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Psychometric integrity of the Chinese Happiness Inventory among retired older people in Taiwan

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Aim: Happiness is an important indicator of mental and physical health. It has been emphasized as one kind of well-being, and its definition varies from culture to culture. The main objective of the present study was to examine the psychometric integrity and dimensions of the Chinese Happiness Inventory (CHI) in relation to scores on Ryff's Psychological Well-Being Scale among retired older people in Taiwan.

Methods: A cross-sectional study was carried out at social service centers in Taipei, Taiwan. Retired adults gave informed consent from September to November 2010, and completed a package of structured questionnaires measuring happiness and psychological well-being. Internal consistency, the factor structure of the CHI and criterion validity were assessed.

Results: Results from an exploratory factor analysis showed a three-factor solution for the CHI. These factors were named Positive Affect, Life Satisfaction and Interpersonal Relationships. Internal consistency coefficients were 0.95 (Positive Affect), 0.91 (Life Satisfaction), 0.85 (Interpersonal Relationships) and 0.97 (total scale). The results of a canonical correlation analysis showed the presence of a strong relationship between CHI and Ryff's Psychological Well-Being Scale ($r = 0.69$), and that two canonical variates could be derived from the relationship between them.

Conclusions: The results show that the CHI is a three-dimensional scale with high reliability and validity. The construct of happiness emphasizes relationships in relation to others and environment rather than autonomy in this sample. Although the components of happiness might be similar for Positive Affect and Life Satisfaction, their weights for Interpersonal Relationships should be considered when measuring happiness in different cultures. **Geriatr Gerontol Int 2016; 16: 865–872.**

Keywords: Chinese, happiness, psychological well-being, retired elders.

Introduction

Happy people live longer.[1] Previous studies have shown that happiness is an important indicator of good physical and mental health, a positive mood, a good quality of life, and reduced risks of suicide and chronic diseases, especially in the aged population.[2–5] Retired persons are in a significant stage of the life cycle that brings with it major changes in employment status and time allocation. Happiness is also associated with improvements in physical strength, social relationships, family involvement and mental functioning.[6,7] Although high scores on happiness scales have been shown to be positively associated with a long life expectancy and a decreased risk of suicide, there has been limited research on the relationship of happiness with depression, Alzheimer's disease, Parkinson's disease and other chronic diseases.[1]

Happiness is understood as a state of subjective well-being in both Eastern and Western cultures.[8] It is a multidimensional construct that consists of both cognitive and emotional elements.[9] The results of previous studies suggest that in both Eastern and Western societies, it consists of at least three components: life satisfaction, positive affect and the absence of negative affect. Psychological well-being (PWB) is a comprehensive and well-established construct measured by the six subscales of Ryff's PWB scale: Autonomy, Self-Acceptance, Positive Relations with Others, Environmental Mastery, Purpose in Life and Personal

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Growth.[10,11] Harmonious social networks can help promote happiness in Taiwanese who are mainly of Chinese ethnicity, but not in Western individuals.[12,13] Particularly in Chinese culture, happiness has been defined as "a mental state of satisfaction," a harmonious homeostasis of inner experience.[12] So defined, it is measured by the Chinese Happiness Inventory (CHI).[14,15]

The CHI was developed to measure happiness in Taiwanese undergraduate college students and young adults.[12,16–18] Although it has been shown to have high internal consistency (0.94) in adults of all ages in Chinese culture generally, construct validity has been shown for only one factor, Happiness, and only for Taiwanese.[17] There has been no research applying the scale to retired older adults. Therefore, the present study was intended to analyze the reliability, construct validity and criterion validity of the CHI as a correlate of PWB among retired older people in Taiwanese society.

Materials and methods

Participants and procedure

A semistructured questionnaire was completed by a sample of retirees in Taipei, Taiwan. Details of the study procedure are described in a previous article.[19] The 248 participants were recruited from social service centers in Taipei from September to November 2010. They were aged 50–75 years and able to communicate verbally with the interviewer without any signs of cognitive dysfunction.

All participants signed an informed consent form. The study protocol was approved by the Human Subject Protection committee of the Taipei Medical University Institutional Review Board (Approval No. 201003002).

Instruments

The questionnaire package included items on demographics, the CHI and the PWB scale. The demographic questions asked about sex, age, marital status, education level, perceived health status and perceived economic status. Responses for age, sex, marital status and educational level were coded by the interviewer.

CHI

The CHI is the first comprehensive instrument to suitably measure general subjective well-being in Chinese culture.[17] The CHI consists of 48 items, 20 of which were derived from a qualitative study carried out in Taiwan.[20] That study showed that harmony of interpersonal relationships, praise and respect from others, satisfaction of material needs, achievement at work, downward social comparisons, and peace of mind characterize happiness in Chinese society. The remaining 28 items were taken from the Oxford Happiness Inventory (OHI), which has seven subscales: Optimism, Social Commitment, Positive Affect, Contentment, Fitness, Life Satisfaction and Mental Alertness.[17] Responses are recorded on a four-point scale (1, 2, 3 and 4) representing four levels of subjective happiness. The codes are then transformed to remove the positive skewness of the distribution of the raw codes.[17] The original CHI has been given to several groups of research participants aged between 18 and 65 years, but only a small percentage of these were elderly.[20,21] High reliability has been found for the CHI in both British and Taiwanese college students ($\alpha = 0.93–0.94$).[12]

PWB scale

Translation of the PWB scale is described by Chiang *et al.*[19] It consists of six 14-item subscales with the items rated on six-point scales (1–6). The items are worded both positively and negatively, and scored such that higher scores indicate higher PWB. The reliability of the PWB scale in its Mandarin version has been shown to be high ($\alpha = 0.89$) for retired elderly Taiwanese, and the same is true for its validity.[19] The internal consistencies for the six PWB subscales are 0.68 (Autonomy), 0.83 (Environmental Mastery), 0.78 (Personal Growth), 0.83 (Positive Relations with Others), 0.80 (Purpose in Life) and 0.80 (Self-Acceptance). The factor loadings are 0.30 (Autonomy), 0.90 (Environmental Mastery), 0.64 (Personal Growth), 0.84 (Positive Relations with Others), 0.82 (Purpose in Life) and 0.89 (Self-Acceptance).[19]

Statistical analyses

Descriptive statistics were calculated for the demographic items, the CHI and the PWB scale. A principle-components factor analysis with varimax rotation was undertaken to evaluate the covariance of the items and to identify the factors derived from the CHI. Item loadings >0.4 were considered adequate and retained.[22] Pearson correlation coefficients between total scores of the PWB scale and the CHI were used to measure the concurrent and criterion validity of the CHI. Cronbach's alpha was used as the measure of internal consistency reliability of the retained factors and individual items of the CHI. The criterion for adequate reliability was preset at 0.7.[23]

Canonical correlation analysis (CCA) models the relationship between two sets of multidimensional variables and yields their linear combinations.[24,25] It is considered to be a general representation of the general linear model.[26] Specifically, it extracts score vectors representing the new predictors and regresses the response variables on these new predictors. The maximum number of canonical variates that can be extracted equals the

number of variables in the smaller set. In the present study, CCA was chosen to examine the predictability of the CHI by the PWB scale using the R version 2.15.0 software. Two-forty one had completed all questions and 7 participants had less than two missing values on one or both instruments. The overall scale means were substituted for these missing values.

Results

Sample characteristics

Table 1 reports the demographic characteristics of the 248 retired elderly participants. Most were women ($n = 184$, 74.2%) with a mean age of 64.7 years. Most participants were married (75.4%), slightly less than half had attended college or university (42.3%) and most felt they had enough money to support their lifestyle (82.2%).

Validity and reliability of the CHI

The CHI data were found to be appropriate for factor analysis (Kaiser–Meyer–Olkin; KMO = 0.953; Bartlett's test of sphericity = 6377.25, $P < 0.0001$). Three factors had eigenvalues greater than one, after item 43 was deleted due to a low factor loading (<0.4). After this adjustment, the data remained appropriate for factor analysis (KMO = 0.96, Bartlett's test of sphericity = 6659.85, $P < 0.0001$). Exploratory factor analysis of the CHI using a principle axis factor with varimax rotation yielded a three-factor structure that explains 45.1% of the variance of the total scale. The three factors were labeled Positive Affect ($\alpha = 0.95$), Life Satisfaction ($\alpha = 0.91$) and Interpersonal Relationships ($\alpha = 0.85$) (Table 2). Alpha for the total scale was 0.97. A Pearson correlation between PWB and the CHI with PWB as the criterion was statistically significant ($r = 0.69$, $P < 0.001$).

Prediction of the CHI by the PWB scale

As aforementioned, a CCA was carried out with the six subscales of the PWB scale as predictors of the three dimensions of the CHI. The two multivariate scales yielded two canonical variates, each significant at $P < 0.001$. The third canonical variate was deleted because of a weak correlation (<0.3) between the CHI and PWB scales.

Table 1 Characteristics of our sample of retired Taiwanese older people

Variables	Mean	SD	*n* (%)
Age (years)	64.7	6.1	
Education level			
Elementary or below			37 (14.9)
Junior high school			35 (14.1)
Senior high school			71 (28.6)
College or university			105 (42.3)
Sex (female)			184 (74.2)
Marital status			
Married			187 (75.4)
Single/divorced/separated			61 (24.6)
Spending money in past 6 months			
Not enough			44 (17.8)
Enough			205 (82.2)
CHI (total)	119.9	21.7	
Positive Affect (range 25–100)	59.3	12.6	
Life Satisfaction (range 15–60)	39.1	7.1	
Interpersonal Relations (range 7–28)	19.5	3.4	
PWB scale (total, range 84–504)	354.9	35.2	
Autonomy (range 14–84)	52.2	5.0	
Environmental Mastery (range 14–84)	62.1	7.6	
Personal Growth (range 14–84)	61.7	7.1	
Positive Relations with Others (range 14–84)	63.2	7.7	
Purpose in Life (range 14–84)	58.7	8.0	
Self-acceptance (range 14–84)	57.1	8.0	

$n = 248$. CHI, Chinese Happiness Inventory.

Table 2 Results of exploratory factor analysis for the Chinese Happiness Inventory

Factor	Item	Positive Affect	Life Satisfaction	Interpersonal Relationships
Factor 1 Positive Affect $\alpha = 0.95$	37 I am vigorous.	0.70		
	22 I think life is meaningful.	0.67		
	48 I think I am attractive.	0.63		
	30 I feel happy.	0.59		
	35 It is easier than before to do things.	0.58		
	47 I like myself.	0.58		
	29 I engage in everything in my life.	0.58		
	15 I think the world is a good place.	0.54		
	12 It is more comfortable than before when I get up.	0.53		
	17 It is easy to make decisions about life events.	0.51		
	39 I feel exhilarated.	0.50		
	20 I make others happy.	0.50		
	9 I am healthier than before.	0.50		
	23 My job makes me fulfilled.	0.50		
	44 I laugh.	0.50		
	42 I can understand the meaning of my life.	0.46		
	21 I love my life.	0.46		
	13 I think everything in the world is wonderful.	0.45		
	14 I can have good effects on everything in life.	0.45		
	38 I am optimistic about the future.	0.45		
	28 I think life is worthy.	0.45		
	46 I am focused on my job.	0.44		
	31 I care about others.	0.44		
	45 I use my time well to finish things that I want to do.	0.40		
	27 Things were pleasant in the past.	0.37		
Factor 2 Life Satisfaction $\alpha = 0.91$	3 Everything is going well in my life.		0.64	
	6 I live life better than others.		0.64	
	19 I have a comfortable life.		0.64	
	10 I have a sense of security in my life.		0.63	
	32 I live life without any burdens.		0.56	
	11 My dreams all come true.		0.56	
	5 I can control my life.		0.55	
	2 I feel happy when I get along with others.		0.54	
	1 I am lucky.		0.53	
	36 My life leaves me nothing to worry about.		0.49	
	34 I am satisfied with everything in my life.		0.48	
	33 I earn more money than I need.		0.46	
	4 I find everything is interesting in life.		0.45	
	25 I have enough money to do what I want.		0.43	
	7 I feel happy to be with my family.		0.41	
Factor 3 Interpersonal Relationships $\alpha = 0.85$	8 I am respected by others.			0.64
	24 I have good friends who care about me.			0.59
	16 It makes me happy to get along with my friends.			0.56
	26 My work performance is confirmed by others.			0.54
	41 I am praised by others.			0.51
	40 It is interesting to get together with friends.			0.50
	18 I am interested in others' experiences			0.45
	Eigenvalues	18.69	1.59	1.07
	% of variance explained	39.77	3.38	2.28

$n = 248$.

Table 3 Canonical correlation analysis between the Chinese Happiness Inventory and the Ryff's Psychological Well-Being Scale

X variate (PWB scales)	Standardized canonical coefficients/structure correlation coefficients		Y variate (CHI scale)	Standardized canonical coefficients/structure correlation coefficients	
	X1 Harmonious Homeostasis	X2 Relations of Self		Y1 Life Enjoyment	Y2 Self-Fulfilment
1. Autonomy	0.01/0.29	0.12/0.09	1. Positive Affect	0.49/0.96	0.83/–0.22
2. Environmental Mastery	0.39/0.94	–0.39/–0.08	2. Life Satisfaction	0.44/0.93	–1.59/0.34
3. Personal Growth	0.01/0.64	0.79/0.66	3. Interpersonal Relationships	0.13/0.85	0.81/–0.34
4. Positive Relations with Others	0.36/0.91	0.46/0.25			
5. Purpose in Life	0.03/0.79	0.39/0.33			
6. Self-acceptance	0.31/0.92	–0.97/–0.21			
Redundancy coefficient (%)	X_1-->Y: 31.1		ρ	0.71	0.34
	X_2-->Y: 1.3		ρ^2	0.51***	0.11***

***$P < 0.001$. Standardized canonical coefficients are interpreted in a manner analogous to standardized regression coefficients. For the Ryff's Psychological Well-Being Scale (PWB) variables, the first canonical variate, Harmonious Homeostasis, is most strongly influenced by Environmental Mastery (0.39), Positive Relations with Others (0.36) and Self-acceptance (0.31). Structure correlation coefficients that are known to be the canonical loadings are between observed variables (Chinese Happiness Inventory [CHI] or PWB) and canonical variables. ρ: The canonical correlation coefficient, a measure of the strength of the overall relationship between the two canonical variates Xi and Yi, analogous to Pearson's *r*. ρ2: The canonical roots. The simple square of the canonical correlation, the proportion of variance shared by the two canonical variates, is analogous to R^2 in multiple regression analysis. Redundancy coefficient (%): Amount of variance in a canonical variate (dependent or independent) explained by the other canonical variates in the canonical function.

Table 3 summarizes the results of CCA between the PWB and CHI. The first PWB variate, X1(Harmonious Homeostasis), was extracted mainly from Environmental Mastery (0.39), Positive Interpersonal Relations (0.36), and Self-Acceptance (0.31). The second PWB variate, X2 (Relations of Self), was extracted from Environmental Mastery (–0.39), Personal Growth (0.79), Positive Relations with Others (0.46), Purpose in Life (0.39) and Self-Acceptance (–0.97; Table 3). The first CHI variate, Y1 (Life Enjoyment), was extracted mainly from Positive Affect (0.49) and Life Satisfaction (0.44). The second CHI variate, Y2 (Self-Fulfilment), was extracted mainly from Positive Affect (0.83), Life Satisfaction (–1.59) and Interpersonal Relationships (0.81).

As for the correlations between the X and Y components, Harmonious Homeostasis (X1) is positively and strongly related to Life Enjoyment (Y1; $\rho = 0.71$, $P < 0.001$). Harmonious Homeostasis explains 51% of the total variance of the Life Enjoyment component of CHI. As for PWB, Relations of Self (X2) is positively and modestly correlated with Self-Fulfilment (Y2; $\rho = 0.34$, $P < 0.001$), explaining 11.0% of its total variance. Figure 1 shows the predictability of CHI from PWB. Life Enjoyment (Y1) correlates highly with all the dimensions of the CHI: Positive Affect (0.96), Life Satisfaction (0.93) and Interpersonal Relationships (0.85). Self-Fulfilment (Y2) is modestly correlated with Life Satisfaction (0.34) and Interpersonal Relationships (–0.34).

As for the redundancy of prediction from the CHI scale, Harmonious Homeostasis (X1) and Relations of Self (X2) explains 31.1% and 1.3 %of the variability of total CHI scores, respectively (Fig. 1).

Discussion

The results of the present study show that the three-dimensional CHI has good reliability, construct validity and criterion validity. Its dimensions correspond to the two definitions of the three aspects of happiness, positive affect and life satisfaction, the exception being negative affect.[13] Furthermore, the results show that the PWB scale has good criterion validity for Taiwanese retirees. All the PWB subscales except Autonomy correlated with the CHI significantly.

The dimensions of the CHI in the present study reflected the concept of happiness, understood as consisting of positive affect and life satisfaction.[27] For older people, good interpersonal relationships also fulfil the needs for praise, respect, affection, love, achievement, emotional support and social attachment.[28] Furthermore, older people with good interpersonal relationships, social support and high levels of community participation report the greatest happiness in Taiwanese society.[29] This explains why good interpersonal relationships are a key dimension of the CHI.

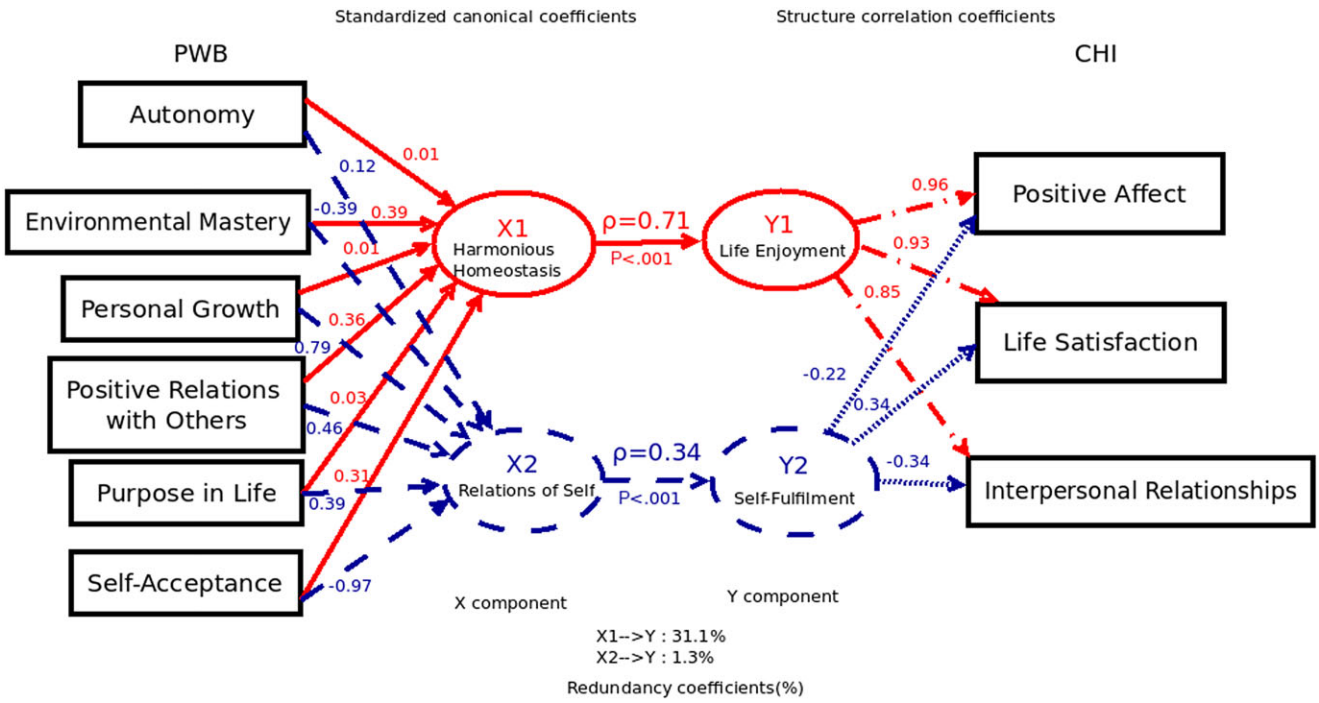

Figure 1 Predictability of the three-dimensional Chinese Happiness Inventory (CHI) by Ryff's Psychological Well-Being Scale (PWB) scale. Standardized canonical coefficients are interpreted in a manner analogous to standardized regression coefficients. Structure correlation coefficients that are known to be canonical loadings are between observed variables (CHI) and canonical variables. ρ: The canonical correlation coefficients between the independent variables (Xi: PWB scale) and the dependent variable (Yi: CHI). Redundancy coefficient (%): Amount of variance in a canonical variate (dependent or independent) explained by the other canonical variates in the canonical function. ⟶: Standardized canonical coefficients between PWB and Harmonious Homeostasis. - - ≫: Standardized canonica l coefficients between PWB and Relations of Self. -·-≫: Structure correlation coefficients between Life Enjoyment and CHI. ·····≫: Structure correlation coefficients between Self-Fulfilment and CHI.

In the present study, the CHI had good concurrent validity with the PWB. The CHI and the PWB originated in different cultures, but both define well-being as reflecting self-realization, personal growth, and, more generally, human flourishing and the fulfilment or realization of one's true nature.[30] Our results support the finding of Linley *et al.* that happiness was strongly related to PWB in a large sample in the UK ($r = 0.76$).[27] Another study in the USA also found happiness and PWB to be highly correlated ($r = 0.70$).[31] In the present study, the correlation between CHI and PWB can be considered moderate to good ($r = 0.69$). Furthermore, the significant canonical variates (X and Y components) we found show that the dimensions of the CHI can be considered correlated to the dimensions of all the PWB subscales except Autonomy.

In the current study, the PWB component Harmonious Homeostasis, which was mainly constructed from Environmental Mastery, Positive Relations with Others and Self-Acceptance, was highly correlated with the dimensions of the CHI. The CHI component, Life Enjoyment, was also predicted by Harmonious Homeostasis (see Fig. 1). That is to say, Harmonious Homeostasis yielded good prediction of Life Enjoyment, but Environmental Mastery, Positive Relations with Others and Self-Acceptance were the principal predictors. This suggests that for retired people, happiness comes from acquiring a higher level of environmental mastery despite chronic health challenges and declining physical health. Along with these life changes, people with a higher level of self-acceptance feel more positive about past events and are better able to acknowledge their limitations.[32] They have positive relations with others and high levels of social attachment, which promote their well-being.[28] It was shown that personal growth was associated with the pursuit of life satisfaction. Additionally, the PWB component, Relations of Self, correlated significantly with the CHI component Self-Fulfilment. We attribute this to the eudaimonic orientation of the second variate scale, which focuses on personal growth and self-acceptance, and is negatively associated with interpersonal relationships.

Cultural differences should be taken into account when measuring levels of happiness. The construct of happiness is different in Eastern and Western cultures. As emotions are embedded in cultural contexts, happiness might vary from culture to culture.[33] One study indicates that whereas Chinese culture emphasizes

collectivism, which is positively related to the need for affiliation and negatively related to the need for autonomy, Western culture emphasizes individualism, which is positively related to the need for autonomy and negatively related to the need for affiliation and the need for abasement.[34] Happiness in individualistic societies comes primarily from personal achievement.[35] People in Western cultures, especially, focus more on their own beliefs, and they seek autonomy, independence and self-esteem.

In contrast, people in Chinese cultures stress homeostatic affiliation, positive relations with others and group harmony; in collectivist societies, happiness means harmony and homeostatic social relations.[35] Evidence suggests that happiness in Western cultures is highly associated with interpersonal competition and personal achievement, and that happiness in Chinese cultures is highly associated with group harmony and the collective welfare of the family.[34] Consequently, the CHI is a suitable measure of happiness in collectivist societies. Examples of CHI items that emphasize the harmony of interpersonal relationships are "It makes me happy to get along with my friends," "I have good friends who care about me" and "It is interesting to get together with friends." These items are focused on group harmony and interpersonal affiliation.

It is noteworthy that the coefficient of the PWB Autonomy factor is much smaller than those of the other five factors in both the Harmonious Homeostasis and the Relations of Self components. In Chinese culture, happiness is defined in terms of interpersonal connectedness. People in Chinese cultures are eager to maintain a balance between positive and negative affect in their social relationships. Therefore, happiness can be best predicted by how much the self is perceived as embedded in social relationships.[33] Quite to the contrary, people in Western cultures are motivated to maximize their positive affect and search for happiness through self-achievement.[35] Therefore, happiness in Western cultures is best predicted by self-esteem.[35] The CHI, which has its origin in Chinese culture, focuses on the harmony of interpersonal relationships, being praised and respected by others, peace of mind, and downward social comparisons.[15,36] However, the PWB scale, which originated in Western culture, emphasizes autonomy, the purpose of life and self-achievement. The differences between Chinese and Western cultures explain why the Autonomy subscale of the PWB was not a significant indicator of happiness in the present study.

The differences between psychological well-being and happiness illustrate the low coefficient of Personal Growth and Purpose in Life on the PWB Harmonious Homeostasis. The PWB scale is a "eudaimonic" measure, which means that it emphasizes meaning of life, human fulfilment and growth, as manifested by its Personal Growth and Purpose in Life subscales.[37] Happiness has been defined as "a mental state of satisfaction," a harmonious homeostasis of inner experience, especially in Chinese culture.[14] Furthermore, culture can moderate social relationships or societal conditions, the two variables that most influence happiness.[38] Along with a good capacity for environmental control, good interpersonal relationships and mental health lead to a better life in old age. As they age, individuals in the collectivist Chinese cultures are expected to lead a homeostatic life, a maxim that traces its origin to the Confucian norm of filial piety and the fundamental concept of Taoism.[39]

Although happiness is beneficial for the physical and mental health of retired older adults, there are only a few studies of happiness in the geriatric literature. In the present study, we have explicated the various constructions of happiness, and reported analyses of the reliability and concurrent validity of the CHI. Besides, we have described important relevant differences between Western and Eastern cultures. It is noteworthy that most of the empirical research on happiness does not address cultural diversity; future research should take cultural differences into account.

The one limitation of the current study was the homogeneity of our non-random, sample – largely married, well-educated, healthy females all recruited from the capital city of Taiwan. In particular, our findings cannot be generalized to people who are severely ill or disabled. Our most important positive finding is that the Chinese-originated CHI is a suitable measure of happiness in Chinese society.

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Disclosure statement

No potential conflicts of interest were disclosed.

References

1 Frey BS. Happy people live longer. *Science* 2011; **331**: 542–543.

2 Benyamini Y, Idler EL, Leventhal H, Leventhal EA. Positive affect and function as influences on self-assessments of health: expanding our view beyond illness and disability. *J Gerontol B* 2000; **55**: 107–116.
3 Bray I, Gunnell D. Suicide rates, life satisfaction and happiness as markers for population mental health. *Soc Psychiatry Psychiatr Epidemiol* 2006; **41**: 333–337.
4 Chyi H, Mao S. The determinants of happiness of China's elderly population. *J Happiness Stud* 2011; **13**: 167–185.
5 Steptoe A, Wardle J, Marmot M. Positive affect and health-related neuroendocrine, cardiovascular, and inflammatory processes. *Proc Natl Acad Sci U S A* 2005; **102**: 6508–6512.
6 Helweg-Larsen M, Kjøller M, Thoning H. Do age and social relations moderate the relationship between self-rated health and mortality among adult Danes? *Soc Sci Med* 2003; **57**: 1237–1247.
7 Mein G, Martikainen P, Hemingway H, Stansfeld S, Marmot M. Is retirement good or bad for mental and physical health functioning? Whitehall II longitudinal study of civil servants. *J Epidemiol Community Health* 2003; **57**: 46–49.
8 Bekhet AK, Zauszniewski JA, Nakhla WE. Happiness: theoretical and empirical considerations. *Nurs Forum* 2008; **43**: 12–23.
9 Davern MT, Cummins RA, Stokes MA. Subjective wellbeing as an affective-cognitive construct. *J Happiness Stud* 2007; **8**: 429–449.
10 Ryff CD. Happiness is everything, or is it? Explorations on the meaning of psychological well-being. *J Pers Soc Psychol* 1989; **57**: 1069–1081.
11 Ryff CD, Keyes CL. The structure of psychological well-being revisited. *J Pers Soc Psychol* 1995; **69**: 719–727.
12 Lu L, Gilmour R, Kao S *et al*. Two ways to achieve happiness: when the East meets the West. *Pers Individ Dif* 2001; **30**: 1161–1174.
13 Zhang J, Yang Y, Wang H. Measuring subjective well-being: a comparison of China and the USA. *Asian J Soc Psychol* 2009; **12**: 221–225.
14 Lu L. Understanding happiness: a look into the Chinese folk psychology. *J Happiness Stud* 2001; **2**: 407–432.
15 Lee Y-C, Lin Y-C, Huang C-L, Fredrickson BL. The construct and measurement of peace of mind. *J Happiness Stud* 2013; **14**: 571–590.
16 Lu L. The relationship between subjective well-being and psychosocial variables in Taiwan. *J Soc Psychol* 1995; **135**: 351–357.
17 Lu L, Shih JB. Personality and happiness: Is mental health a mediator? *Pers Individ Dif* 1997; **22**: 249–256.
18 Lu L, Kao S-F, Chang T-T, Wu H-P, Jin Z. The individual- and social-oriented Chinese bicultural self: a subcultural analysis contrasting mainland Chinese and Taiwanese. *Soc Behav Pers Int J* 2008; **36**: 337–346.
19 Chiang H-H, Chien L-H, Lin J-S, Yeh Y-H, Lee TS-H. Modeling psychological well-being and family relationships among retired older people in Taiwan. *Int J Ment Health Nurs* 2013; **22**: 93–101.
20 Lu L, Shih JB. Sources of happiness: a qualitative approach. *J Soc Psychol* 1997; **137**: 181–187.
21 Lu L, Lin Y. Family roles and happiness in adulthood. *Pers Individ Dif* 1998; **25**: 195–207.
22 Peterson R. A meta-analysis of variance accounted for and factor loadings in exploratory factor analysis. *Mark Lett* 2000; **11**: 261–275.
23 Jenkinson C, Coulter A, Bruster S. Questionnaire: development and validation using data from in-patient surveys in five countries. *Int J Qual Health Care* 2002; **14**: 353–358.
24 Fan X, Konold TR. Canonical correlation analysis. In: Hancock GR, Mueller RO, eds. *The Reviewer's Guide to Quantitative Methods in the Social Sciences*. New York and London: Routledge, 2010; 29–40.
25 Kuylen A, Verhallen T. The use of canonical analysis. *J Econ Psychol* 1981; **1**: 217–237.
26 Sherry A, Henson RK. Conducting and interpreting canonical correlation analysis in personality research: a user-friendly primer. *J Pers Assess* 2005; **84**: 37–48.
27 Linley PA, Maltby J, Wood AM, Osborne G, Hurling R. Measuring happiness: the higher order factor structure of subjective and psychological well-being measures. *Pers Individ Dif* 2009; **47**: 878–884.
28 Baumeister RF, Leary MR. The need to belong: desire for interpersonal attachments as a fundamental human motivation. *Psychol Bull* 1995; **117**: 497–529.
29 Lu L, Kao S-F, Hsieh Y-H. Positive attitudes toward older people and well-being among Chinese community older adults. *J Appl Gerontol* 2009; **29**: 622–639.
30 Ilies R, Morgeson FP, Nahrgang JD. Authentic leadership and eudaimonic well-being: understanding leader–follower outcomes. *Leadersh Q* 2005; **16**: 373–394.
31 Keyes CLM, Shmotkin D, Ryff CD. Optimizing well-being: the empirical encounter of two traditions. *J Pers Soc Psychol* 2002; **82**: 1007–1022.
32 Strauser DR, Lustig DC, Ciftçi A. Psychological well-being: its relation to work personality, vocational identity, and career thoughts. *J Psychol* 2008; **142**: 21–35.
33 Uchida Y, Norasakkunkit V, Kitayama S. Cultural constructions of happiness: theory and emprical evidence. *J Happiness Stud* 2004; **5**: 223–239.
34 Hui CH, Villareal MJ. Individualism-collectivism and psychological needs: their relationships in two cultures. *J Cross Cult Psychol* 1989; **20**: 310–323.
35 Rudy D, Sheldon K, Awong T, Tan H. Autonomy, culture, and well-being: the benefits of inclusive autonomy. *J Res Pers* 2007; **41**: 983–1007.
36 Vansteenkiste M, Lens W, Soenens B, Luyckx K. Autonomy and relatedness among Chinese sojourners and applicants: conflictual or independent predictors of well-being and adjustment? *Motiv Emot* 2006; **30**: 273–282.
37 Ryff C, Singer B. Best news yet on the six-factor model of well-being. *Soc Sci Res* 2006; **35**: 1103–1119.
38 Diener E, Oishi S, Lucas RE. Personality, culture, and subjective well-being: emotional and cognitive evaluations of life. *Annu Rev Psychol* 2003; **54**: 403–425.
39 Karasawa M, Curhan KB, Markus HR *et al*. Cultural perspectives on aging and well-being: a comparison of Japan and the U.S. *Int J Aging Hum Dev* 2011; **73**: 73–98.