.28
O4: Actions[a]	–.26	–.24	–.22	.10	–.14	–.02
Thrift vs Extravagance	.16	.34	.11	–.28	.22	–.08
Modernization	–.32	–.10	.35	–.05	–.19	.33
E5: Excitement Seeking[a]	–.08	–.28	–.31	.27	.16	.25
O6: Values[a]	–.16	.09	.34	.14	–.14	.35
Eigenvalue	8.35	5.06	4.92	3.66	2.16	1.82
Variance explained (%)	16.1	9.7	9.5	7.0	4.2	3.5

NOTE: CPAI = Chinese Personality Assessment Inventory; NEO-PI-R = Revised NEO Personality Inventory. Values in bold indicate factor loadings ≥ .40.
a. Personality facets from the NEO-PI-R; all other scales are from the CPAI.

TABLE 3

Five-Factor Solution of the Explorative Factor Analysis of CPAI Personality Scales and NEO-PI Facets for the Chinese Student Sample (N = 279)

	Factor				
Scales/Facets	*1 Conscientiousness*	*2 Extraversion*	*3 Neuroticism/Social Poise*	*4 Agreeableness*	*5 Openness*
C6: Deliberation[a]	**.69**	.01	.00	–.06	.07
C5: Self-Discipline[a]	**.62**	–.15	.28	.01	.14
C3: Dutifulness[a]	**.60**	–.04	.07	.29	.20
C2: Order[a]	**.59**	–.02	–.05	.02	.09
C4: Achievement Striving[a]	**.52**	**.42**	.07	–.05	.04
C1: Competence[a]	**.50**	**.44**	.03	.11	.16
N5: Impulsiveness[a]	**–.58**	–.01	.36	–.01	.26
Responsibility	**.72**	.08	–.09	.05	–.16
Meticulousness	**.65**	–.12	.06	.02	.01
Logical vs. Affective Orientation	**.58**	.20	.13	–.14	.13
Emotionality	**–.54**	–.09	**.43**	–.09	.24
Harmony	**.53**	–.20	.28	.39	–.04
Practical Mindedness	**.50**	–.10	–.37	.17	–.16
Thrift vs. Extravagance	**.42**	–.31	.14	–.03	–.05
E3: Assertiveness[a]	–.01	**.71**	.08	.02	–.07
E4: Activity[a]	.18	**.63**	–.07	.16	.02
E6: Positive Emotions[a]	–.13	**.41**	–.11	.37	.27
E5: Excitement Seeking[a]	–.28	**.37**	.24	–.04	.24
N4: Self-Consciousness[a]	–.08	**–.58**	**.42**	.00	.13
N6: Vulnerability[a]	**–.48**	**–.51**	.34	.04	–.05
A5: Modesty[a]	–.01	**–.54**	.05	.13	–.26
A2: Straightforwardness[a]	.00	**–.43**	–.21	.34	.02
Introversion vs. Extraversion	.13	**–.71**	.00	–.27	.06
Leadership	.21	**.70**	.17	–.09	.02
Adventurousness	.03	**.62**	**–.46**	–.05	.06
N3: Depression[a]	–.27	**–.41**	**.53**	–.02	.10
N1: Anxiety[a]	–.20	–.39	**.46**	–.07	.15

(continued)

TABLE 3 Continued

	Factor				
Scales/Facets	*1 Conscientiousness*	*2 Extraversion*	*3 Neuroticism/Social Poise*	*4 Agreeableness*	*5 Openness*
Face	.04	–.03	**.73**	.04	–.01
Graciousness vs. Meanness	.08	–.10	**–.73**	.39	.04
Inferiority vs. Self-Acceptance	–.12	**–.41**	**.67**	.05	.00
Defensiveness	.10	.17	**.64**	–.30	–.01
Flexibility	**–.41**	–.05	**–.53**	.12	.11
Optimism vs. Pessimism	–.16	–.10	**–.53**	–.18	–.11
Modernization	–.06	.02	**–.48**	.16	.28
Veraciousness vs. Slickness	.06	–.26	**–.46**	.36	.08
External vs. Internal Locus of Control	–.25	–.24	**.46**	–.12	.06
A1: Trust[a]	.06	.03	–.15	**.61**	.14
A3: Altruism[a]	.36	.06	–.02	**.59**	.39
A4: Compliance[a]	.17	–.39	–.15	**.51**	–.11
E1: Warmth[a]	.01	.38	–.06	**.56**	.29
E2: Gregariousness[a]	–.14	**.43**	–.01	**.54**	–.24
Self vs. Social Orientation	.22	.13	.06	**–.61**	.17
Family Orientation	–.14	–.02	.28	**.41**	–.04
O3: Feelings[a]	.06	.09	.13	.14	**.72**
O2: Aesthetics[a]	.08	.02	–.14	–.01	**.70**
O1: Fantasy[a]	–.35	–.14	.02	–.02	**.56**
A6: Tender Mindedness[a]	.06	.04	.13	.39	**.41**
O4: Actions [a]	–.26	.29	–.14	–.17	–.01
N2: Angry Hostility[a]	–.35	–.10	.39	–.35	.23
O5: Ideas[a]	.15	.36	–.09	–.20	.37
O6: Values[a]	.07	.05	–.33	.29	.32
Ren Qing (relationship orientation)	.28	–.09	.27	.26	.30
Eigenvalue	8.31	5.09	4.98	3.69	2.18
Variance explained (%)	16.0	9.8	9.6	7.1	4.2

NOTE: CPAI = Chinese Personality Assessment Inventory; NEO-PI-R = Revised NEO Personality Inventory. Values in bold indicate factor loadings ≥ .40.
a. Personality facets from the NEO-PI-R; all other scales are from the CPAI.

other cross-cultural studies of the NEO-PI-R in Asia. Factor 4 may be interpreted as the Affiliation or Love versus Hate factor in these studies. On the other hand, many of the scales associated with the Chinese Tradition and Dependability factors of the CPAI loaded on the same factor as two of the Neuroticism facets in Factor 3. This is a less interpretable factor and involves the underlying meaning of both neuroticism and social poise. The total variance explained by the five factors is 46.7%.

Comparison of the two models shows that the six-factor model makes more sense in explaining the personality structure covered by both the Big Five and the CPAI factors for this Chinese sample. The interpretation of the six-factor model is more straightforward and meaningful than that of a five-factor model. The additional factor that corresponds to the original factor in the standardization study is called for. To demonstrate the stability of the six-factor model with another sample in China, a second study was conducted to replicate the factors using CFA.

STUDY 2

The objective of Study 2 is to replicate the six-factor model derived from the joint analysis of the Big Five factors and the CPAI Interpersonal Relatedness factor in a nonstudent sample in China.

Method

Respondents. Chinese managers in Guangzhou who were attending part-time management training workshops were recruited for this study as part of the doctoral research study of the fourth author (Sun, 1997). A total of 372 respondents (240 men and 132 women) participated in the study. The mean age of the respondents was about 35, with the range from 20 to 60.

Instruments. The respondents took the Chinese translation of the NEO-FFI (Costa & McCrae, 1992), which is the short version of the Big Five measure, together with selected items from the CPAI scales as part of the set of questionnaires used in the doctoral study on influence tactics. The Cronbach's alpha coefficients obtained for the NEO-FFI domains in this study were .79 for N, .67 for E, .63 for O, .62 for A, and .71 for C. Items from four CPAI scales that loaded on the Interpersonal Relatedness factor were included: Harmony, Ren Qing, Face, and Flexibility. These four scales were chosen because they constituted the core scales that defined the Chinese Tradition factor in the standardization study (Table 1) and Interpersonal Relatedness factor in Study 1 (Table 2). The inconsistency of the loading of other CPAI scales in the standardization study and Study 1 may be related to the multiple loading of some of these scales. The Cronbach's alpha coefficients obtained for the four subsets of the CPAI scales in this study were .69, .55, .67, and .49, respectively. The selected items from these four scales are listed in the appendix.

Analysis. A CFA was used to test the goodness of fit of the six-factor model. The correlated factor model included the five NEO-FFI factors, each consisting of three facets, and the Interpersonal Relatedness factor, consisting of the four CPAI scales. The Windows LISREL 8.12a program (Jöreskog & Sörbom, 1993) was used. As in Study 1, the analyses were con-

TABLE 4
Five-Factor Solution of the Exploratory Factor Analysis of the CPAI Interpersonal Relatedness Scales With the Five Factors of the NEO-FFI for the Chinese Manager Sample (*N* = 372)

	Factor				
Scales/Facets	*1*	*2*	*3*	*4*	*5*
Neuroticism 2[a]	**–.79**				
Neuroticism 3[a]	**–.72**				
Agreeableness 2[a]	**.66**				
Neuroticism 1[a]	**–.63**		–.33		
Agreeableness 1[a]	**.62**			.33	
Flexibility		**–.75**			
Conscientiousness 2[a]		**.75**			
Conscientiousness 1[a]		**.67**			
Conscientiousness 3[a]		**.67**			
Extraversion 1[a]			**.69**		
Extraversion 2[a]			**.63**		
Agreeableness 3[a]	.30		**–.59**		
Extraversion 3[a]	.31	.37	**.54**		
Face				**.70**	
Harmony				**.69**	
Ren Qing (relationship orientation)				**.66**	
Openness 1[a]					**.76**
Openness 2[a]					**.71**
Openness 3[a]					**.55**
Eigenvalue	4.00	2.47	1.68	1.37	1.04
Variance explained (%)	21.1	13.0	8.9	7.2	5.5

NOTE: CPAI = Chinese Personality Assessment Inventory; NEO-FFI = NEO Five-Factor Inventory. Values in bold indicate factor loadings ≥ .40.
a. Personality facets from the NEO-FFI; all other scales are from the CPAI.

ducted at the scale level. Each of the factors in the NEO-FFI has 12 items, and three subscales consisting of four items were randomly formed. The latent variables used in the six-factor model included the Big Five factors on the NEO-FFI and the four Interpersonal Relatedness factor scales from the CPAI. In addition, a principal components analysis with varimax rotation was also run on the same set of scales to try to fit the data into a five-factor model.

Results

When the four CPAI scales and the five NEO-FFI facets were entered into the confirmatory factor analyses, the six-factor model's goodness-of-fit statistics indicated a good fit to the data. Although the chi-square for the six-factor model was significant ($\chi^2 = 361.17$, $df = 137$, $p < .01$), chi-square/df ratio was 2.63, and the other CFA indices were respectable: root mean square error of approximation (RMSEA) = .07, Goodness of Fit Index (GFI) = .90, Adjusted Goodness of Fit Index (AGFI) = .87, Comparative Fit Index (CFI) = .86, Normed Fit Index (NFI) = .79.

The factor loadings of the five factors extracted in the EFA are presented in Table 4.

The original five NEO-FFI factors were not retained in this analysis. In particular, two facets from the original Agreeableness factor were now loaded together with the reverse of the Neuroticism facets in Factor 1, whereas the other Agreeableness facet was loaded in a negative direction with the Extraversion facets in Factor 3. However, this latter Agreeableness facet also had a moderate double loading with the Neuroticism factor. In addition, there was an overlap in the loadings of the Neuroticism and Extraversion facets. On the other hand, three of the scales associated with the Interpersonal Relatedness factor formed the distinct Factor 4 with no overlap with the NEO facets. The Flexibility scale, however, was loaded in a negative direction with the Conscientiousness facets in Factor 2.

These results confirm the uniqueness of the Interpersonal Relatedness factor that was identified in Study 1 among an independent sample of Chinese workers. The Interpersonal Relatedness factor cannot be encompassed by the Big Five factors. It remained intact in a five-factor model. The six-factor model was replicated in a nonstudent population in China and provided better interpretation of the factor structure obtained in a joint analysis of the CPAI and the NEO-FFI.

STUDY 3

Although the six-factor model has been replicated in an independent sample in China, the next question is whether a six-factor model could be found in a non-Chinese population. Is the Interpersonal Relatedness factor unique to the Chinese culture or is it relevant to non-Chinese cultures as well? The objective of Study 3 is to replicate the six-factor model with a sample collected outside of China and Hong Kong, where the CPAI was originally developed. Replication of the six-factor model would support the cross-cultural relevance of the Interpersonal Relatedness factor beyond the Chinese culture.

Method

Respondents. In conjunction with the doctoral research of the fifth author (Gan, 1998), a group of 273 undergraduate students in Hawaii was recruited for this study. The student sample consisted of multiple ethnicities, with 46 of Caucasian background, 23 mixed Caucasian, 36 Chinese, 13 Filipino, 17 Korean, 80 Japanese, 21 mixed Asian, 7 Hispanic, and 30 cases in which the data were missing or reported as unknown. There were 89 men and 182 women in the sample, with 2 participants not indicating gender. The mean age was 26, with the range between 19 and 76. The students participated in the questionnaire study for extra bonus in their psychology classes at the university.

Instruments. The respondents took the English version of the NEO-FFI and 16 scales from the CPAI as part of the set of questionnaires used in the doctoral study on mental health and coping behavior. The mean Cronbach's alpha coefficient for NEO-FFI domains obtained with the Hawaii sample was .76 (with the range .68 to .86). The 16 CPAI scales were selected for their correlation with mental health in a previous study (Gan & Cheung, 1996). The CPAI was translated into English by two translators proficient in both English and Chinese. The procedure of back translation was adopted to refine the translation. In this study, the four core Interpersonal Relatedness scales used in Study 2—Harmony, Ren Qing, Face, and Flexibility—were entered together with the NEO-FFI domains in the CFA and the EFA.

The Cronbach's alpha coefficients of the four Interpersonal Relatedness scales for the Hawaii sample were .61 for Harmony, .54 for Ren Qing, .65 for Face, and.61 for Flexibility.

The English version of the CPAI has subsequently been used in another study on 536 ethnic Chinese adults in Singapore. The mean Cronbach's alpha coefficient was .62. The coefficients of the four Interpersonal Relatedness scales in the Singapore Chinese sample were .71 for Harmony, .61 for Ren Qing, .73 for Face, and .70 for Flexibility.

Analysis. CFAs using the Windows LISREL 8.12a program (Jöreskog & Sörbom, 1993) were conducted to test the goodness of fit of the six-factor model. EFA fitting the same set of data into a five-factor model was also attempted.

Results

Results from the CFA using the four CPAI Interpersonal Relatedness scales and the NEO-FFI domains indicated that the goodness of fit of the six-factor model was not as high as those found in the Chinese sample in Study 2 ($\chi^2 = 400.50$, $df = 137$, $p < .01$; χ^2/df ratio = 2.92, RMSEA = .08, GFI = .86, AGFI = .81, CFI = .84, NFI = .84). However, these results suggest that a six-factor model may still fit the data and an independent Interpersonal Relatedness factor is distinct from the Big Five domains even in a non-Chinese sample outside of China.

The factor loadings of the five factors from the principal components analysis with varimax rotation is presented in Table 5.

With the Hawaiian sample, the original NEO facets retained their structure in the five-factor model. The Interpersonal Relatedness scales, on the other hand, were dispersed among three dimensions. Face and Ren Qing were loaded primarily in Factor 1 with the Neuroticism facets. However, both scales had strong double loadings in other factors: Factor 3 (Openness) for Face (negative) and Factor 4 (Agreeableness) for Ren Qing. Similarly, Harmony, which had its primary loading in Factor 4, also had a sizeable negative loading on Factor 3. Flexibility, which had a primary loading in Factor 3, had a moderate negative loading in Factor 2 (Conscientiousness). Factor 5 was a clear-cut Extraversion factor.

The results of the exploratory factor analyses from Study 2 and Study 3 show that the original Big Five model may have a better fit among the multiethnic respondents from Hawaii than among Chinese in the PRC. The scales of the Interpersonal Relatedness factor, however, could not be neatly subsumed under the Big Five structure. Two of the Interpersonal Relatedness facets would be represented in the more pathological domain of Neuroticism. Although Harmony may fit in with Agreeableness, and Flexibility with Openness, their double loadings (negative loading on Openness for Harmony, negative loading on Conscientiousness for Flexibility) show that the Interpersonal Relatedness factor cannot be easily explained by the alternative five-factor model in the Hawaii sample.

FURTHER ANALYSIS

Five-Factor Model

Results from the EFA in Study 3 suggest that the Interpersonal Relatedness scales could be forced into the Big Five factors in a multiethnic sample. The question remains whether this five-factor model would be superior to a six-factor model. To compare the two models,

TABLE 5
Five-Factor Solution of the Exploratory Factor Analysis of the CPAI Interpersonal Relatedness Scale With the Five Factors of the NEO-FFI for the Hawaiian Student Sample (n = 267)

	Factor				
Scales/Facets	*1*	*2*	*3*	*4*	*5*
Neuroticism 3[a]	**.80**				
Neuroticism 2[a]	**.79**				
Neuroticism 1[a]	**.77**				
Face	**.66**		–.47		
Ren Qing (relationship orientation)	**.46**			.42	
Conscientiousness 3[a]		**.79**			
Conscientiousness 2[a]		**.78**			
Conscientiousness 1[a]		**.78**			
Openness 1[a]			**.72**		
Openness 2[a]			**.69**		
Openness 3[a]		.31	**.65**		
Flexibility		–.39	**.57**		
Agreeableness 3[a]				**.82**	
Agreeableness 1[a]				**.70**	
Agreeableness 2[a]	–.33			**.58**	
Harmony			–.42	**.48**	
Extraversion 1[a]					**.85**
Extraversion 2[a]				.32	**.76**
Extraversion 3[a]		.37			**.58**
Eigenvalue	4.88	2.57	1.97	1.37	1.24
Variance explained (%)	25.7	13.5	10.4	7.2	6.5

NOTE: CPAI = Chinese Personality Assessment Inventory; NEO-FFI = NEO Five-Factor Inventory. Values in bold indicate factor loadings ≥ .40.
a. Personality facets from the NEO-FFI; all other scales are from the CPAI.

CFAs were also run on this alternative five-factor model. The model was created by incorporating the four CPAI scales into the original Big Five factors based on the loadings observed in the results of the EFA in Table 5, using a correlated factor model as in the six-factor model. In this five-factor model, Face was loaded on the Neuroticism factor, Flexibility on the Openness factor, and Harmony and Ren Qing on the Agreeableness factor. Confirmatory factor analyses of this five-factor model were run for the Chinese manager sample in Study 2 as well as the Hawaiian student sample in Study 3.

Results of the five-factor model CFA for the Chinese manager sample were inferior to those obtained for the six-factor model in Study 2. The chi-square was 459.82 (df = 142, p < .01), with RMSEA = .08, GFI = .88, AGFI = .84, CFI = .80, and NFI = .75. The $\Delta\chi^2$ between the six-factor model and the five-factor model was 98.65 (df = 5, p < .01).

Results of the five-factor CFA for the Hawaiian student sample were also inferior to those of the six-factor model in Study 3 (χ^2 = 487.46, df = 142, p < .01; RMSEA = .095, GFI = .83, AGFI = .77, CFI = .80, NFI = .76). The $\Delta\chi^2$ between the six-factor model and the five-factor model was 86.94 (df = 5, p < .01). Even for the Hawaiian sample in which the Big Five structure could remain intact by forcing the Interpersonal Relatedness scales into the five-factor model, the six-factor model was still superior in terms of relative goodness of fit.

TABLE 6
Interpersonal Relatedness Scales as Predicted by the Five Factors of NEO-PI-R for the Chinese Student Sample (*N* = 279)

	NEO-FFI Factor					
	Neuroticism	*Conscientiousness*	*Agreeableness*	*Extraversion*	*Openness*	
CPAI Scale	*Standardized Beta*					*Total* R^2
Harmony	–.07	.35**	.41**	–.11	–.15*	.30**
Face	.40**	.15*	–.07	.04	.06	.14**
Ren Qing	.11	.26**	.16*	–.12	.22**	.15**
Flexibility	–.22**	–.32**	.03	–.02	.15*	.13**

NOTE: NEO-PI-R = Revised NEO Personality Inventory; NEO-FFI = NEO Five-Factor Inventory; CPAI = Chinese Personality Assessment Inventory.
*$p < .05$. **$p < .01$.

TABLE 7
Chinese Tradition Scales as Predicted by the Five Factors of FFI for the Chinese Manager Sample (*N* = 372)

	NEO-FFI Factor					
	Neuroticism	*Conscientiousness*	*Agreeableness*	*Extraversion*	*Openness*	
CPAI Scale	*Standardized Beta*					*Total* R^2
Harmony	–.01	.23**	.13*	–.00	–.01	.08**
Face	.34**	.22**	–.04	.05	.01	.13**
Ren Qing	.25**	.23**	.12*	–.03	.01	.08**
Flexibility	–.16**	–.54**	.12*	–.11*	–.02	.31**

NOTE: NEO-FFI = NEO Five-Factor Inventory; CPAI = Chinese Personality Assessment Inventory.
*$p < .05$. **$p < .01$.

Multiple Regression

One may question whether the Interpersonal Relatedness factor could be absorbed by the factors of the Big Five. To demonstrate the independence of the Interpersonal Relatedness scales from the Big Five factors, multiple regression analyses were run using the Big Five factors to predict each of the four CPAI scales. If a large proportion of the variance of the CPAI scale could be explained by a combination of the Big Five factors, then the scale could be regarded as redundant. If only a small proportion of the variance could be explained, then the scale could be regarded as independent of the Big Five factors. The analyses were run on the Chinese student sample in Study 1, the Chinese manager sample in Study 2, and the Hawaiian student sample in Study 3.

Results for the multiple regression analyses are shown in Tables 6, 7, and 8, respectively. Results of the prediction of the Interpersonal Relatedness scales by the NEO-PI-R factors for the Chinese student sample in Study 1 show that only a small proportion of the variance on Face, Ren Qing, and Flexibility was explained by the Big Five factors (R^2 = .14, .15, and .13, respectively). The R^2 for Harmony was .30, with significant prediction from Agreeableness, Conscientiousness, and lack of Openness.

For the Chinese manager sample from Study 2, Harmony, Ren Qing, and Face were barely explained by a combination of the NEO-FFI factors (R^2 = .08, .08, and .13, respectively). The

TABLE 8
Interpersonal Relatedness Scales as Predicted by the Five Factors of FFI for the Hawaiian Student Sample (n = 267)

	NEO-FFI Factor					
	Neuroticism	*Conscientiousness*	*Agreeableness*	*Extraversion*	*Openness*	
CPAI Scale	*Standardized Beta*					*Total* R^2
Harmony	.14*	.03	.30**	.11	–.24**	.14**
Face	.52**	.11	.06	.00	–.30**	.35**
Ren Qing	.32**	–.02	.25**	.17*	–.09	.14**
Flexibility	–.10	–.32**	.22**	.01	.30**	.20**

NOTE: NEO-FFI = NEO Five-Factor Inventory; CPAI = Chinese Personality Assessment Inventory.
*p < .05. **p < .01.

R^2 for Flexibility was .31, with the reverse of Conscientiousness contributing most to the prediction.

For the Hawaiian sample, the results of the multiple regression analyses showed that not all the CPAI scales could be absorbed by the Big Five. A moderate proportion of the variance for the Face scale was explained by a combination of Neuroticism and a lack of Openness (R^2 = .35). The explanation for the other Interpersonal Relatedness scales by all the NEO-FFI facets was much lower (R^2 from .14 to .20).

In the multiple regression analyses from the three studies, the models of prediction were mostly different. The Neuroticism factor was the major predictor of the CPAI Face scale, whereas the Conscientiousness factor was a significant predictor of the CPAI Flexibility scale in all three samples. However, the overall pattern of predictors for the CPAI Interpersonal Relatedness scales varied, and there was no consistent pattern of prediction across the three samples.

DISCUSSION

FIVE-FACTOR MODEL

The NEO-PI has been applied cross-culturally in Hong Kong (McCrae, Costa, et al., 1996), Japan (Gondo, Shimonaka, Nakazato, Ishihara, & Imuta, cited in McCrae, Zonderman et al., 1996), Korea (McCrae, Zonderman, et al., 1996), and the Philippines (Huang, Church, & Katigbak, 1997; McCrae, Costa, del Pilar, Rolland, & Parker, 1998). The results of these cross-cultural applications generally supported the universality of the five-factor model and the validity of the NEO-PI-R. In Study 1, the NEO-PI-R was tried out for the first time in the PRC (K. Leung et al., 1997). On its own, the Big Five were identifiable using both Procrustes rotation and CFA. However, the fact that the five-factor model was recoverable did not prove that the model was "adequate in providing a comprehensive description of personality traits outside of the U.S." (K. Leung et al., 1997, p. 242).

Studies with the five-factor model in Hong Kong by Bond and his associates (M. H. Bond, 1994) supported the universality of the Big Five. They found that the imported items were similarly grouped by Hong Kong respondents. Even when other indigenous instruments were used in conjunction with the imported instruments, it was found that the imported

dimensions were able to explain a large proportion of the variance in the indigenous bipolar trait dimensions (Yik & Bond, 1993). Although the indigenous dimensions may have cut the social perceptual world in different ways, they were considered to define the same space and could be "coaxed to reveal a five-factor solution that bears plausible functional similarity to the Big Five" (M. H. Bond, 1994, p. 116).

In particular, principal components analyses of the Big Five using varimax rotation with other Asian samples have shown that the Extraversion and Agreeableness facets realigned to form two different dimensions (Katigbak et al., 1996). The Warmth, Gregariousness, and Positive Emotions facets of the Extraversion domain and the Trust, Altruism, and Tender Mindedness facets of the Agreeableness domain combine to form an Affiliation factor. On the other hand, the Assertiveness, Activity, and Excitement-Seeking facets of the Extraversion domain combine with the reverse of the Compliance, Modesty, and Straightforwardness facets of the Agreeableness domain to form the Surgency factor. These configurations fit in better with the interpersonal circumplex model of love-hate and dominance-submission (Wiggins, 1979). McCrae, Costa, et al. (1998) argued that the varimax rotation is not appropriate for the analysis of variables that show a circumplex ordering. However, these configurations were not found in Western respondents from individualistic cultures. The consistent finding that the interpersonal facets of the NEO-PI-R do not fit a simple structure in cross-cultural samples from collectivistic societies including the Philippines, Korea, and Japan suggests that the interpersonal dimensions of personality need further exploration. This issue will be further addressed in the later sections.

COMMON DOMAINS

In Study 1, four of the Big Five domains obtained from the NEO-PI-R shared a large overlap with the CPAI factors in the six-factor solution. However, the facet loadings differed from those of the original NEO-PI-R, as well as from the patterns obtained in the Procrustes factor analysis and the CFA in K. Leung et al.'s (1997) report. In the current series of studies, EFA was used in the first study, in which the full scales of the CPAI and NEO-PI-R were included. CFAs were then applied in the other two studies to test the six-factor model in two independent sets of samples.

Three joint factors obtained in Study 1, Neuroticism, Conscientiousness, and Agreeableness, retain most of the original facets of these NEO-PI-R factors and incorporate scales from the Dependability factor of the CPAI. These three joint factors resemble Digman's (1997) higher order Factor Alpha that represents the socialization process of personality by grouping together the common aspects of Agreeableness, Conscientiousness, and Neuroticism of the Big Five.

The fourth joint factor, Extraversion, consists of five of the original NEO-PI-R facets and includes scales measuring extraversion and social orientation on the CPAI. These four joint factors represent the core domains that are shared by the NEO-PI-R and the CPAI. In line with previous studies on the Big Five, there is support for the universality of these dimensions, although slight variations in how the Western perceptual space is organized may be found with Chinese respondents.

The five-factor solution in Study 1 (Table 3) produced two clear-cut factors: Conscientiousness and Openness. The facets of the Extraversion and Agreeableness were intermixed, similar to those found in other Asian samples. The Neuroticism facets were dispersed and intermixed.

Results from the five-factor solution in Study 2 (Table 4) show that among the Chinese managers in a Chinese society, the original five factors are less well defined when the Chinese Tradition scales are included. The Conscientiousness, Extraversion, and Openness dimensions are more distinct. The Neuroticism factor consists of both emotional instability and social conformity. The Agreeableness facets may be related to the lack of Neuroticism as well as to Introversion. As shown in Study 3, the original Big Five dimensions are much more distinct in the Hawaiian sample.

THE INTERPERSONAL RELATEDNESS FACTOR

The completeness of the five-factor model would only be supported if the CPAI does not produce factors that go beyond the Big Five. The results obtained from all three studies support a six-factor model with one unique factor loaded entirely by CPAI scales and none of the NEO-PI-R facets. This factor, which was originally labeled as the Chinese Tradition factor, consists of the indigenous personality scales developed specifically for the CPAI, including Ren Qing (relationship orientation), Harmony, and Face. In addition, the factor is loaded negatively by Flexibility. The characteristics associated with these personality scales reflect a strong orientation toward instrumental relationships; emphasis on occupying one's proper place and engaging in appropriate action; avoidance of internal, external, and interpersonal conflict; and adherence to norms and traditions. These personality characteristics are central to interpersonal relatedness in the Chinese culture but have not been tapped by Western personality tests (Gabrenya & Hwang, 1996). These characteristics are akin to Singelis's (1994) concept of the interdependent self-construal and may be relabeled as Interpersonal Relatedness. That this factor is found only with the CPAI scales but not with any of the NEO-PI-R facets presents a candidate that may challenge the completeness of the five-factor model.

The robustness of the Interpersonal Relatedness factor was demonstrated in the CPAI standardization study (Cheung et al., 1996). Separate analyses with samples from Hong Kong and the PRC, where the economic and political systems are very divergent, produced very similar factor structures. Four CPAI scales in particular are found to be common across the EFAs in the standardization study as well as in Study 1. The four scales are Ren Qing, Harmony, Face, and Flexibility.

Results of the CFA on the NEO-FFI and CPAI scales as well as the five-factor solution in the EFA (Table 4) from Study 2 involving a different sample of Chinese managers from China confirm the uniqueness of the CPAI scales in defining the Interpersonal Relatedness factor. It is evident that this important interpersonal dimension forms a significant component of Chinese personality. It raises a number of questions about current Western theories of personality and personality assessment.

The Interpersonal Relatedness factor as measured by the CPAI emphasizes the interdependence concern in the Chinese personality. Traditional Western theories of personality have omitted this important interpersonal dimension. In early European American interpersonal theories of personality, such as Sullivan's (1953) theory, the focus of the interpersonal relationship was still on the resultant self-system. Interpersonal circumplex models of personality (Wiggins, 1979) were not incorporated into the major personality theories until recent years. The ideologies of personhood in European American models of personality have focused on the person as "an independent self-contained, autonomous entity who comprises a unique configuration of internal attributes (e.g., traits, abilities, motives, and values) and who behaves primarily as consequence of these internal attributes" (Markus & Kitayama, 1991, p. 226).

On the other hand, in collectivistic cultures, the interdependent model of personality is more elaborated. The interdependent model views the person as "a connected, fluid, flexible, committed being who is bound to others" (Markus & Kitayama, 1998, p. 69). The collective construction of personality in Asia will focus on "relationality" or "being a part, belonging, and improving the fit between how one is doing and what is expected" (Markus & Kitayama, 1998, p. 71). The Interpersonal Relatedness factor of the CPAI consists of scales that are derived indigenously from a collectivistic cultural context to tap this important aspect of interdependence in interpersonal relationships.

In using translated Western personality inventories, the interdependent dimension that has been tapped by the Interpersonal Relatedness factor of the CPAI would be ignored. What, then, would be the deficiencies arising from the reliance on these theories and instruments in understanding the Chinese personality?

Earlier indigenous approaches to the study of Chinese personality have identified different facets of social-oriented character (K. S. Yang, 1986). Chinese personality is viewed in the context of the cultural-ecological model. Chinese culture is characterized by collectivistic orientation, other orientation, relationship orientation, and authoritarian orientation. Indigenous constructs that have been studied include constructs that characterize interpersonal interactions and social orientations, such as Harmony and Ren Qing (relationship orientation).

Harmony is an important consideration in conflict avoidance and conflict resolution in Chinese social psychological research (M. B. Bond & Hwang, 1986; M. B. Bond & Wang, 1983; K. Leung, 1997). Recent research on relationship harmony as a personality dimension also indicated its important role in the collectivistic Chinese culture. In contrast to American students, Hong Kong students showed that developing and maintaining relationship harmony was as important as establishing self-esteem in predicting life satisfaction (Kwan, Bond, & Singelis, 1997). It was also found that the relative importance of relationship harmony in predicting life satisfaction was greater for the Hong Kong students.

One of the paramount guiding principles governing family relationship and social behavior in Chinese societies is filial piety. Zhang and Bond (1998) examined the relationship between filial piety and personality determinants using both the Big Five factors and items from scales associated with the CPAI Chinese Tradition factor, including Harmony, Ren Qing, Face, Flexibility, and Optimism. It was found that both universal and indigenous dimensions were included in the prediction model. Among the Big Five factors, Neuroticism and (negative) Openness were the significant predictors. In addition, Harmony and Ren Qing items from the CPAI significantly predicted filial piety even after controlling for the effect of the Big Five dimensions. This finding indicates that the universal personality dimensions alone could not account for all the variance in predicting a fundamental cornerstone of Confucian ethics that prescribes normative behavior in Chinese family relationships. The Interpersonal Relatedness factor scales added predictive value beyond those contributed by the Big Five dimensions.

The Chinese Tradition/Interpersonal Relatedness factor scales have been used in other studies to predict different aspects of social relationships in the Chinese culture. Zhang (1997) found that the Chinese Tradition factor predicted the general trust trait across all situations of trusting behaviors. In terms of target-based trust, trust of intimate persons in one's in-group was positively related to the CPAI Harmony scale, whereas trust of strangers in the out-group was negatively related to the Ren Qing scale.

Items from the Face, Harmony, Ren Qing, and Flexibility scales also contributed additional variance beyond that of the NEO-FFI facets in predicting the use of gentle persuasion in interpersonal influence tactics in Chinese managers (Sun, 1997; Sun & Bond, 2000).

In another study, items from the same scales were used to form the Chinese Tradition facet and added to the NEO-FFI facets to predict the communication styles among university students working on group projects (V.S.K. Leung, 1999). The participants of this study were expected to discuss constructively with one another in fulfilling their group assignments. The Chinese Tradition facet had a moderate correlation with the students' self-rating of the sensitivity style of communication (.33) and a high negative correlation with the silence style of communication (–.60). It added significant beta weights beyond the NEO-FFI facets in the multiple regression analysis of these two dimensions. These two communication styles were shown to be related to interdependent self-construal (Gudykunst et al., 1996). In addition, the Chinese Tradition facet scores of the students were significantly correlated with others' rating of their silence style of communication (–.26) in V.S.K. Leung's (1999) study.

The identification of the Interpersonal Relatedness factor in the CPAI that taps the dimension of interdependent "relationality" points to the added value of the CPAI in assessing Chinese personality (Cheung & Leung, 1998). It is evident that this Interpersonal Relatedness factor is relevant and useful to the study of Chinese psychology. This factor is independent of the Big Five and is untapped by all the translated personality measures. Studies on Chinese people using translated personality tests would have left out an important dimension of the Chinese personality.

However, it is unclear whether this personality dimension is culture specific and unique to the Chinese culture or whether this personality dimension may be relevant to non-Chinese cultures as well. One may then question whether the five-factor model is sufficient in representing all human personality dimensions, especially in interdependent domains that have long been neglected in major Western theories of personality. The identification of the Interpersonal Relatedness factor in the CPAI may point to this blind spot in Western theories and assessment tools.

The question remains whether the Interpersonal Relatedness factor is unique to the Chinese culture or may also be relevant to the understanding of the interdependent domains of personality in non-Chinese cultures. The Interpersonal Relatedness factor addresses the interdependent aspects of personality that are important to the Chinese as well as to other collectivistic cultures. In the past, the interdependent domains of personality were seldom addressed in traditional Western theories of personality, which focus on the intrapsychic aspects of the person. The increasing cultural diversities in many Western societies and greater attention on the concept of "self-in-relation" to others (Chodorow, 1989) may pose a challenge to the sufficiency of traditional personality theories and the adequacy of existing personality inventories.

Results from Study 3 demonstrate that the interpersonal orientation dimension covered by the Interpersonal Relatedness factor could be identified among a group of Hawaiian students of multiple ethnicities. The six-factor model with a distinct Interpersonal Relatedness factor is superior to the five-factor model that subsumes the Interpersonal Relatedness scales under the Big Five structure. This finding points to the likelihood that the Interpersonal Relatedness factor is also relevant outside a Chinese society.

The independence of the Interpersonal Relatedness factor was further supported by the multiple regression analyses. For the majority of the Interpersonal Relatedness scales, a combination of the Big Five factors did not adequately explain the variance. Whereas one of the Interpersonal Relatedness scales was moderately predicted by the Big Five in each study,

no clear pattern of prediction was observed across the studies. The interpersonal orientation domain tapped by the Interpersonal Relatedness factor could not be regarded as redundant but was, in fact, relevant even outside of the Chinese culture. In this sense, the factor should not be labeled as *Chinese Tradition*; the more general label of *Interpersonal Relatedness* that would represent the personality characteristics associated with the instrumental and interdependent considerations in interpersonal relationships would be more appropriate.

It should be noted that respondents of both Caucasian and Asian ethnicities are represented in the sample in Study 3. One may argue that Hawaiian culture is not typical of Western culture given its strong Asian presence. Thus, the presence of the Interpersonal Relatedness factor may be related to the ethnic background of the sample. Future studies involving ethnic groups from different parts of the world will shed light on the cross-cultural relevance of this Interpersonal Relatedness factor, which may, in fact, be more universal than its original label suggests.

OPENNESS DOMAIN

In the joint factor analysis from Study 1, the Openness factor consisted entirely of NEO-PI-R facets but none of the CPAI personality scales. The question one may ask is whether openness is a culturally relevant personality dimension for the Chinese people. Alternatively, the absence of the Openness-related facets in the CPAI may reflect blind spots of the test developers themselves. In the development of the CPAI, personality characteristics were derived from daily life experiences that are relevant to the experience of Chinese people. Openness-related constructs may not have stood out prominently in the collective consciousness or may have been deemed more related to intellect and less relevant to personality by the test developers when the constructs were selected for inclusion in the CPAI.

The NEO-PI-R Openness domain itself has not been consistently extracted in cross-cultural studies of the Big Five (M. K. Bond, 1994). M. K. Bond (1994) suggested that "it may be differently defined in different cultures but still exists and has a functional impact on social behavior" (p. 116). The Openness to Experience domain was introduced by McCrae and Costa (1985) to reinterpret Goldberg's (1981) Intellect as the fifth factor. Openness to Experience is a broader construct that encompasses imaginativeness, liberal thinking, receptivity to many varieties of experience, and a fluid and permeable structure of consciousness. McCrae (1990) himself admitted that Openness to Experience seemed to be poorly represented in natural languages, particularly for the less observable traits that characterize the structure of consciousness.

In the earlier Procrustes rotation analysis of the NEO-PI-R with the group of Chinese students tested in Study 1 (Leung et al., 1997), it was found that two of the six facets from Openness (Actions and Values) had variable coefficients at less than the .05 *p* level. The internal consistency of these facets was also very low, with a coefficient alpha of .10 for Actions and .29 for Values. It suggests that these two facets may have a different meaning for the Chinese students.

Results from Study 2 involving Chinese managers show that if the NEO-FFI facets and the Interpersonal Relatedness scales of the CPAI are submitted to a joint factor analysis to force a five-factor structure, the Openness factor is still obtained. Unlike the other four dimensions of the Big Five, the Openness factor remains clearly defined, with no overlap with any of the NEO facets or CPAI scales.

McCrae (1994) pondered the relevance of the equivalence of the Openness construct in non-Indo-European cultures. He reported studies with Chinese and Japanese samples using

the NEO-PI-R in which a clear Openness factor emerged, although the facet of Openness to Actions was a weak definer of the factor. In both samples, the factor was defined by intellectual interests and imagination, aesthetic sensitivity, affective responsiveness, and liberal attitudes.

Although the Openness domain as a whole is identified in the Chinese personality structure, it may still be an imposed etic construct with questionable relevance to the Chinese context. Its construct validity has been demonstrated in some recent studies by Bond and his associates (Kwan et al., 1997). Further research with the CPAI should also explore the need to include other indigenous constructs constituting this dimension. Exploration of behavioral correlates of Openness could include emic constructs related to folk wisdom in East Asian cultures, such as holistic versus dualistic thinking, relativism versus absolutism, dialectics, contradictory thinking, and probabilistic thinking (Choi, Nisbett, & Norenzayan, 1998; Wright & Phillips, 1980).

METHODOLOGICAL CONSIDERATIONS

More theories and findings in psychology come from the West, particularly the United States. A number of researchers have argued that some of these theories and findings may be shaped by the cultural background of the researchers and that their validity should not be taken for granted when they are exported to non-Western countries (Chinese Culture Connection, 1987; Leung & Zhang, 1996; Moghaddam, 1990). This study provides a convincing case for this argument. If personality research were dominated by Chinese researchers, with CPAI as the major tool for research, the leading theory of personality structure would assume the merging of the Conscientiousness and Agreeableness factors, the exclusion of the Openness factor, and the inclusion of the Interpersonal Relatedness factor. This structure is obviously very different from the Big Five model.

Van de Vijver and Leung (1997) have argued that a powerful way to break theoretical new ground through cross-cultural research is the adoption of the convergence approach. In this approach, different research instruments are designed to capture the phenomenon under study in different cultures, and the aim is to have instruments that are maximally relevant for the cultures in which they are applied. When such instruments are available, they are then administered to all cultures included in the study. If culturally diverse instruments yield similar results, we are confident that the cultural origin of the instruments have not biased the results obtained, and that the results are likely to be universal.

The current research exemplifies this approach. The confirmation of the Interpersonal Relatedness factor in a Hawaiian sample involving different ethnic backgrounds points to the cross-cultural relevance of this factor. The next step is to administer the CPAI together with the Big Five facets in larger samples from other cultures. Studies using the English version of the CPAI in different parts of the world, including the United States and Singapore, are underway or near completion. With such data, we can answer the question whether the Interpersonal Relatedness factor represents something unique to the Chinese people or a construct that is illusive for Western researchers to discover because of its obscurity in Western theories of personality. If the Interpersonal Relatedness factor is indeed relevant in other cultural contexts, then the meaning of personality characteristics that were considered to be indigenous to the Chinese should be explored in Western personality theories.

APPENDIX
Selected Items From the CPAI Interpersonal Relatedness Factor Scales

Harmony

- I always maintain a peaceful frame of mind.
- Usually when I talk with people, I take great care not to offend them.
- I strongly support the principle that "if a family lives in harmony all things will prosper."
- It is a virtue to tolerate everything.

Ren Qing

- When dealing with institutions, things can work out more smoothly through the connections of friends working inside.
- I find it very hard to say "no" when others make requests or give me assignments.
- Returning money is easier than returning favors, so the best thing to do is not become indebted to people's favors.
- Do not do unto others what you do not wish others to do to you. In society one should be considerate to others and avoid causing harm to others.

Face

- I pay a lot of attention to how others see me.
- I am usually very particular about the way I dress because I do not want others to look down on me.
- I feel a loss of face when others turn down my favor.
- Sometimes I will insist on giving a friend a decent gift even if it means borrowing money to buy it.

Flexibility

- I hate things that are uncertain or unpredictable.
- I believe I have a much stricter sense of right and wrong than most people.
- I always insist on making detailed plans and schedules of my work.

NOTE: There are 15 items on each scale.

NOTE

1. One reviewer pointed out that because most items on the Interpersonal Relatedness factor scales were keyed in the same direction, it might give rise to the possibility that the factor was an acquiescence response set instead of a separate factor. We believe that this argument is untenable. When the full Chinese Personality Assessment Inventory (CPAI) is used, the random order of the items across all scales would have minimized this effect. If acquiescence were the only cause of the factor, other CPAI scales that are similarly keyed (e.g., Leadership or Self vs. Social Orientation) should have been loaded on this factor also. A subsequent study in which the direction of half of the items on the Interpersonal Relatedness scales was reversed showed that the item direction did not change the mean scale scores or the pattern of correlations among these scales. If the responses to the items were due to acquiescence, the mean scores of the adjusted scales should have been affected. Furthermore, the robustness of the Interpersonal Relatedness factor in predicting social behavior has also been demonstrated in other studies reviewed in the Discussion section of this article.

REFERENCES

Berry, J. W. (1969). On cross-cultural comparability. *International Journal of Psychology*, *4*, 119-128.

Bond, M. B., & Hwang, K. K. (1986). The social psychology of Chinese people. In M. B. Bond (Ed.), *The psychology of the Chinese people* (pp. 213-266). Hong Kong: Oxford University Press.

Bond, M. B., & Wang, S. H. (1983). Aggressive behavior in Chinese society: The problem of maintaining order and harmony. In A. P. Goldstein & M. Segell (Eds.), *Global perspectives on aggression* (pp. 58-74). New York: Pergamon Press.

Bond, M. H. (1994). Trait theory and cross-cultural studies of person perception. *Psychological Enquiry*, *5*, 114-117.
Cattell, R. B. (1966). The scree test for the number of factors. *Multivariate Behavioral Research*, *1*, 245-276.
Cheung , F. M., & Leung, K. (1998). Indigenous personality measures: Chinese examples. *Journal of Cross-Cultural Psychology*, *29*, 233-248.
Cheung, F. M., Leung, K., Fan, R. M., Song, W. Z., Zhang, J. X., & Zhang, J. P. (1996). Development of the Chinese Personality Assessment Inventory. *Journal of Cross-Cultural Psychology*, *27*, 181-199.
Chinese Culture Connection. (1987). Chinese values and the search for culture-free dimensions of culture. *Journal of Cross-Cultural Psychology*, *18*, 143-164.
Chodorow, N. J. (1989). *Feminism and psychoanalytic theory.* New Haven, CT: Yale University Press.
Choi, I., Nisbett, R. E., & Norenzayan, A. (1998). Causal attribution across cultures: Variation and universality. *Psychological Bulletin*, *125*, 47-63.
Costa, P. T., Jr., & McCrae, R. R. (1985). *The NEO Personality Inventory manual*. Odessa, FL: Psychological Assessment Resources.
Costa, P. T., Jr., & McCrae, R. R. (1992). *Revised NEO Personality Inventory (NEO-PI-R) and NEO Five-Factor Inventory (NEO-FFI) professional manual*. Odessa, FL: Psychological Assessment Resources.
Digman, J. M. (1997). Higher-order factors of the Big Five. *Journal of Personality and Social Psychology*, *73*, 1246-1256.
Gabrenya, W. K., Jr., & Hwang, K. K. (1996). Chinese social interaction: Harmony and hierarchy on the good earth. In M. H. Bond (Ed.), *The handbook of Chinese psychology* (pp. 309-321). Hong Kong: Oxford University Press.
Gan, Y. Q. (1998). *Healthy personality traits and unique pathways to psychological adjustment: Cultural and gender perspectives*. Unpublished doctoral dissertation, Chinese University of Hong Kong.
Gan, Y. Q., & Cheung, F. M. (1996, August). *Personality traits as predictors of mental health in Chinese: Cultural and gender issues*. Paper presented at the 13th International Congress of the International Association of Cross-Cultural Psychology, Montreal, Canada.
Goldberg, L. (1981). Language and individual differences: The search for universals in personality lexicons. In L. Wheeler (Ed.), *Review of personality and social psychology* (Vol. 2, pp. 141-165). Beverly Hills, CA: Sage.
Goldberg, L. (1990). An alternative "description of personality": The Big Five factor structure. *Journal of Personality and Social Psychology*, *59*, 1216-1229.
Gudykunst, W. B., Matsumoto, Y., Ting-Toomey, S., Nishida, T., Kim, Y., & Heyman, S. (1996). The influence of cultural individualism-collectivism, self-construals, and values on communication styles across cultures. *Human Communication Research*, *22*, 510-543.
Huang, C. D., Church, A. T., & Katigbak, M. S. (1997). Identifying cultural differences in items and traits: Differential item functioning in the NEO Personality Inventory. *Journal of Cross-Cultural Psychology,* 28, 192-218.
Jöreskog, K. G., & Sörbom, D. (1993). *Windows LISREL 8.12a*. Chicago: Scientific Software International.
Katigbak, M. S., Church, A. T., & Akamine, T. X. (1996). Cross-cultural generalizability of personality dimensions: Relating indigenous and imported dimensions in two cultures. *Journal of Personality and Social Psychology*, *70*, 99-114.
Kwan, V.S.Y., Bond, M. H., & Singelis, T. M. (1997). Pancultural explanations for life satisfaction: Adding relationship harmony to self-esteem. *Journal of Personality and Social Psychology*, *73*, 1938-1951.
Leung, K. (1997). Negotiation and reward allocations across cultures. In P. C. Earley & M. Erez (Eds.), *New perspectives on international industrial/organizational psychology.* San Francisco: Jossey-Bass.
Leung, K., Cheung, F. M., Zhang, J. X., Song, W. Z., & Xie, D. (1997). The five factor model of personality in China. In K. Leung, Y. Kashima, U. Kim, & S. Yamaguchi (Eds.), *Progress in Asian social psychology* (Vol. 1, pp. 231-244). Singapore: John Wiley.
Leung, K., & Zhang, J. (1996). Systemic considerations: Factors facilitating and impeding the development of psychology in developing countries. *International Journal of Psychology*, *30*, 693-706.
Leung, V.S.K. (1999). *Influence of individual-level factors on communication: Self-other perceptions*. Unpublished undergraduate thesis, The Chinese University of Hong Kong, Department of Psychology.
Markus, H. R., & Kitayama, S. (1991). Culture and the self: Implications for cognition, emotion, and motivation. *Psychological Review*, *98*, 224-253.
Markus, H. R., & Kitayama, S. (1998). The cultural psychology of personality. *Journal of Cross-Cultural Psychology*, *29*, 63-87.
McCrae, R. R. (1990). Traits and trait names: How well is openness represented in natural languages? *European Journal of Personality*, *4*, 119-129.
McCrae, R. R. (1994). Openness to experience: Expanding the boundaries of Factor V. *European Journal of Personality*, *8*, 251-272.
McCrae, R. R., & Costa, P. T., Jr. (1985). Openness to experience. In R. Hogan & W. H. Jones (Eds.), *Perspectives in personality* (Vol. 1, pp. 145-172). Greenwich, CT: JAI Press.
McCrae, R. R., & Costa, P. T., Jr. (1997). Personality trait structure as a human universal. *American Psychologist*, *52*, 509-516.
McCrae, R. R., Costa, P. T., Jr., del Pilar, G. H., Rolland, J. P., & Parker, W. D. (1998). Cross-cultural assessment of the five-factor model: The Revised NEO Personality Inventory. *Journal of Cross-Cultural Psychology*, *29*, 171-188.

McCrae, R. R., Costa, P. T., Jr., & Yik, M.S.M. (1996). Universal aspects of Chinese personality structure. In M .H. Bond (Ed.), *The handbook of Chinese psychology* (pp. 189-207). Hong Kong: Oxford University Press.
McCrae, R. R., Yik, M.S.M, Trapnell, P. D., Bond, M. H., & Paulhus, D. L. (1998). Interpreting personality profiles across cultures: Bilingual, acculturation, and peer rating studies of Chinese undergraduates. *Journal of Personality and Social Psychology*, *74*, 1041-1055.
McCrae, R. R., Zonderman, A. B., Costa, P. T., Jr., Bond, M. H., & Paunonen, S. V. (1996). Evaluating replicability of factors in the Revised NEO Personality Inventory. *Journal of Personality and Social Psychology*, *70*, 552-566.
Moghaddam, M. F. (1990). Modulative and generative orientations in psychology: Implications for psychology in the three worlds. *Journal of Social Issues*, *46*, 21-41.
Narayanan, L., Menon, S., & Levine, E. L. (1995). Personality structure: A culture-specific examination of the five-factor model. *Journal of Personality Assessment*, *64*, 51-62.
Norman, W. T. (1963). Toward an adequate taxonomy of personality attributes: Replicated factor structure in peer nomination personality ratings. *Journal of Abnormal and Social Psychology*, *66*, 574-583.
Shweder, R. A. (1990). Cultural psychology—What is it? In J. W. Stigler, R. A. Shweder, & G. Herdt (Eds.), *Cultural psychology: Essays on comparative human development* (pp. 1-43). New York: Cambridge University Press.
Singelis, T. M. (1994). The measurement of independent and interdependent self-construals. *Personality and Social Psychology Bulletin*, *20*, 580-591.
Sue, S. (1983). Ethnic minority issues in psychology: A reexamination. *American Psychologist*, *38*, 583-592.
Sullivan, H. S. (1953). *The interpersonal theory of psychiatry.* New York: Norton.
Sun, H. F. (1997). *Choice of influence tactics in Chinese organizations: The effect of the interactants' personality and status*. Unpublished doctoral dissertation, Chinese University of Hong Kong.
Sun, H. F., & Bond, M. H. (2000). Choice of influence tactics: Effects of the target person's behavioral patterns, status and the personality influencer. In J. T. Li, A. S. Tusk, & E. Weldon (Eds.), *Management and organizations in the Chinese context* (pp. 283-302). London: Macmillan.
Van de Vijver, F., & Leung, K. (1997). *Method and data analysis for cross-cultural research*. Thousand Oaks, CA: Sage.
Wiggins, J. S. (1979). A psychological taxonomy of trait-descriptive terms: The interpersonal domain. *Journal of Personality and Social Psychology*, *37*, 395-412.
Wright, G. N., & Phillips, L. D. (1980). Cultural variation in probabilistic thinking: Alternative ways of dealing with uncertainty. *International Journal of Psychology*, *15*, 139-157.
Yang, K. S. (1986). Chinese personality and its change. In M. H. Bond (Ed.), *The psychology of the Chinese people* (pp. 106-170). Hong Kong: Oxford University Press.
Yang, K. S., & Bond, M. B. (1990). Exploring implicit personality theories with indigenous or imported constructs: The Chinese case. *Journal of Personality and Social Psychology*, *58*, 1087-1095.
Yang, J., McCrae, R. R., Costa, P. T., Jr., Dai, X., Yao, S., Cai, T., & Gao, B. (1999). Cross-cultural personality assessment in psychiatric populations: The NEO-PI-R in the People's Republic of China. *Psychological Assessment*, *11*, 359-368.
Yik, M. S., & Bond, M. H. (1993). Exploring the dimensions of Chinese person perception with indigenous and imported constructs: Creating a culturally balanced scale. *International Journal of Psychology*, *28*, 75-95.
Zhang, J. X. (1997). *Distinction between general trust and specific trust: Their unique patterns with personality trait domains, distinct roles in interpersonal situations, and different function in path models of trusting behavior.* Unpublished doctoral dissertation, The Chinese University of Hong Kong, Hong Kong.
Zhang, J. X., & Bond, M. H. (1998). Personality and filial piety among college students in two Chinese societies: The added value of indigenous constructs. *Journal of Cross-Cultural Psychology*, *29*, 402-417.

Fanny M. Cheung (Ph.D., University of Minnesota) is the chairperson and a professor in the Department of Psychology at The Chinese University of Hong Kong. She is the principal investigator of the Chinese Personality Assessment Inventory (CPAI) project. She is responsible for the adaptation and publication of the Chinese Minnesota Multiphasic Personality Inventory (MMPI), MMPI-2, and MMPI-A. Her research interests are personality assessment, psychopathology, and gender studies. She was on leave from the university to serve as the founding chairperson of the Equal Opportunities Commission of Hong Kong from 1996-1999.

Kwok Leung (Ph.D., University of Illinois) was a professor and the chairman of the Department of Psychology at The Chinese University of Hong Kong until 1999. He is currently professor of management at the City University of Hong Kong. His research interests are wide ranging and include resource allocation, conflict management, work motivation, job satisfaction, organization behavior, self-concepts, delinquent behavior, attribution, social adjustment, social cognition, and cross-cultural psychology.

Jian-xin Zhang (Ph.D., The Chinese University of Hong Kong) is currently head of the Developmental and Educational Psychology Section, Institute of Psychology, Academia Sinica in the People's Republic of China (PRC). His research interests are personality psychology, social psychology, and psychological testing. He is also responsible for the adaptation of the Chinese MMPI-2 in the PRC.

Hai-fa Sun (Ph.D., The Chinese University of Hong Kong) is currently an associate professor at South China Normal University in the People's Republic of China. His research interests are influence strategies and cooperation.

Yi-qun Gan (Ph.D., The Chinese University of Hong Kong) is an associate professor in the Department of Psychology, Peking University, in the People's Republic of China. Her research interests are cross-cultural psychology, personality and mental health, and personnel assessment.

Wei-zhen Song was a professor at the Institute of Psychology, Academia Sinica, in the People's Republic of China until her retirement in 1996. Her major contributions were in the areas of medical psychology and personality assessment. She was responsible for the introduction, revision, and application of the MMPI in the PRC. She also established the National MMPI Coordinating Group to facilitate research and training in the use of the inventory.

Dong Xie was affiliated with the research group led by Wei-zhen Song at the Institute of Psychology, Academia Sinica. His research interests are medical psychology, counseling psychology and personality assessment. He is currently a doctoral student at the Department of Psychology, The Ohio State University.