A Nationwide Study on Subjective Well-being Scale for Chinese Citizens (SWBS-cc)

Liqing Huang[1], Zhanjun Xing[2],*

[1]Centre for Quality of Life and Public Policy Research, Shandong University, Jinan City, P.R.China
[2]School of Political Science and Public Administration, Shandong University, Jinan City, P.R.China

Abstract   In previous studies, the subjective well-being scales for Chinese citizens (SWBS-cc) including 54 and 40 items had been developed based on Chinese cultural background. These scales were applied to a sample of Shandong province, and also to another sample of six capital cities in mainland China. A brief scale consists of 20 items was developed to satisfy large-scale interview survey. Sampling from the whole country (the sample size is 5946) through CGSS, the psychometric properties of SWBS-cc20 were examined. The scale shows good reliability and validity. The standard norm sample was expanded on the whole country, and the nationwide norm of SWBS-cc20 was achieved. A more refined scale SWBS-cc including 6 items was developed for telephone survey.

Keywords   Subjective well-being, Psychological testing, Norm, Telephone survey

1. Introduction

The research on subjective well-being measures appeared in the mid-20th century along with the research of quality of life. Researchers from different cultures developed some important instruments to measure subjective well-being (Bradburn and Caplovitz, 1965; Kozma and Stones, 1980; Diener et. al., 1985; Ryff and Singer, 1996; Stones et.al., 1996; Diener et. al., 1996; Cummins, 1996; Luo, 1998; Xing, 2002,). According to Kahneman and Krueger (2006), it is difficult to measure a single, unifying concept that registers all humans' relevant feelings and experiences. Therefore, it is necessary to investigate people's subjective well-being experience in different cultural backgrounds. In previous studies, a 54 items subjective well-being scale for Chinese citizens (SWBS-cc54) and a brief one including 20 items (SWBS-cc20) for large-scale investigation from Chinese cultural background had been developed (Xing, 2002; Xing, 2003). A revised 40 items SWBS-cc was also developed through a large-scale interview survey research from six capital cities in mainland China (Xing, 2009). The SWBS-cc was developed through the view point of psychological experience. According to this view point, subjective well-being is people's subjective experience of their objective existence. Those people with higher subjective

well-being have positive or greatly satisfying experience in their existence status. Subjective well-being could be used as an index to evaluate whether a person lived normally and at which degree the normal person achieved in matter and spirit. The former indicated people's psychological experience of physical and mental health, and the later indicated people's psychological experience of enjoyment and development (Xing, 2009).

A number of studies have showed that SWBS-cc had good psychometric properties when applying to Chinese urban and rural residents and also some special groups, such as the aged, the young people, the women, the college students, the post-graduates, the college and middle school teachers, the Christians, the commercial bank employees, and so on (Xing, 2003; Huang, 2004; Zhang and Xing, 2005; Chen and Chen, 2005; Xiao and Ding, 2008; Liao and Xing, 2009; Guo, B. et. al., 2011; Xing and Chu, 2012; Yang, L. et. al., 2015). A meta-analysis study re-analyzed the results of some researches in which the SWBS-cc20 was applied to the college students from 2004 to 2008, and drew some important conclusion (Dong, J. et. al., 2014). The results of SWBS-cc's being applied to a sample of six capital cities in mainland China had been reported (Xing, 2009), but it was not really a nationwide research. So it is necessary to examine the psychometric properties of SWBS-cc when applied to the whole country, and the national norm of SWBS-cc remains to be established. Moreover, the SWBS-cc20 is still not suitable for telephone survey as the length problem, and this research would also explore to develop a more refined subjective well-being scale for telephone survey research.

2. Method

2.1. Sampling and Procedure

The investigation was carried out through Chinese General Social Survey (CGSS) in 2012. The CGSS is the best interview survey project in mainland China which was jointly launched by the Renmin University and the Survey Research Center of Hong Kong University of Science and Technology in 2003. Since then, CGSS has come through three different sampling designs and used three sets of sampling frames: 2003-2006, 2008, and 2010-present. The sampling design made in 2010 used 2009 national population data as sampling frame. 2010 sampling frame was a multi-stage stratified design including three sampling stages: the primary sampling unit (PSU) was at county-level, and 2762 PSUs were selected in this stage; the secondary sampling unit (SSU) was at community-level (villages [cun] and neighborhood committees [ju wei hui]); In selected SSU, 25 households (TSUs) were sampled with PPS method; In each selected household, age 18 and above adult were sampled with Kish grid. The total sample size of 2010 designs was 12,000 households (CGSS, 2015). The distribution of 2010 selected PSUs was as figure 1.

Since 2012, the CGSS began to publicly call for topic module in academic community. Researchers could submit topic modules at any time. In each annual CGSS Board Conference, board members voted for the proposed additional topic modules to decide which had the possibility to be included as topic module. Each topic module only had one-third or a half chance to be asked. The chance was decided by how many additional modules had in that year and the sample size demand of each topic module. SWBS-cc20 was selected as an additional module and put into investigation in 2012.
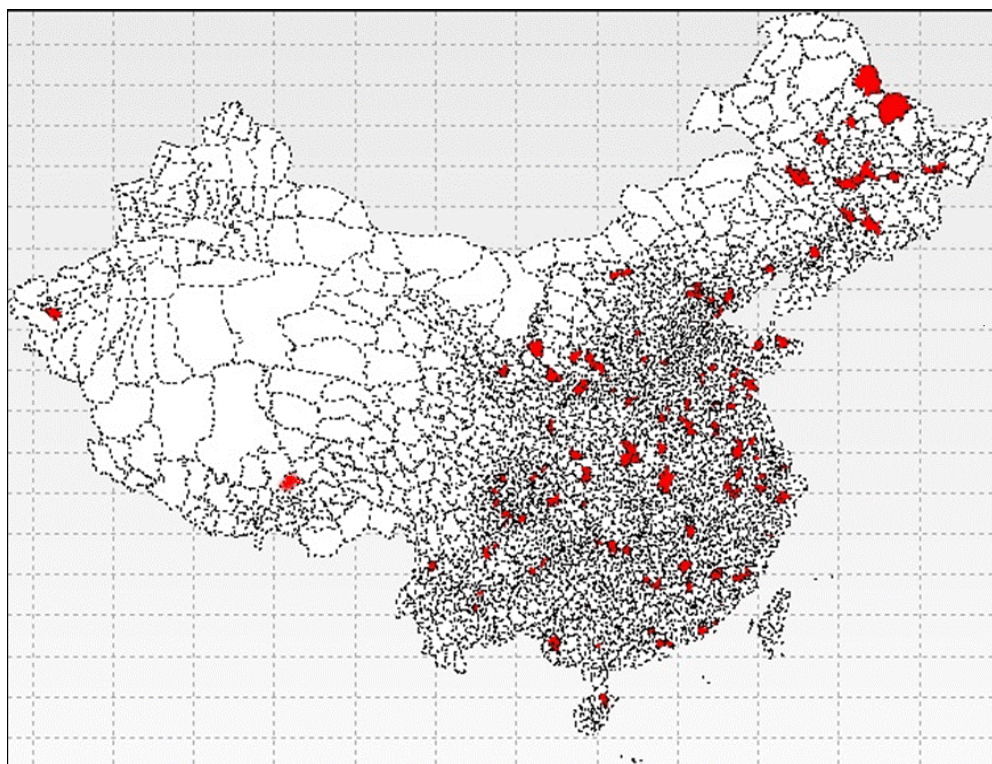

Figure 1.   PSUs of the CGSS since 2010 (quoted in the CGSS website: http://www.chinagss.org/index.php?r=index/sample)

2.2. Description of the Sample

According to the sampling procedure, the final sample size of 2012 investigation was 5,946 peoples. The main demographic characteristics of the sample were as follows: Gender: male, 3095 (52.1%); female, 2851 (47.9%). Age: 18-25 years old, 477 (8.0%); 25-35 years old, 874 (14.7%); 35-45 years old, 1234 (20.8%); 45-55 years old, 1203 (20.2%); 55-65 years old, 1188 (20.0%); 65 years old and above, 970 (16.3%). Education: elementary school and below, 2228 (37.5%); junior middle school, 1660 (27.9%); senior higher school, 1125 (18.9%); junior college, 491 (8.3%); undergraduate college and above, 442(7.4%).

The sample was randomly divided into two subsamples through SPSS case selecting procedure to develop a refined SWBS-cc for telephone survey. Subsample1 (including 2980 respondents) was used to item selection, and subsample 2 (including 2966 respondents) was used to examine the psychometric properties of the new scale. The main demographic characteristics of subsample1 were as follows: Gender: male, 1554 (52.1%); female, 1426 (47.9%). Age: 18-25 years old, 238 (8.0%); 25-35 years old, 435 (14.6%); 35-45 years old, 604 (20.3%); 45-55 years old, 608 (20.4%); 55-65 years old, 592 (19.9%); 65 years old and above, 503 (16.9%). Education: elementary school and below, 1128 (37.9%); junior middle school, 838 (28.1%); senior higher

school, 549 (18.4%); junior college, 241 (8.1%); undergraduate college and above, 224 (7.5%). The main demographic characteristics of subsample 2 were as follows: Gender: male, 1541 (52.0%); female, 1425 (48.0%). Age: 18-25 years old, 239 (8.1%); 25-35 years old, 439 (14.8%); 35-45 years old, 630 (21.2%); 45-55 years old, 595 (20.1%); 55-65 years old, 596 (20.1%); 65 years old and above, 467 (16.7%). Education: elementary school and below, 1100 (37.1%); junior middle school, 822 (27.7%); senior higher school, 576 (19.4%); junior college, 250 (8.4%); undergraduate college and above, 218 (7.3%).

2.3. Instruments

SWBS-cc20. It contains 20 items in ten dimensions, and the respondents were required to respond to each item with a 6-grade selection (Xing, 2003; Xing, 2009). The ten subscales were as follows: experience of satisfaction and abundance (ESAb), experience of mental health (EMH), experience of confidence towards society (ECS), experience of growth and progress (EGP), experience of goal and personal value (EGPV), experience of self-acceptance (ESAc), experience of physical health (EPH), experience of

psychological balance (EPB), experience of adaptation to interpersonal relation (EAIR), experience of family atmosphere (EFA).

Singer-item self-report SWB scale (SISRSWBS). The scale contains only one question: "Overall, I am a happy people". The respondents were required to respond with a 7-grade Likert-style selection.

3. Results

3.1. The Psychometric Properties of SWBS-cc20

3.1.1. Internal Consistency Reliability

Using the data onto a nationwide sample of the mainland China, this research examined the internal consistency reliability of SWBS-cc20 and its ten subscales. The results showed that the full scale and most of subscales have favorable reliability. The Cronbach's alpha coefficient of the full scale was 0.831, and the Cronbach's alpha coefficients of the subscales were above 0.50 except for subscale 6 and subscale 10 (see Table 1).

Table 1. The internal consistency reliability of the ten subscales

ESAb	EMH	ECS	EGP	EGPV	ESAc	EPH	EPB	EAIR	EFA
0.668	0.586	0.589	0.655	0.713	0.412	0.782	0.622	0.538	0.336

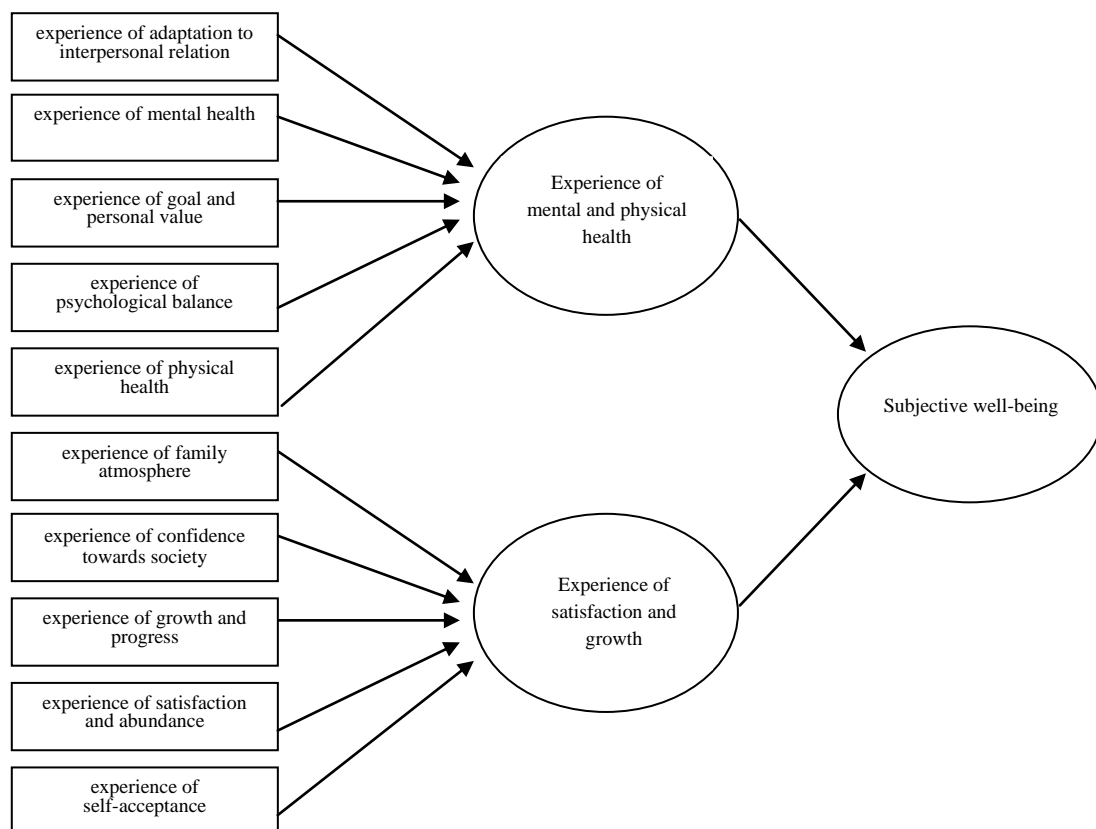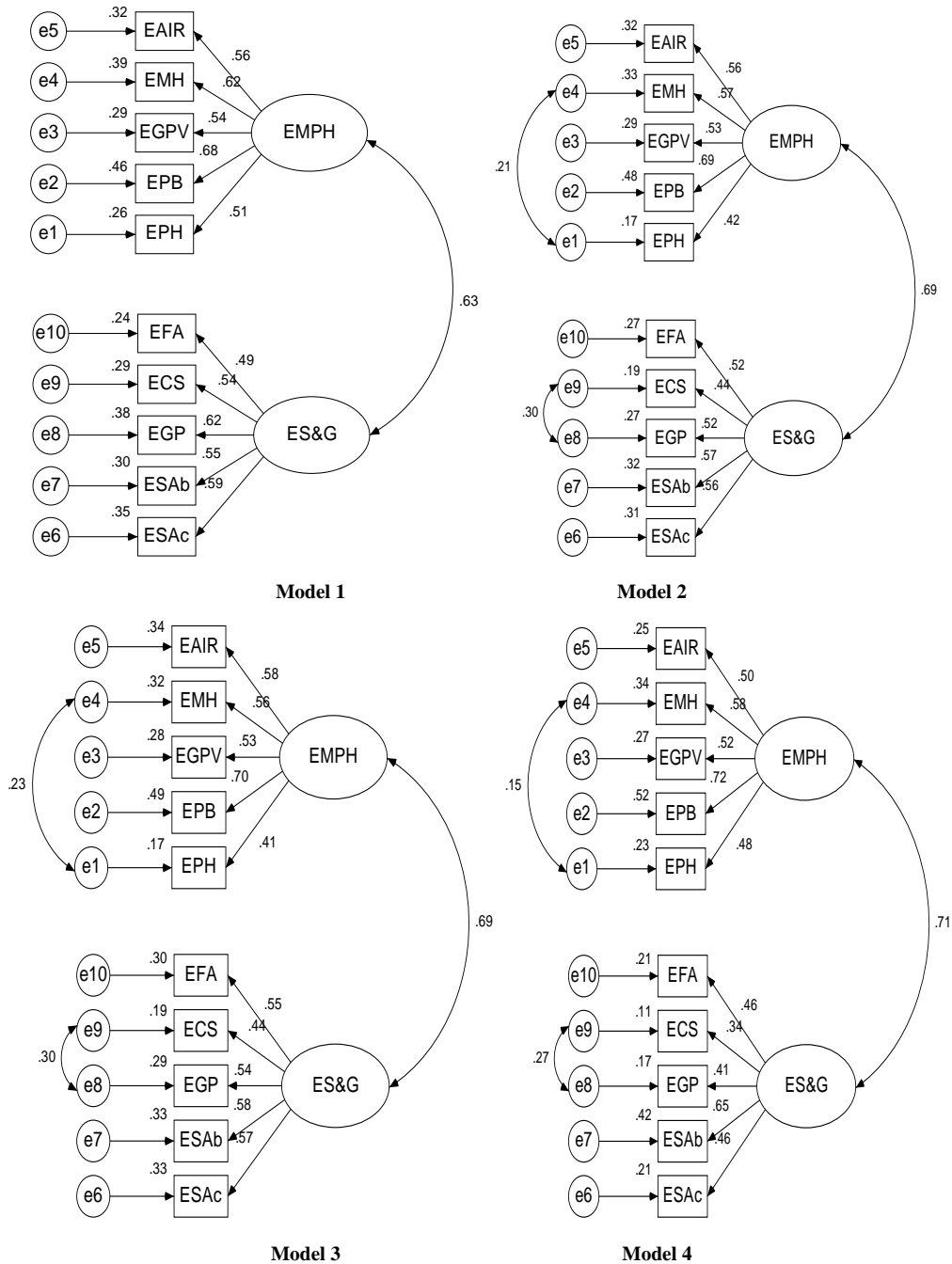*Data in the table were Cronbach's alpha coefficients.

Figure 2. The structural model of Chinese people's subjective well-being

Table 2.   The criterion validity of SWBS-cc20's ten subscales

ESAb	EMH	ECS	EGP	EGPV	ESAc	EPH	EPB	EAIR	EFA
0.462	0.254	0.230	0.254	0.248	0.242	0.223	0.339	0.189	0.289

*Data in the table were correlation coefficients.

Figure 3.   The Parameters of the four Models

Table 3.   The main goodness-of-fit index of the original model's testifying

	CMIN/df	GFI	AGFI	NFI	RFI	IFI	RMSEA
Model 1 (n=5946)	35.962	0.959	0.934	0.895	0.860	0.897	0.077
Model 2 (n=5946)	27.205	0.971	0.952	0.923	0.894	0.925	0.066
Model 3 (n=2980)	14.478	0.969	0.949	0.923	0.895	0.928	0.067
Model 4 (n=800)	4.396	0.964	0.940	0.894	0.856	0.916	0.065

3.1.2. Criterion Validity

Pearson correlation coefficients between the scores of the full SWBS-cc20 (including the scores of its subscales) and the scores of SISRSWBS were used as criterion index. The criterion validity of SWBS-cc20 applied to this nationwide sample was 0.473. All of the correlation coefficients between the subscales scores and the SISRSWBS scores were significant at 0.000 levels (see Table 2), which means that the SWBS-cc20 and its subscales showed favorable criterion validity.

3.1.3. Structural Validity

Based on the former theory hypothesis and empirical exploration, a model of Chinese citizens' subjective well-being was putting forward. According to the model, the structure of Chinese people's subjective well-being might be regarded as two basic components (see Figure 2). The first principal component was the experience of mental and psychological health (EMPH) which included EAIR, EMH, EGPV, EPB, and, EPH. The second principle component was the experience of satisfaction and growth (ES & G) which included EFA, ECS, EGP, ESAb and ESAc.

Four models were designed to testify the structural validity of SWBS-cc20. All of the respondents from the full sample were included in model 1, and the errors of all subscale scores were assumed independently. All of the respondents from the full sample were also included in model 2, but the correlation between EMH and EPH was controlled. Subsample 1 was used to testify model 3, and the correlation between EMH and EPH was controlled. A sample including 800 respondents which were randomly selected from the full sample was used to testify model 4, and the correlation between EMH and EPH was also controlled. A procedure of confirmatory factor analysis was put into action through Amos17.0. Figure 3 showed the results of confirmatory factor analysis. It showed that the main goodness-of-fit index of the four models was satisfactory except for CMIN/df, whereas model 4 showed ideal goodness-of-fit in all of the index (see Table 3).

3.2. The Nationwide Norm of SWBS-cc20

3.2.1. The Full Population Norm of SWBS-cc20

According to the age distribution of China's sixth census, and sett the age group of the lowest number as baseline, a nationwide standard norm sample was achieved from the full sample of randomly selection procedure. The sample size of norm sample was 2438 peoples, and the demographic characteristics of the samples were as follows: Gender: male, 1264 (51.8%); female, 1174 (48.2%). Age: 18-25 years old, 390 (16.0%); 25-35 years old, 463 (19.0%); 35-45 years old, 561 (23.0%); 45-55 years old, 415 (17.0%); 55-65 years old, 341 (14.0%); 65 years old and above, 268 (11.0%). Education:

elementary school and below, 721 (29.6%); junior middle school, 692 (28.4%); senior higher school, 515 (21.4%); junior college, 245 (10.1%); undergraduate college and above, 187 (7.7%).

Through the nationwide standard normal sample, the SWBS-cc20's norm of adult residents in the whole country was obtained. The mean score of the full scale were 71.38 (the total score is 100), and the standard deviation were 9.82. Table 4 showed the descriptive statistics of SWBS-cc's ten subscales.

Table 4. The full population norm of SWBS-cc20

	Mean	SD
SWB	71.3836	9.81908
ESAb	64.3560	18.45068
EMH	66.0582	17.91982
ECS	75.3076	15.71511
EGP	77.0304	13.69450
EGPV	71.8861	18.32518
ESAc	73.9541	14.04613
EPH	67.2614	21.36167
EPB	70.0916	17.54798
EAIR	71.2127	16.57962
EFA	76.6783	14.72993

3.2.2. The Gender Norm of SWBS-cc20

The standard norm sample was divided into two subsamples by gender. The sample size of male norm sample was 1264 peoples, and the sample size of female norm sample was 1174 peoples (table 5). Table 6 showed the gender norm of SWBS-cc20. An independent-samples T tested found there were no difference in the full scale score of the male and the female. The male scored higher than the female in subscale EMH and EPH (t = 5.600, p = 0.000; t = 4.329, p=0.000), while the female scored higher than the male in subscale ESAb (t = - 0.330, p = 0.001).

3.2.3. The Age Norm of SWBS-cc20

The standard norm sample was divided into six subsamples by age. The sample size of each age norm sample was 390, 463, 561, 415, 341 and 268 peoples respectively. An independent-samples T test found there were no difference in the full scale score of the male and the female. Table 7 showed the distribution of each age norm sample of gender and education. Table 8 showed the age norm of SWBS-cc20, and figure 4 showed the trends of the mean scores of SWB and its ten subscales with age. From figure 4 we could find that the mean scores of SWB, EGP, EPH and EAIR showed obvious decline with age, whereas the mean scores of ESAb and EMH showed an approximate U-shape across age groups.

Table 5.   The distribution of gender norm sample on age and education

Group		Male(n=1264)	Female(n=1174)
Age	18-25 years old	186(14.7%)	204(17.4%)
	25-35 years old	222(17.6%)	241(20.5%)
	35-45 years old	273(21.6%)	288(24.5%)
	45-55 years old	246(19.5%)	169(14.4%)
	55-65 years old	178(14.1%)	163(13.9%)
Education	65 years old and above	159(12.6%)	109(9.3%)
	elementary school and below	311(24.6%)	410(34.9%)
	junior middle school	378(29.9%)	314(26.7%)
	senior higher school	295(23.3%)	230(19.6%)
	junior college	131(10.4%)	114(9.7%)
	undergraduate college and above	149(11.8%)	106(9.0%)

Table 6.   The gender norm of SWBS-cc20

Gender		SWB	ESAb	EMH	ECS	EGP	EGPV	ESAc	EPH	EPB	EAIR	EFA
Male	M	71.703	63.159	68.005	75.356	77.136	72.356	73.952	69.060	69.844	71.605	76.556
	SD	9.921	18.765	17.778	15.848	13.935	18.356	14.130	20.906	17.987	16.930	14.974
Female	M	71.040	65.645	65.875	75.256	76.917	71.380	73.957	65.325	70.358	70.791	76.810
	SD	9.701	18.026	17.842	15.578	13.437	18.287	13.962	21.685	17.066	16.190	14.468

Table 7.   The distribution of age norm sample on gender and education

Group		Age sample					
		1(n=390)	2(n=463)	3(n=561)	4(n-415)	5(n=341)	6(n-268)
Gender	male	186(14.7%)	222(17.6%)	273(21.6%)	246(19.5%)	178(14.1%)	159(12.6%)
	female	204(17.4%)	241(20.5%)	288(24.5%)	169(14.4%)	163(13.9%)	109(9.3%)
Education	elementary school and below	20(2.8%)	62(8.6%)	162(22.5%)	131(18.2%)	175(24.3%)	171(23.7%)
	junior middle school	93(13.4%)	143(20.7%)	192(27.7%)	129(18.6%)	96(13.9%)	39(5.6%)
	senior higher school	122(23.2%)	100(19.0%)	110(21.0%)	109(20.8%)	53(10.1%)	31(5.9%)
	Junior college	61(24.9%)	75(30.6%)	52(21.2%)	28(11.4%)	12(4.9%)	17(6.9%)
	undergraduate college and above	94(36.9%)	83(32.5%)	45(17.6%)	18(7.1%)	5(2.0%)	10(3.9%)

Table 8.   The age norm of SWBS-cc20

Age		SWB	ESAb	EMH	ECS	EGP	EGPV	ESAc	EPH	EPB	EAIR	EFA
1	M	73.370	66.068	67.329	74.039	80.192	71.581	74.872	76.816	73.633	74.338	74.829
	SD	7.485	17.287	17.321	14.708	10.785	17.484	12.260	16.069	14.731	14.797	13.638
2	M	71.928	63.895	65.875	72.786	78.096	72.354	73.632	72.768	70.896	72.552	76.422
	SD	9.831	17.930	17.876	17.461	13.763	18.424	14.842	18.726	16.539	16.284	14.730
3	M	72.050	62.656	66.177	76.129	77.837	74.109	74.465	69.444	70.187	71.970	77.525
	SD	8.994	18.454	17.904	14.814	13.279	17.774	13.184	20.022	17.334	15.558	14.237
4	M	70.602	62.932	64.980	76.325	75.924	71.807	72.872	63.574	68.916	71.024	77.671
	SD	9.162	18.465	17.960	14.638	13.150	17.616	13.540	21.387	18.232	16.288	14.529
5	M	69.655	64.712	65.103	77.004	74.927	70.870	74.218	58.895	66.178	68.109	76.540
	SD	10.096	18.409	17.316	14.135	13.414	18.431	14.327	22.129	18.551	17.320	14.903
6	M	69.568	67.973	67.164	76.057	73.290	68.284	73.445	55.628	70.149	67.009	76.679
	SD	13.647	20.345	19.494	18.541	17.546	20.753	16.920	23.794	19.904	19.530	17.046

*1=18-25 years old, 2=25-35 years old, 3=35-45 years old, 4= 45-55 years old, 5=55-65 years old, 6=65 years old and above.
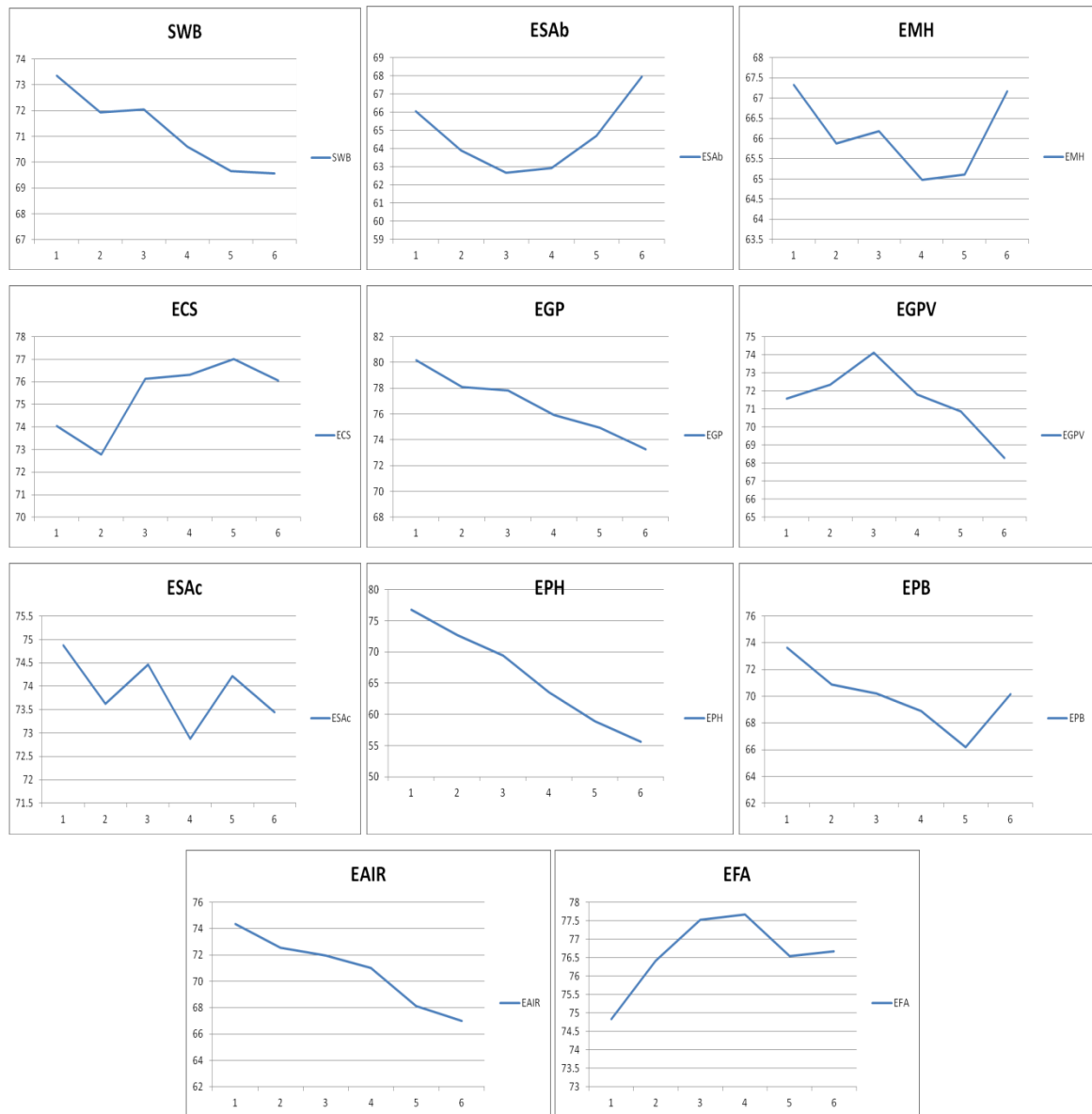
Figure 4. The distributions of SWB and its ten subscales with age group

3.3. Development of a Refined SWBS-cc for Telephone Survey

3.3.1. Item Analysis and Development of SWBS-cc6

3.3.1.1. Item Discrimination Analysis

Item-total correlation coefficients were used to examine the discrimination of each item in SWBS-cc20. The item selection criterion was as follows:

(1) Item scores and the full scale score ($R_{i\text{-}SWB}$) relate significantly;

(2) The correlation coefficient between item scores and subordinate dimension score ($R_{i\text{-}EMPH}$ or $R_{i\text{-}ES\&G}$) is above 0.50;

(3) The correlation coefficient between item scores and its subordinate dimension score is far higher than the correlation coefficient between item score and the other dimension scores. The absolute value of the difference between the two correlation coefficient ($|R_{i\text{-}EMPH}\text{-}R_{i\text{-}ES\&G}|$) are greater than 0.25.

Subsample 1 (n = 2980) was used to carry out discrimination analysis. Table 9 showed the information on discrimination analysis. All of the correlation coefficients between item score and the full scale score of the table reached statistically significant (p = 0.000, two-tailed test). But in dimension ES&G, the correlation coefficient between item 20 and its subordinate dimension was only 0.414, and the item was deleted. The $|R_{i\text{-}EMPH}\text{-}R_{i\text{-}ES\&G}|$s of item 4 and itme 17 were lower than 0.25, so the two items were deleted. After the above discrimination analysis process, 17 items were reserved.

Table 9.   The outcome of discrimination analysis (n=2980)

	$R_{i\text{-}SWB}$	$R_{i\text{-}EMPH}$	$R_{i\text{-}ES\&G}$	$|R_{i\text{-}EMPH}\text{-}R_{i\text{-}ES\&G}|$	Item choice
Item 1	.371	.134	.547	.413	
Item 2	.464	.239	.594	.355	
Item 3	.488	.287	.580	.293	
Item 4	.530	.553	.325	.228	deleted
Item 5	.541	.574	.321	.253	
Item 6	.485	.613	.164	.449	
Item 7	.537	.311	.644	.333	
Item 8	.492	.296	.575	.279	
Item 9	.487	.575	.215	.360	
Item 10	.549	.667	.219	.448	
Item 11	.520	.567	.288	.279	
Item 12	.432	.243	.526	.283	
Item 13	.439	.523	.189	.334	
Item 14	.400	.184	.540	.356	
Item 15	.584	.622	.343	.279	
Item 16	.421	.168	.601	.433	
Item 17	.566	.586	.354	.232	deleted
Item 18	.562	.637	.282	.355	
Item 19	.435	.229	.549	.320	
Item 20	.453	.364	.414	.050	deleted

3.3.1.2. Factor Analysis and Logical Analysis

Exploratory factor analysis (EFA) and logic analysis were used to further item analysis to ensure the refined SWBS had ideal structural validity. Items excluded criterion were as follows:

(1) The number of extracted component would be decreased distinctly when the item was deleted;

(2) The item whose factor loading was significantly lower than any other items in the same principal component;

(3) Although an item influenced a certain principal component, but it was obviously different from other items influencing the same principal component;

(4) In different round of EFA, the item belonged to different dimension.

(5) Only one item from the same subscale of SWBS-cc20 could be selected.

(6) In order to keep balance on the number of items in each dimension, the sub-optimal item would be deleted.

In the first round of EFA, the outcomes of data analysis showed that the KMO values were 0.822, Barlett spherical value of chi-square test was at significant level, which indicated that factor analysis was suitable. With the factor analysis (principal component/varimax), four factors whose eigenvalue over 1 were extracted, and these factors could account for 49.510% of the total variance (Table 10).

Table 10.   Rotated component matrix from the first round of EFA (n=2980)

	factor 1	factor 2	factor 3	factor 4
item 2	.778	.084	.082	.033
item 1	.682	.040	-.072	.103
item 3	.671	.187	.053	.063
item 16	.573	-.074	.032	.263
item 19	.554	-.037	.209	.149
item 14	.365	-.161	.241	.294
item 6	.044	.831	.051	-.009
item 10	.072	.824	.139	.050
item 9	-.069	.500	.301	.263
item 13	.000	.057	.784	-.016
item 11	.164	.192	.658	.043
item 18	.015	.430	.455	.208
item 15	.085	.286	.439	.376
item 5	.325	.348	.362	.022
item 8	.111	.139	-.057	.799
item 7	.224	.074	.037	.769
item 12	.186	.025	.260	.411

According to the above criterion, exploratory factor analysis and logical analysis were used for item selection. Item 12 was deleted according to criterion 3 in the first round of EFA. Item 5 and item 9 were deleted according to criterion 2 in the second round of EFA. Item 6 and item 7 were deleted according to criterion 1 and criterion 5 in the third round of EFA. Item 8 was deleted according to criterion1 in the fourth round of EFA. Item 3 item 11 item 13 and item16 was deleted according to criterion5 in the fifth round of EFA. Item 2 was deleted according to criterion6 in the sixth round of EFA. After six rounds of EFA, a refined 6 items SWBS-cc was developed for telephone survey.

3.3.2. The psychometric properties of SWBS-cc6

3.3.2.1. Internal Consistency Reliability

Subsample 2 was used to examine the internal consistency reliability of SWBS-cc6 and its two dimensions. The results showed that the full scale and most of subscales have favorable reliability. The Cronbach's alpha coefficient of the full scale was 0.575, and the Cronbach's alpha coefficients of the two dimensions (EMPH and ES&G) were 0.501 and above 0.605 respectively.

3.3.2.2. Criterion Validity

Pearson correlation coefficients between the scores of the full SWBS-cc6 (including the scores of its two dimensions) and the scores of SISRSWBS were used as criterion index. The criterion validity of SWBS-cc6 applied to subsample 2 was 0.414. The correlation coefficients between the scores of the two dimensions (EMPH and ES&G) and the SISRSWBS scores were 0.351 and 0.286 respectively, which means that the SWBS-cc6 and its two dimensions showed favorable criterion validity.
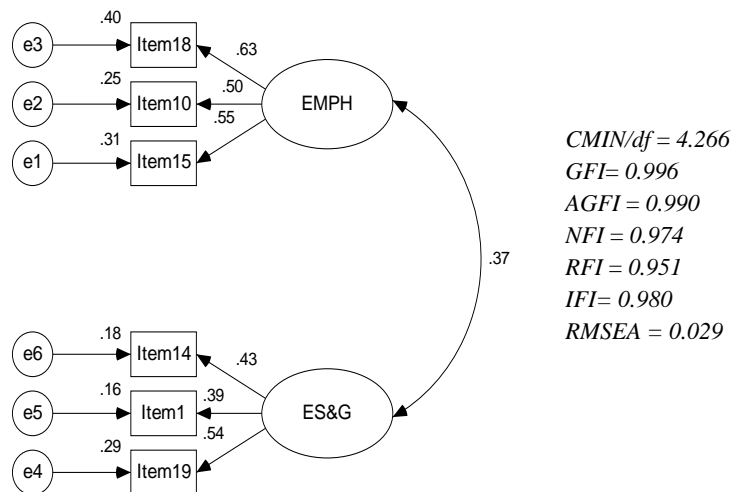
Figure 5. The parameters of model and its main goodness-of-fit index

3.3.2.3. Structural Validity

According to the model of Chinese citizens' subjective well-being mentioned above, the structure of SWBS-cc6 was constructed. Subsample 2 was used to testify the model. A procedure of confirmatory factor analysis was put into action through Amos 17.0. Figure 5 showed the results of confirmatory factor analysis. All of the goodness-of-fit indicators being examined about the model were satisfactory (see Table 3).

4. Discussion and Conclusions

Consistent with former studies from mainland China, this research shows that SWBS-cc20 had ideal internal consistency reliability and criterion validity. But for the structural validity, things are different. With the sample size reduction, the value of *CMIN/df* was greatly reduced. This findings are consist with other researches (Marsh, Balla and McDonald, 1988; Wen, Hau and Marsh, 2004). According to the findings of these researches, When *N* was larger, *CHI* test would be considered bad, because *CHI* would be increased from the increase in *N*, as a result, any model would be rejected. So we need to examine some other Goodness-of-fit indices less affected by the sample size. In this research, *GFI AGFI NFI* and *IFI* were detected to have values above or very close to the cutoff value 0.90, and it could be concluded the model fitting of SWBS-cc20 was good. The SWBS-6 developed in this research was demonstrated to have very good psychometric properties, and it was testified that. the simple model usually had better fitt effect than the sophisticated one (Wen, Hau and Marsh, 2004).

Norm is a very important standard measure for comparison. In this research, the nationwide norm of SWBS-cc20 was achieved through a standard norm sample including 2438 respondents from the mainland China. The gender norm and age norm were also established for the convenience of comparison between groups. Although there are many evidences indicate that there are no difference between men and women on subjective well-being (Zweig, 2014), the gender norm was still established in this research. When we developed SWBS-cc, subjective well-being was regarded as a system including some essential elements. These elements were measured by corresponding subscales. In a sense it is more valuable to examine the difference between men and women on these subscales, and so the establishment of gender norm is necessary. While examining the age norm, a different relationship between age and subjective well-being was detected. The total score of subjective well-being declined by age, which was different from our former findings: the total score of subjective well-being follows approximate U-shape across age groups (Xing and Huang, 2014). But the finding of this research is consistent with some previous researches (Larson, 1978; Diener and Suh, 1998; Smith and Baltes, 1993; Ferring and Filipp, 1995) Further analysis showed the approximate same trend on EGP EPH and EAIR, from which we could find the elements lowering the overall trend. As to ESAb and EMH, U-shape across age groups was quite obvious, which was consistent with other researches (Gerlach and Stephan, 1996; Oswald, 1997; Theodossiou, 1998; Helliwell, 2003; Blanchflower and Oswald, 2004; Frijters et al., 2005; Clark and Oswald, 2006; Xing and Huang, 2014; German L. et al., 2016). Why we didn't get the same results when using the same instrument? One reason might be sampling. The sample we used in the former research was from 5 capital cities in mainland China, and its representative was obviously poorer than the sample of this research which was selected from the whole country. In fact, very little old age people were included in the former sample. It should be emphasized that the content of subjective well-being would affect the relationship between age and subjective well-being.

REFERENCES

[1] Bradburn, N.M. & Caplovitz D. (1965), Reports on happiness: a pilot study of behavior related to mental health. Chicago: Aldine Publishing Company.

[2] Blanchflower, D. G., & Oswald, A. J. (2004). Well-being over time in Britain and the USA. Journal of Public Economics, 88, 1359–1386.

[3] Chen, H. & Wu, L., (2005), Demonstrational analysis of university faculty in Zhejiang province based on the investigation of happiness and miseries resources. Journal of Higher Education, (8), 14-18.

[4] Clark, A. E., & Oswald, A. J. (2006). The curved relationship between subjective well-being and age. http://ideas.repec.org/p/hal/wpaper/halshs-00590404.html.

[5] Cummins, R.A. (1996) The domains of life satisfaction: An attempt to order chaos. Social Indicators Research, 38, 303-332.

[6] Diener ED. Emmons R.A. Larsen R.J. et al. (1985), The satisfaction with life scale, Journal of personality assessment, 49(1), 71-75.

[7] Diener ED., Suh EM. & Lucas R. et al. (1999). Subjective well–being: three decades of progress, Psychological Bulletin, 125(2), 276-302.

[8] Dong, J., Zhang, L. & Zhang, J.(2014), Comparative analysis between college students' subjective well-being and that in the nationwide norms, Journal of Southwest Jiaotong University (Social Sciences), 15(3), 97-102.

[9] Ferring, D., & Filipp, S. H. (1995). The structure of subjective well-being in the elderly: A test of different models by structural equation modeling. European Journal of Psychological Assessment, 11, 32.

[10] Frijters, P., Haisken-DeNew, J. P., & Shields, M. A. (2005). The causal effect of income on health: Evidence from German reunification. Journal of Health Economics, 24, 997–1017.

[11] Gerlach, K., & Stephan, G. (1996). A paper on unhappiness and unemployment in Germany. Economics Letters, 52, 325–330.

[12] German, L., Claus, G.G. & Miguel, B. et al. (2016), With health and good food, great life! gender differences and happiness in Chilean rural older adults, Social Indicators Research, 127(2), 865-885.

[13] Guo, B., Pan, Y. & Ma, S. et. al. (2011), Research on the relationship between adult urban residents' values and subjective well-being, China Journal of Health Psychology, (2): 184-185.

[14] Helliwell, J. (2003). How's life? Combining individual and national variables to explain subjective wellbeing. Economic Modeling, 20, 331–360.

[15] Kahneman, D., & Krueger, A. (2006). Developments in the measurement of subjective well-being. Journal of Economic Perspectives, 10, 175-178.

[16] Kozma A. & Stones M J. (1980), The measurement of happiness: development of the memorial university Newfoundland scale of happiness, Journal of Gerontology, 35(6), 906-917.

[17] Larson, R. (1978). Thirty years of research on the subjective well-being of older Americans. Journal of Gerontology, 33(1), 109–125.

[18] Liao, M. & Xing, Z. (2009), The application of the brief subjective well-being scale for Chinese citizen in Christian group. China Journal of Healthy Psychology, (6), 678-680.

[19] Luo Lu (1998), The meaning, measure, and correlates of happiness among Chinese people. Proceeding of the national science council part C: humanities and social sciences, 8, 115-137.

[20] Marsh H.W, Balla J.R., & McDonald R P. (1988), Goodness-of-fit indices in confirmatory factor analysis : the effect of sample size. Psychological Bulletin, 103, 391-410.

[21] Oswald, A. J. (1997). Happiness and economic performance. Economic Journal, 107, 1815–1831.

[22] Ryff, C. D. & Singer, B. H. (1996). Psychological well-being: Meaning, measurement, and implications for psychotherapy research. Psychotherapy and Psychosomatics, 65, 14–23.

[23] Smith, J., & Baltes, P. B. (1993). Differential psychological ageing: Profiles of the old and very old. Ageing and Society, 13, 551–587.

[24] Stones MJ., KozmaA. & Hirdes J. et al. (1996), Short happiness and affect research protocol. Social Indicators Research, 1(37), 75-91.

[25] Theodossiou, I. (1998). The effects of low-pay and unemployment on psychological well-being: A logistic regression approach. Journal of Health Economics, 17, 85–104.

[26] Wen, Z., Hau K., & Marsh, H.W. (2004), Structural equation model testing: cutoff criteria for goodness of fit of fit indices and CHI square test. Acta Psychological Sinica, 36 (2), 186-194.

[27] Xiao, X. & Ding, Y. (2008), An investigation on the post-graduate's subjective well-being in Hunan province. Academic Degrees & Graduate Education, (1), 37-40.

[28] Zhang, Y. & Xing, Z. (2005), An initial study on college student's subjective well-being. Youth & Juvenile Study, (1), 7-9.

[29] Xing, Z. (2002), To develop an inventory for measuring the subjective well-being of Chinese citizens, Hong Kong Journal of Social Sciences, 23, 151-189.

[30] Xing, Z. (2003a), Developing the brief subjective well-being scale for Chinese citizen, Chinese Journal of Behavioral Medical Science, (12): 703-705.

[31] Xing, Z. (2003b), Research on the Subjective Well-being Scale for Chinese Citizens Applying to the Senior Citizens, Chinese Journal of Gerontology, (10), 648-651.

[32] Xing, Z. (2009), Development of the revised subjective well-being scale for Chinese citizens. Statistics in Transition, 10(2), 301-316.

[33] Xing, Z. & Chu, L. (2012), The relationship between commercial bank employees' job stress, social support and

job-related satisfaction, Chinese Journal of Clinical Psychology, (6), 878-881.

[34] Xing, Z. & Huang, L. (2014), The relationship between age and subjective well-being: evidence from five capital cities in mainland China, Social Indicators Research, 117,743-756.

[35] Yang, L., Fu, C., Zhao & X. et. al. (2015), Mediating effect of

job burnout on the relationship between work-family conflict and subjective well-being, Chinese Journal of Clinical Psychology, (2), 330-335.

[36] Zweig J.S. (2015), Are women happier than men? evidence from the Gallup world poll, Journal of Happiness Study, 16, 515–541.