行政院國家科學委員會專題研究計畫 成果報告

台灣中老年人幸福感及相關因素之長期追蹤研究(II) 研究成果報告(精簡版)

計 畫 主 持 人 ： 李仁豪
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報 告 附 件 ： 出席國際會議研究心得報告及發表論文

公 開 資 訊 ： 本計畫涉及專利或其他智慧財產權，2 年後可公開查詢

中 華 民 國 101 年 10 月 02 日

中 文 摘 要 ： 參見英文摘要

中文關鍵詞： 心理幸福感、驗證性因素分析、中文版

英 文 摘 要 ： On behave of importance of psychological well-being
in research and practical application but of
deficiency in length of Ryff's psychological well-
being scale and in validity of its confirmatory
factor analysis, the current study aimed to translate
the scale of 84 items into a Chinese version and to
establish its brief version with reliability and
validity. The sample included 820 participants in
Taiwan with age ranging 31-95 and mean 59.8, obtained
by convenience sampling. Among them, 409 of
participants were sampled randomly to execute items
selection using structural equation modeling, the
rest 411 of participants and all subjects were used
to check the 18-item brief version with reliability
and validity. Besides, competed models were used to
confirm better model-fit for six-factor oblique model
and six-factor with one second-order factor model.
The reliability alpha coefficients were .60-.75 for
six subscales, and .92 for the total scale. In
addition, other information of construct validity and
criterion-related validity also warranted the brief
version. Further, factorial invariance of the brief
version were confirmed between middle-aged and older
people and between gender, which showed relationships
among six factors and latent means could be compared
among those people. The current study suggested
future studies use this scale to cumulate more
reliability and validity information for this brief
Chinese version of Ryff's psychological well-being
scale.

英文關鍵詞： Chinese version, confirmatory factor analysis,
psychological well-being scale

Development of The Brief Chinese Version of Ryff's Psychological Well-Being Scale

Abstract

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On behave of importance of psychological well-being in research and practical application but of deficiency in length of Ryff's psychological well-being scale and in validity of its confirmatory factor analysis, the current study aimed to translate the scale of 84 items into a Chinese version and to establish its brief version with reliability and validity. The sample included 820 participants in Taiwan with age ranging 31-95 and mean 59.8, obtained by convenience sampling. Among them, 409 of participants were sampled randomly to execute items selection using structural equation modeling, the rest 411 of participants and all subjects were used to check the 18-item brief version with reliability and validity. Besides, competed models were used to confirm better model-fit for six-factor oblique model and six-factor with one second-order factor model. The reliability alpha coefficients were .60-.75 for six subscales, and .92 for the total scale. In addition, other information of construct validity and criterion-related validity also warranted the brief version. Further, factorial invariance of the brief version were confirmed between middle-aged and older people and between gender, which showed relationships among six factors and latent means could be compared among those people. The current study suggested future studies use this scale to cumulate more reliability and validity information for this brief Chinese version of Ryff's psychological well-being scale.

Keywords: Chinese version, confirmatory factor analysis, psychological well-being scale

Introduction

Since Diener proposed the construct "subjective well being" in 1980s, it has often been broadly used in related psychological research. However, the concept has still been quite unclear. Therefore, Ryff et al. (such as Keyes, 2006；Ryff, 1989a, 1989b；Ryff & Keyes, 1995；Ryff & Singer, 1998) brought up a similar construct named as "psychological well being." The main differences between these two terminologies are in philosophical traditions and operational definitions. While subjective well being follows hedonism tradition, psychological well being has eudaimonic traits, both of which can be traced back to Greece philosophy two thousand years ago. Besides, subjective well being are inconsistent in much measurement of its construct, the related constructs or scales such as happiness, satisfaction of life, positive and negative emotion, quality of life, morale, self-esteem and so on all had ever been used as operational definitions of subjective well being. On the contrast, Ryff's psychological well being has a much clear theory-derived definition. She synthesized many past well-known positive psychological health concepts originated from such as Erikson's psychosocial stages, Bühler's basic life tendencies, Neugarten's personality change, Maslow's self-actualization, Allport's maturity, Roger's fully functioning person, Jung's individuation, and Jahoda's positive psychological health (Ryff, 1989a, 1989b). Hence, Ryff's psychological well being scale consisted of six dimensions, including self-acceptance, positive relations with others, autonomy, environmental mastery, purpose in life, and personal growth. It is worth to note that Ryff's psychological well being scale is still used in self-reported manner; therefore it can also be viewed as a kind of subjective well being but focus on subject's eudaimonic facet.

Reliability and validity of Ryff's psychological well being scale and its shorter versions

Ryff's scale of psychological well being with six dimensions was made up in a serious manner. Three experts independently wrote 80 items for each dimension, half of which was reversely worded items. Through qualitative analysis, 32 items for each dimension were retained. Then, the scale was administrated 321 adults to explore simple quantitative reliability and validity information, in which some items having lower correlations with belonging dimension than that with other dimensions had been deleted. In this version, totally 120 items were obtained with Cronbach's α ranging .86-.93 and with rest-retest reliability coefficients ranging .81-.88 in six weeks duration. Besides, the each dimension of the scale showed distinct correlation patterns with satisfaction of life, balanced emotion, self-esteem and so on, which expressed convergent and discrimination validity information (Ryff, 1989b). However,

the version supplied no confirmatory factor analysis result.

Ryff, Lee, Essex and Schmutte (1994) developed a more concise version of 84 items based on item-total correlation and guidance of definition in theory, which has .97-.98 correlations with original version of 120 items. The new version still had good Cronbach's α coefficients, test-retest reliability and convergent and discrimination validity information. However, it was also a pity that the 84 item version still did not offer information of confirmatory factor analysis, which implied that too many items can not lead to an acceptable model-fit in confirmatory factor analysis. Hence, Ryff and Keyes (1995) selected 3 items form 20 items of each dimension. This shortest version of 18 items presented relatively acceptable model-fit in both oblique six-factor model and six-factor with one second order factor model. However, the version had bad Cronbach's α coefficients ranging .33~.52. Also Clarke, Marshall, Ryff and Wheaton (2001) found lower Cronbach's α coefficients ranging .26~.52. Van Dierendonck (2004) even found Cronbach's α was .17 in dimension of 'purpose in life.'

Recently, in order to translate Ryff's psychological well being scale into a Chinese version, I obtained 18, 54 and 84 items versions after corresponding with Ryff. Van Dierendonck (2004) found 18 items version was superior to 54 items version, and the latter was superior to 84 item version in confirmatory factor analysis. He found six-factor with one second order factor model had relatively better model-fit, but he did not consider oblique six-factor model. Besides, he also developed a 39 items version based on the 84 items version, which rose Cronbach's α coefficients to .72-.81. Cheng and Chan (2005) using Hong Kong sample also found lower Cronbach's α coefficients in 18 items version, so they reselected 24 items as a new version where Cronbach's α coefficients ranging .43-.72 in the adult sample. They also found oblique six-factor model had better model-fit than six-factor with one second order factor model. Fernandes, Vasconcelos-Raposo and Teixcira (2010) using translated Portuguese 18-items version in samples below 20 years old also found Cronbach's α coefficients were below .50. They reselected 30 items version but offered no confirmatory factor analysis result. In Taiwan, Yu, Hsieh, Lin, Chen and Tseng (2011) translated Ryff's 18-items version into a Chinese version. They found the 'purpose in life' dimension had Cronbach's α coefficient close to .30, and did not have good model-fit results.

In addition, Springer and Hauser (2006) found correlation coefficients were too high among the six dimensions in 18 items version, even reaching .97. However, Ryff and Singer (2006) reminded us that distinct six factor evidences should not consider only factorial validity. They maintained that psychological correlates,

sociodemographic correlates, biological correlates, and intervention studies can also offer evidences to support six-factor model.

Although Ryff's psychological well being scales could not guarantee some reliability and validity information, several large-scale national surveys had adopted part of the scales, such as NSFH II（National Survey of Families and Households II）、MIDUS（National Survey of Midlife in the United States）、WLS（Wisconsin Longitudinal Study)、CSHA(Canadian Study of Health and Aging). Besides, it seemed that researchers in different countries or zones had reselected items from 84 items version to produce several new versions in accord with their different cultures. However, for Chinese version, although Cheng and Chan's (2005) 24 items version had relatively high reliabilities for several dimensions, the factor loadings of most items were lower than .50. They confessed that parts of items need modifying. Therefore, in this study, 84 items version of Ryff's psychological well being scale was retranslated in Taiwan trying to raise a new shorter Chinese version with more acceptable Cronbach's α reliability and confirmatory factor analysis validity.

Method

A questionnaire survey was adopted to collect data including background information, 84 items Chinese version of Ryff's psychological well being scale, Geriatric Depression Scale (GDS-15), and the first item of WHOQOL-BREF Taiwan version.

Sample

The samples were recruited in convenient way in Taiwan. Totally 820 participants aged 31-95 years old with mean 59.8 received the survey, of whom 337 were males, 468 were females, and 15 were unknown. The education levels showed that 50 participants were illiteracies, 144 participants were elementary school degree, 99 participants were junior high school degree, 231 participants were high school degree, 219 participants were college degree, and 35 participants were master degree.

Instruments

1. 84 items Chinese version of Ryff's psychological well being scale

Three psychologists and one English language expert cooperated to translate the scale into its Chinese version. Each dimension consists of 14 items, so there were 84 items in the scale, of which 40 items were reversely worded. A Likert-type six points scoring was adopted as its English version. The reliability and validity information of

the scale were described later.

2. WHOQOL-BREF Taiwan version

In WHOQOL-BREF Taiwan version (Yao, Chung, Yu, & Wang, 2002), the first item "How would you rate your quality of life" was used as criterion with which to correlate with the psychological well being scale to offer criterion-related validity evidence. The item was used with a Likert-type five points scoring way to measure subjects' quality of life.

3. Geriatric Depression Scale

Sheikh and Yesavage (1986) had established a 15 items shorter version from its previous 30 items version. The Geriatric Depression Scale (GDS-15) was scored in binary way, of which 5 items were reversely worded. Its Cronbach' α of Chinese version in this research was .96.

Statistics

The measurement model of structural equation modeling (SEM) was used to execute confirmatory factor analysis to help select appropriate items. LISREL 8.8 software and its default maximum likelihood estimation method were used to estimate parameters.

It seems that using SEM to select items violates its confirmation concept. Hence, about 50 percent of 820 participants' data, that is 409 participants' data, were randomly selected to execute items selection process. Once the shorter version was selected, the rests 411 and total 820 participants' data were used in final confirmatory factor analysis.

The item selection strategies of SEM referred to modification index (MI) and size of factor loadings. When MI indicated that factor loadings of each item on factors except its attributed factor were with high chi-square values, it deserved to delete the item. Besides, when MI indicated that correlation coefficients between each paired measurement errors of items were with high chi-square values, it also deserved to considerate deleting one of the two paired items. Which one in paired items would be deleted also referred to item content and factor loading in addition to chi-square value. When item content and factor loadings of the paired items were much similar, the item that could reduce more chi-square value would be deleted. While double loadings of an item showed it was not pure to measure its attributed factor, correlations between two measurement errors pointed out there were unknown factors in the scale. In addition, the item with much lower factor loading was deleted.

Results

The descriptive statistics of the 84 items Chinese version of Ryff's psychological well being scale showed that distribution of each item was close to normality, where maximum skewness coefficient was 1.05, and the others were among -0.78 to 0.45; and where maximum kurtosis coefficient was 2.16, and the others were among -0.38 to 1.98. After SEM selection process, new 18 items were retained as a new Chinese version.

In contrast to past versions of Ryff's psychological well being scale, the Chinese 18 items version had 16 items overlapping Ryff's 54 items version, and had 9 items overlapping Ryff's 18 items version, but only 7 items overlapping Cheng and Chan's (2005) 24 items version. Besides, there was no reversely worded item in the 18-items Chinese version. Furthermore, in model-fit comparisons as shown in Table 1, Ryff's 84-items, 54-items, 18-items versions and Cheng and Chan's (2005) 24 items version did not had acceptable model-fit with oblique six-factor model, while the new Chinese 18 items version had acceptable model-fit outcomes. Even if comparing with past literature (Cheng & Chan, 2005；Clarke, Marshall, Ryff & Wheaton, 2001；Ryff & Keyes,1995；Van Dierendonck, 2004), the 18 items Chinese had the best model-fit results.

Table 1 oblique six-factor model fit outcomes for several versions

	χ^2	df	AIC	CFI	AGFI	SRMR	RMSEA
Ryff's 84 items	56728.74	3387	57094.74	0.93	0.34	0.11	0.139
Ryff's 54 items	25577.40	1362	25823.40	0.90	0.42	0.11	0.147
Ryff's 18 items	1740.05	120	1842.05	0.88	0.73	0.086	0.128
Cheng & Chan's 24 items	4010.23	237	4136.23	0.90	0.63	0.10	0.139
Chinese 18 items (N=409)	305.32	120	407.32	0.98	0.89	0.042	0.062
Chinese 18 items (N=411)	407.28	120	509.28	0.98	0.86	0.047	0.076
Chinese 18 items (N=820)	550.29	120	652.29	0.98	0.90	0.039	0.066

Note: the versions that did not present number of subjects were all based on data of 820 subjects.

Several competing model as previous mentioned were test with the 18 items Chinese version, where lowest AIC index was used often to judge as the better one. Besides, Burnham and Anderson (2010) suggested that when change between AIC values over 10 points per degree of freedom, it indicated a model difference. In Table 2, oblique six-factor model showed best model-fit, consistent with past research, but orthogonal six-factor model was much worse than it was in Ryff and Keyes (1995) and Van Dierendonck (2004). Although the six-factor with one second order factor

model had a change more than 10 AIC points per degree of freedom than the oblique six-factor model, they both showed acceptable model-fit.

Table 2 the model-fit outcomes of 18 items version for four competing models (*N*=820)

	χ^2	*df*	AIC	CFI	AGFI	SRMR	RMSEA
one-factor model	895.15	135	967.15	0.97	0.86	0.047	0.083
orthogonal six-factor model	5223.48	135	5295.48	0.83	0.47	0.36	0.215
oblique six-factor model	550.29	120	652.29	0.98	0.90	0.039	0.066
six-factor with one second order factor model	673.42	129	757.42	0.98	0.89	0.043	0.072

In the oblique six-factor model, the results of the confirmatory factor analysis and reliability of the 18 items Chinese version were shown in Table 3. The factor loadings were ranging from .55 to .80, while Cronbach's α and composite reliability were among .60-.75, which all reached acceptable standards. Besides, the descriptive statistics and correlation coefficients among six factors were shown in Table 4. The correlation coefficients of six subscales were among .48-.69, while correlation coefficients among six factors were ranging from .71 to .95, none of which higher than .95 standard showing acceptable discriminant validities. In addition, the correlation coefficients between six subscales of 18-items version and those of 84-items version were ranging from .64 to .83, which showed that the 18 items captured the six sub-constructs of original 84 items. Furthermore, since the correlation coefficients among six subscales were not too low, the total score of 18 items was meaningful. The total score had a correlation coefficient .52 with the item of quality of life, and had a correlation coefficient -.21 with GDS-15, which both reached the .01 significant level. That is to say, the 18 items Chinese version showed good criterion-related validities.

Table 3 factor loadings and reliability of oblique six-factor model (*N*=820)

item	PR	AU	EM	PG	PL	SA
A	.62	.58	.72	.60	.73	.60
B	.70	.55	.75	.69	.79	.78
C	.68	.61	.65	.80	.59	.69
Cronbach's α	.71	.60	.75	.74	.73	.73
Composite reliability	.71	.60	.75	.74	.75	.73

Note: A, B, C in PR represented 19th, 49th, 67th of 84 items version; in AU represented 50, 68, 80; in EM represented 3, 21, 39; in PG represented 28, 64, 70; in PL represented 47, 53, 59; in SA represented 6, 12, 78.

Table 4 Descriptive statistics and correlation of six dimensions in 18-items Chinese version

	PR	AU	EM	PG	PL	SA
PR	1.00[.77]					
AU	.56(.87)	1.00[.64]				
EM	.63(.86)	.48(.71)	1.00[.78]			
PG	.69(.95)	.61(.92)	.57(.75)	1.00[.83]		
PL	.62(.86)	.57(.86)	.63(.84)	.68(.90)	1.00[.76]	
SA	.64(.89)	.57(.88)	.69(.91)	.60(.83)	.68(.93)	1.00[.80]
Means	12.97	12.37	13.60	13.26	12.54	12.56
SD	2.31	2.10	2.47	2.33	2.49	2.50

Note: Pearson's correlation coefficients all reached at least .01 significant level. Factor correlations were in the round brackets. The correlation coefficients between six subscales of 18 items version and those of 84 items version were in the square brackets.

Discussion

The 18 items Chinese version did not include any reversely worded item after the selecting items processes. It showed that rescoring the reversely worded items was not consistent with other items within the same dimension in content meaning so that they could not be retained in the final 18 items version. Although reversely worded items could reduce effects of acquiescence response style or other response sets, however, they influence quality of items and then decrease reliability and validity of psychological testing (Holden & Fekken, 1990; Schriesheim & Eisenbach, 1995). Furthermore, they may also lead to method artifact (Bayazit, Hammer, & Wazeter, 2004). Hence, Kelloway, Catano and Southwell (1992) suggested deleting reversely worded items in making up their brief version of union commitment scale.

On the factor validity, the factor loadings were below .50 for half of 18 items in Clarke, Marshall, Ryff and Wheaton (2001) and for one-third of 18 items in Chen and Chan (2005). Compared with the past research, most of the factor loadings were higher than .60 in this new 18 items Chinese version. On the reliability, Cronbach's α was .92 for total scale and at least .60 for each dimension, which were all superior to the past versions (Cheng & Chan, 2005; Clarke, Marshall, Ryff & Wheaton, 2001; Fernandes, Vasconcelos-Raposo & Teixcira, 2010; Ryff & Keyes, 1995). Cheng and Chan (2005) also suggested that Cronbach's α higher than .60 be acceptable standard because of lower reliabilities in the past 18 items versions. On the correlation among six dimensions, Ryff's (1989b) correlation coefficients among .32-.76 of six subscales were similar to .48-.69 in this research; however, correlation coefficients among .13-.46 for six subscales and .24-.85 for six factors were lower than those in this research. Besides, Springer and Hauser (2006) found that .74-.98 in WLS, .65-.98

in NSFH II, and .48-.87 in MIDUS for the six factors were all similar to .71-.95 in this research.

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出席 ApsyA 心得報告

這次遠赴印尼雅加達參加亞洲心理學年會，增加臨場發表的經驗，對於未曾在國外留學的我來說，第一次在國際研討會上以英文進行口頭發表，實在緊張莫名，同時感受到印尼學者的英文能力似乎高出台灣學者很多，他們大都以英文為主要溝通語言，讓我感到壓力極大。此外，也利用短暫的時間，在印尼街頭進行觀察，對於雅加達發展不平衡有深深的感觸。

以下是簡易接受函及摘要

Asian Psychological Association

ABSTRACT SUBMISSION

Conference : 4th APsyA

Title : Development of The Brief Chinese Version of Ryff's Psychological Well-Being Scale

Abstract   :

On behave of importance of psychological well-being in research and practical application but of deficiency in length of Ryff's psychological well-being scale and in validity of its confirmatory factor analysis, the current study aimed to translate the scale of 84 items into a Chinese version and to establish its brief version with reliability and validity. The sample included 820 participants in Taiwan with age ranging 31-95 and mean 59.8, obtained by convenience sampling. Among them, 409 of participants were sampled randomly to execute items selection using structural equation modeling, the rest 411 of participants and all subjects were used to check the 18-item brief version with reliability and validity. Besides, competed models were used to confirm better model-fit for six-factor oblique model and six-factor with one second-order factor model. The reliability alpha coefficients were .60-.75 for six subscales, and .92 for the total scale. In addition, other information of construct validity and criterion-related validity also warranted the brief version. Further, factorial invariance of the brief version were confirmed between middle-aged and older people and between gender, which showed relationships among six factors and latent means could be compared among those people. The current study suggested future studies use this scale to cumulate more reliability and validity information for this brief Chinese version of Ryff's psychological well-being scale.

Keywords: factorial invariance, psychological well-being, structural equation modeling

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Authors   : (1) Ren Hau Li

Presentation: Oral Presentation

國科會補助計畫衍生研發成果推廣資料表

國科會補助計畫	計畫名稱: 台灣中老年人幸福感及相關因素之長期追蹤研究(II)
	計畫主持人: 李仁豪
	計畫編號: 100-2410-H-040-011-　　　　　學門領域: 教育有關專門領域

無研發成果推廣資料

100 年度專題研究計畫研究成果彙整表

計畫主持人：李仁豪　　　　計畫編號：100-2410-H-040-011-

計畫名稱：台灣中老年人幸福感及相關因素之長期追蹤研究(II)

成果項目			量化			單位	備註（質化說明：如數個計畫共同成果、成果列為該期刊之封面故事...等）
			實際已達成數（被接受或已發表）	預期總達成數(含實際已達成數)	本計畫實際貢獻百分比		
國內	論文著作	期刊論文	0	1	100%	篇	
		研究報告/技術報告	0	0	0%		
		研討會論文	0	0	0%		
		專書	0	0	0%		
	專利	申請中件數	0	0	0%	件	
		已獲得件數	0	0	0%		
	技術移轉	件數	0	0	0%	件	
		權利金	0	0	0%	千元	
	參與計畫人力（本國籍）	碩士生	2	2	100%	人次	
		博士生	0	0	0%		
		博士後研究員	0	0	100%		
		專任助理	0	0	100%		
國外	論文著作	期刊論文	0	1	100%	篇	
		研究報告/技術報告	0	0	0%		
		研討會論文	0	1	100%		
		專書	0	0	100%	章/本	
	專利	申請中件數	0	0	0%	件	
		已獲得件數	0	0	0%		
	技術移轉	件數	0	0	0%	件	
		權利金	0	0	0%	千元	
	參與計畫人力（外國籍）	碩士生	0	0	0%	人次	
		博士生	0	0	0%		
		博士後研究員	0	0	0%		
		專任助理	0	0	0%		

	其他成果 (無法以量化表達之成果如辦理學術活動、獲得獎項、重要國際合作、研究成果國際影響力及其他協助產業技術發展之具體效益事項等,請以文字敘述填列。)	無

	成果項目	量化	名稱或內容性質簡述
科教處計畫加填項目	測驗工具(含質性與量性)	0	
	課程/模組	0	
	電腦及網路系統或工具	0	
	教材	0	
	舉辦之活動/競賽	0	
	研討會/工作坊	0	
	電子報、網站	0	
	計畫成果推廣之參與（閱聽）人數	0	

國科會補助專題研究計畫成果報告自評表

請就研究內容與原計畫相符程度、達成預期目標情況、研究成果之學術或應用價值（簡要敘述成果所代表之意義、價值、影響或進一步發展之可能性）、是否適合在學術期刊發表或申請專利、主要發現或其他有關價值等，作一綜合評估。

1. 請就研究內容與原計畫相符程度、達成預期目標情況作一綜合評估
■達成目標
□未達成目標（請說明，以 100 字為限）
    □實驗失敗
    □因故實驗中斷
    □其他原因
  說明：

2. 研究成果在學術期刊發表或申請專利等情形： 論文：□已發表 □未發表之文稿 ■撰寫中 □無 專利：□已獲得 □申請中 ■無 技轉：□已技轉 □洽談中 ■無 其他：（以 100 字為限）
3. 請依學術成就、技術創新、社會影響等方面，評估研究成果之學術或應用價值（簡要敘述成果所代表之意義、價值、影響或進一步發展之可能性）（以 500 字為限） 今年回收一筆資料，已與去年的資料進行統合，論文初稿已先行在國外研討會發表，日後修改後投稿至期刊。該論文有助於確認心理幸福感量表跨時間的信效度，以利未來相關研究的使用，使中老年人心理健康狀態獲得較準確的評估。