The development and psychometric testing of a Brief Aging Perception Questionnaire (B-APQ) among older persons with chronic disease in Taiwan

Yu-Rung Wang, Huan-Fang Lee, Ching-Min Chen

Nursing Department, Chi Mei Medical Center, Liouying, Tainan city, Taiwan

Department of Nursing, College of Medicine, National Cheng Kung University

Taiwan--"the heart of Asia".
It's closer than you think.

Taipei 101
New Year's Fireworks Show

Sunrise at Alishan

Zhushan is located in the mountainous township of Alishan. One of its many attractions is a mountaintop sunrise amid a sea of clouds and mist. It is said that watching the sun rise on the first day of the New Year brings good luck. The Alishan "Sunrise Impression Concert", is an annual event, which began in 2003. It takes place at 2,500 meters above sea level on the Zhushan Sunrise Viewing Platform in the Alishan Forest Recreation Area.

Sun Moon Lake Bike Path

The Sun Moon Lake Bike Path Bridge spans the turquoise waters of the lake and passes through a wooded section of the shoreline. This bike path is considered one of the most beautiful in the world.

Green Island scuba diving

Xiuguluan River white-water rafting

The Xiuguluan River measures more than 100 kilometers in length. It starts in the Central Mountain Range, flowing northward along the East Rift Valley, turning east at Ruisui Township before crossing the Coastal Mountain Range and emptying into the Pacific Ocean at Dagangkou. The 23 kilometer section between Ruisui and Dagankou in Hualien County has more than a dozen rapids making for an exciting trip any time of the year.

Black-faced Spoonbill is one almost extinct bird in the world and protected by regulation.

Black-faced Spoonbill

Bao'an Temple
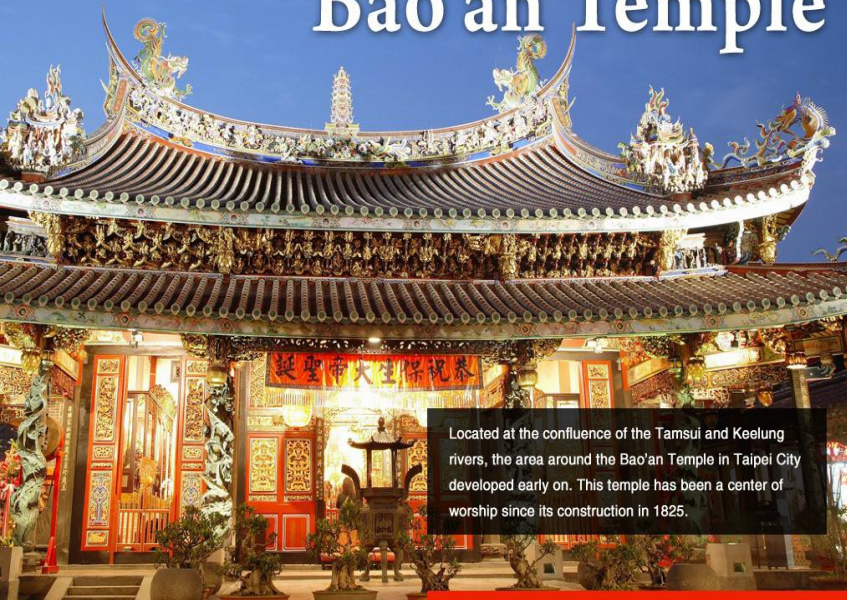
Located at the confluence of the Tamsui and Keelung rivers, the area around the Bao'an Temple in Taipei City developed early on. This temple has been a center of worship since its construction in 1825.

Confucius was an ancient Chinese phi[...] who lived some 2,500 years ago. Lon[...] revered, temples were established to h[...] and usually included a school. The firs[...] Confucian temple was built in Tainan i[...] and is one of many national historical s[...] this southern Taiwan city.

Tainan Confucius Temple

The Mazu Pilgrimage is one of the most important and largest folk culture events in Taiwan.

Dajia Matsu Pilgrimage

Eight Generals

Time to Marvel

Rukai Harvest Festival

The Rukai people host the Harvest Festival between July and August each year.

Keelung Night Market

Innovative and traditional Taiwanese snacks can be found just about anywhere, but especially in Taiwan's night markets. Every town and city has night markets, each with its own characteristics.

Beef noodle soup

Fruits

Taiwan possesses both subtropical and tropical climates, making it well suited to the cultivation of a variety of fruits.

Pearl milk tea

Congee and Side Dishes
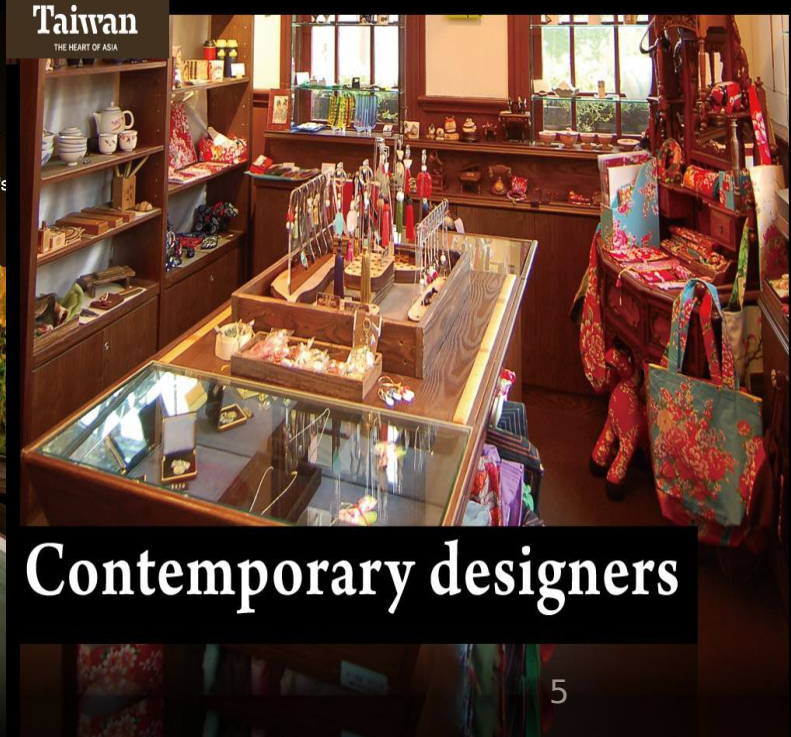
Taiwan offers the perfect solution for anyone wanting to relax and recharge their mind and body- naturally. There are many geothermal hot springs throughout Taiwan. The warm waters of these springs, heated and charged by the earth's own energy, are believed to soothe, revitalize and reinvigorate the body.

Hot Springs

Contemporary designers

Outline

- Introduction
- Research purpose
- Methods
- Results
- Conclusion
- Limitation
- Acknowledgements

Populations are getting older

Percentage aged 60 years or older:

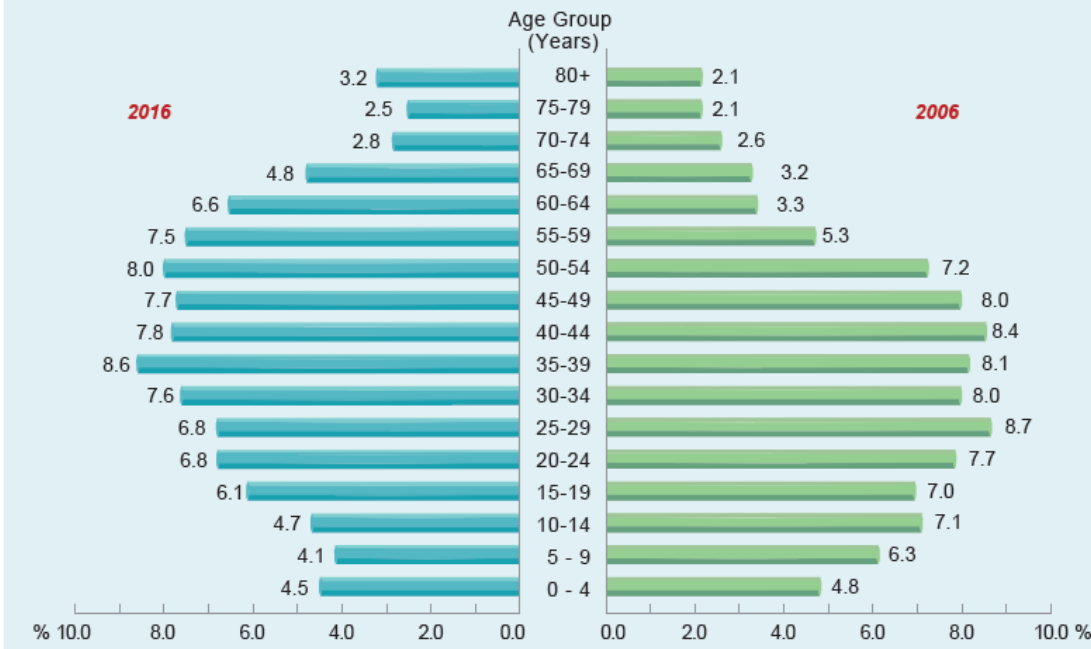- 30% or more
- 10 to <30%
- <10%

2015

World Health Organization

Introduction

▪ The percentage of Taiwanese older adults aged 60 and above have reached 20.1%, and those 65 years and older accounted for 14.1% of the population in 2018, which will make Taiwan become an aged society Soo

Figure 2-1 | Population Age Structure

Age Group (Years)

Source: Ministry of the Interior, R.O.C(Taiwan)

Figure 2-3 | Population Age Structure and Dependency Ratio, by Year
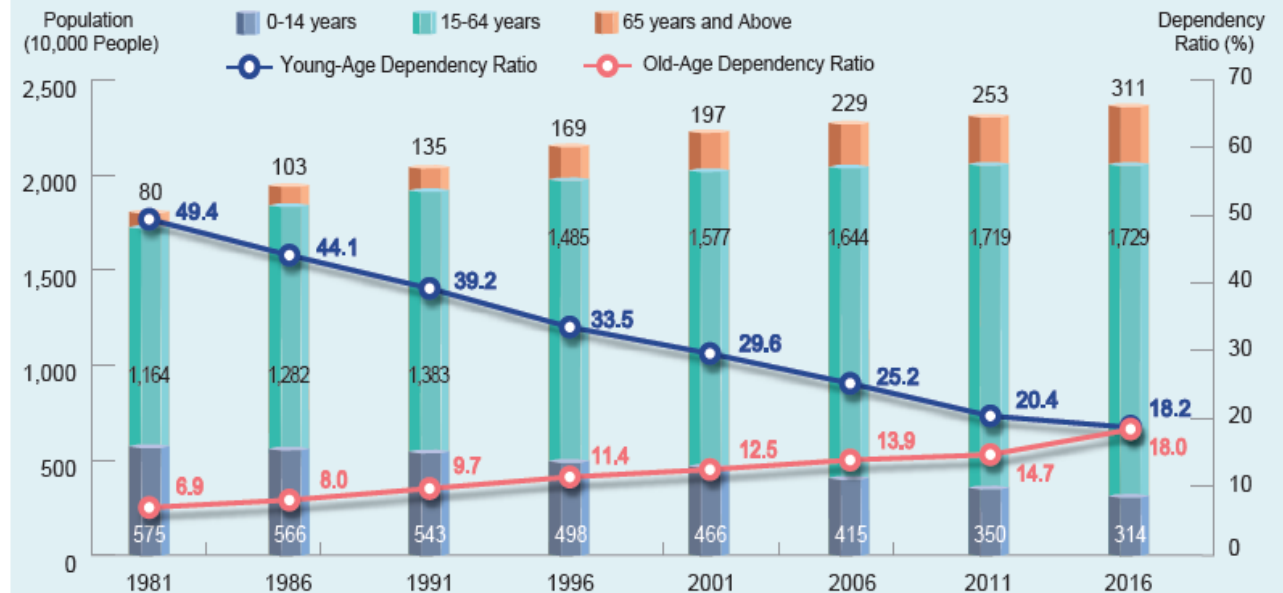
Source: Ministry of the Interior, R.O.C(Taiwan)

(Ministry of the Interior, 2018)

Introduction

- Older adults' self-perceptions of aging are important predictors of health, longer life, and lowered mortality, as well as key well-being outcomes such as quality of life.

- Since the population aging is an unavoidable issue that every country has to face, a reliable and valid instrument is needed to measure the perceptions of aging to further tailor made an appropriate health policy.

(Levy, Slade & Kasl, 2002)

Introduction

- Chronic diseases gradually increase health care expenses in the world.

- In Taiwan, older adults have benefited from the implementation of health policies, including the implementation of the National Health Insurance System (NHI) in 1994 and the advancement of medical technology.

- Statistics analyses from the Ministry of Health and Welfare have shown that more than 88% of Taiwan's elderly suffer from at least one kind of chronic disease.

(WHO, 2014; Hsu et al., 2017; Ministry of Health and Welfare, 2013)

Introduction

- The APQ (Aging Perceptions Questi onnaire) was developed by Barker, O'Hanlon, McGee, Hickey & Conroy (2007) research group.

- They followed the Leventhal's self-re gulation model and developed APQ by testing the questionnaire in the U K.

(Barker, O'Hanlon, McGee, Hickey, & Conroy, 2007; Leventhal, Nerenz, & Steele, 1984)
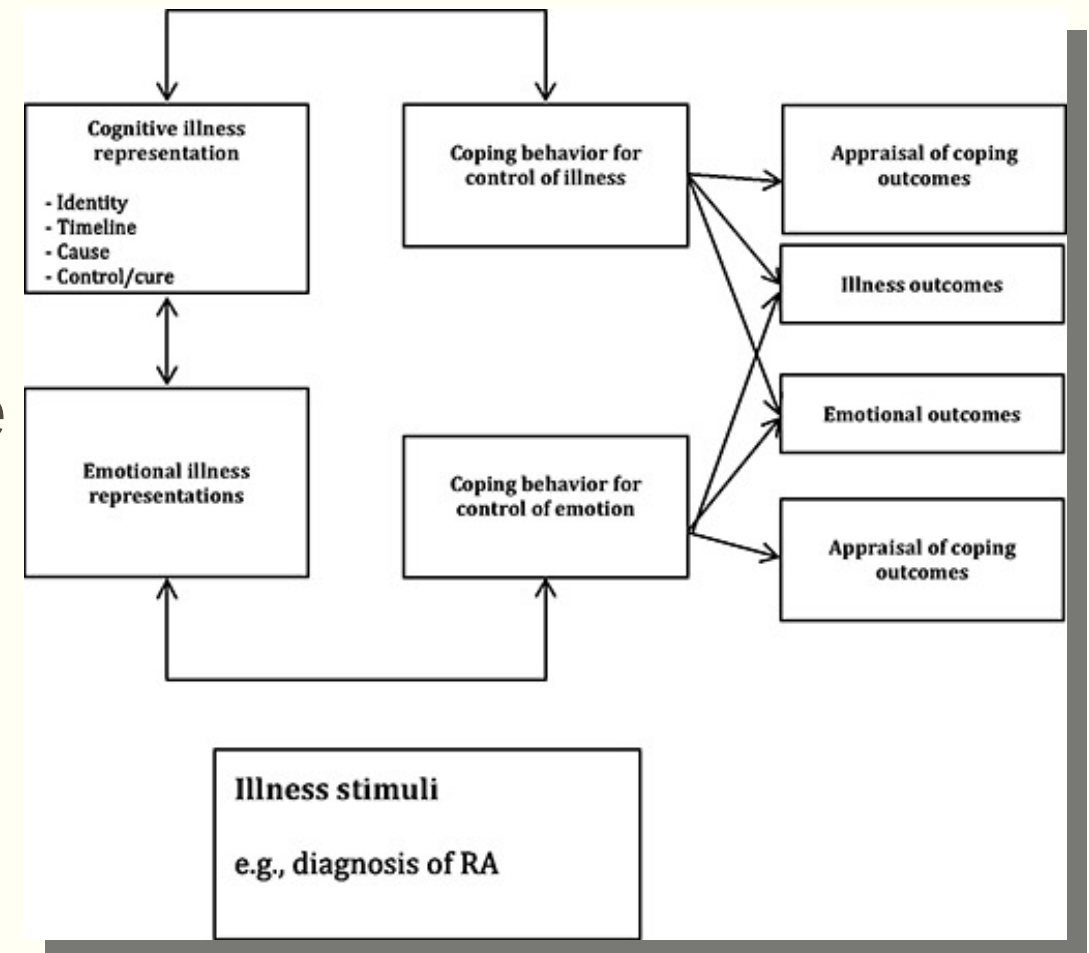
Introduction

- The APQ has been translated to multiple languages translations and applied in community-dwelling participants, such as Dutch, French, Turkish and Simplified Chinese.

  (Ingrand et al., 2012; Slotman, Cramm, & Nieboer, 2015; Slotman, Cramm, & Nieboer, 2017; Chen, Hu, Zhu, Li, & Zhou, 2016)

- Since the original APQ included 32 items, and had been concerned with some respondent burden when participants answer the questions.

- The McGee research group developed the B-APQ (Brief Aging Perception Questionnaire).

(Sexton, King-Kallimanis, Morgan, & McGee, 2014)

Research purpose

- The purpose of this study was to validate the Chinese version of the Brief Aging Perception Questionnaire (B-APQ) for older persons with chronic diseases.

Methods

- This study used a descriptive cross-sectional design.

- The participants were older persons with chronic disease recruited from the outpatient department and the community medical service in Southern Taiwan.

- Inclusion criteria:
  - the participants (1) had no cognitive impairment and had the ability to be communicated in Mandarin Chinese or Taiwanese; (2) were aged 60 years old or above; (3) had one or comorbidity of chronic disease; (4) were willing to join this research.

Methods

- Sample size
  - 415 participants were included in the current study.

- The B-APQ was translated and adapted from English into Chinese on the basis of WHO translation instruments guidelines.

(WHO. Process of translation and adaptation of instruments. 2012. Available from: http://www.who.int/substance_abuse/research_tools/translation/en/.)

Methods

- The mean content validity index was evaluated by 10 experts.

- B-APQ 5 domains:
    - timeline-chronic (item 1-3)
    - consequences-positive (item 4-6)
    - consequences and control negative (item 11-15)
    - control positive (item 8-10)
    - emotional representation (item 7, 16, 17)

Ethical issue

- This study was approved by the Institutional Review Board of the Chi Mei Medical Center in Taiwan (registration number 10 208-012).

- The purpose and methods applied in the study were explained by the researcher and the research assistants before the face to face questionnaire interview.

Statistical analysis

- **Step 1. The validity examination of original model**
  - Confirmatory factor analysis (CFA) was used to examine the existing model.

- **Step 2. Establishing the new model**
  - Content validity index and Cronbach's alpha

- **Step 3. Data quality for items of the new model**
  - Item analysis

- **Step 4. Significant instrument for testing the criterion validity**
  - PASE-C and WHOQOL were used to as the criterion instrument to examine the validity of the new model

- **Step 5. Examination of new model**
  - Examined the model using CFA again

RESULTS

Demographic of the participants (n=415)

Item		N	%	Mean	SD
Age				71.34	8.13
Chronic conditions				1.83	0.92
Gender	Female	231	55.66		
	Male	184	44.34		
Education	Junior high school & below	314	75.66		
	Senior school & above	101	24.34		
Occupation	Yes	133	32.05		
	No	282	67.95		
Religion	None	22	5.30		
	Buddhist	66	15.90		
	Taoist	310	74.70		
	Catholic	3	0.72		
	Christian	13	3.13		
	Others	1	0.24		
Marital status	Single/ Widowed/ Widowed/ Divorced	89	21.45		
	Married	326	78.55		
Income	NT 20,000 & below (Low income)	232	55.90		
	NT 20,000 & above	183	44.10		

Scores of B-APQ subscales among participants

Item	Mean	SD
B-APQ		
Time-line chronic	**3.96**	**0.65**
Consequences positive	**3.48**	**0.75**
Consequences and control negative	**2.96**	**0.86**
Control positive	**3.62**	**0.68**
Emotional Representations	**2.76**	**0.78**

Step 1: The validity examination of original model

- The Chi-square was 317.51, GFI was 0.92, AGFI was 0.89, CFI was 0.95, TLI was 0.94, RMSEA was 0.068, and SRMR was 0.53.

- It was indicating that the existing 5 dimensions with 17 items had acceptable fit to the data.
    - Except item 14 (" Slowing down with age is not something that I can control") with lower factor loading of 0.52.

Step 2: Establishing the new model

- The new model was established after the item 14 was removed and an item "As I get older, I feel that I am getting useless" was added in the Chinese version of B-APQ.

- The content validity index (CVI) was 0.9~1.

- Pilot study was performed, with the Cronbach's alpha of the internal consistency at 0.56-0.94.

Step 3: Data quality for items of the new model

- The item mean ranged from 2.59 to 4.02. The critical ratio (CR) was significant ($p <. 05$), indicating the data quality was good.

- The critical ratio (CR) was significant, no floor and ceiling effect indicating the new model was excellent quality.

# Inter-factors correlations and reliabilities for B-APQ and B-APQ-C

	1	2	3	4	5	α
1. Time-line chronic						
B-APQ (2014)	-					0.76
B-APQ-Persian (2016)						0.69
B-APQ-C	-					**0.90**
2. Consequences positive						
B-APQ (2014)	-.06**					0.78
B-APQ-Persian (2016)						0.54
B-APQ-C	-.07					**0.86**
3. Consequences and Control negative						
B-APQ (2014)	.56**	-.12**				0.81
B-APQ-Persian (2016)						0.77
B-APQ-C	-.39**	.43**				**0.90**
4. Control positive						
B-APQ (2014)	-.07**	.34**	-.11**			0.84
B-APQ-Persian (2016)						0.67
B-APQ-C	-.15**	.58**	.31**			**0.91**
5. Emotional Representations						
B-APQ (2014)	.50**	-.10**	.54**	-.05**	-	0.75
B-APQ-Persian (2016)						0.70
B-APQ-C	.35**	-.30**	-.77**	-.17**	-	**0.77**

Step 4. Significant instrument for testing the criterion validity

	Time-line chronic	Consequences positive	Consequences and Control negative	Control positive	Emotional Representations
1. Time-line chronic					
2. Consequences positive	-.06				
3. Consequences and Control negative	-.39**	.43**			
4. Control positive	-.15**	.58**	.31**		
5. Emotional Representations	.35**	-.30**	-.77**	-.17**	
6. PASE-C	-.11*	.33**	.33**	.35**	-.19**
7. Physical QOL	-.32**	.41**	.69**	.33**	-.59**
8. Mental QOL	-.31**	.38**	.60**	.33**	-.54**
9. Environment QOL	-.22**	.40**	.62**	.26**	-.57**
10. Social relationship QOL	-.25**	.42**	.61**	.29**	-.58**
11. Total QOL	-.30***	.44***	.70***	.34***	-.63***

Step 5. Examination of new model

- Chi-square : 289.70
  GFI : 0.93
  AGFI : 0.90
  RMSEA : 0.063
  SRMR : 0.46
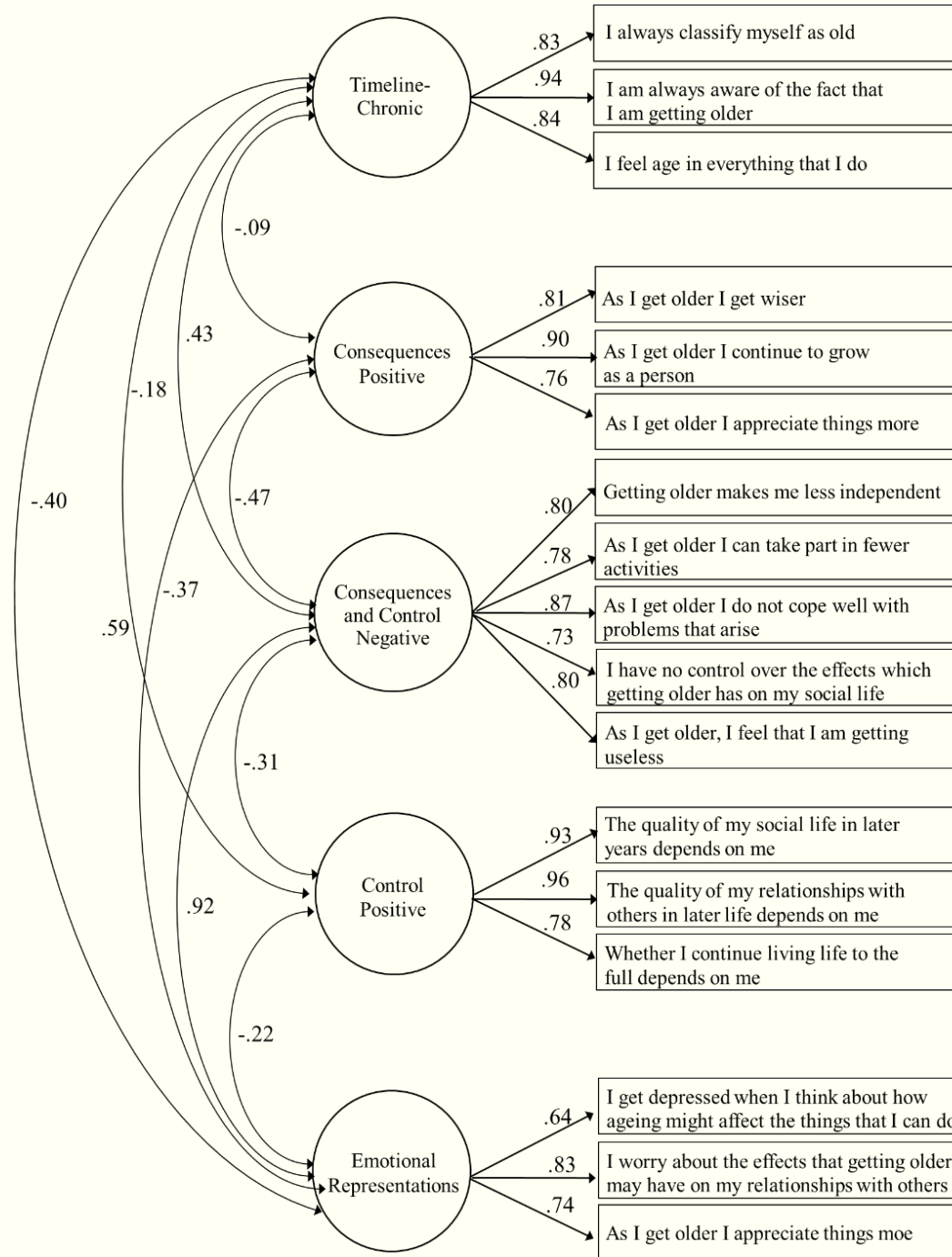
Conclusion

- The B-APQ was translated into Chinese and the model of the original scale was verified via CFA.

- After deleting the items with low factor loading and adding cross-cultural items as the experts recommended, the B-APQ-C with a total of 17 items, the best interpretation ability of the model and acceptable reliability and validity was then finalized.

- The Chinese Version B-APQ showed good validity and reliability and can be applied to elderly with chronic disease in Taiwan.

Limitation

- The study was limited to the elderly with chronic diseases in southern Taiwan.

- It still requires the support of a larger scale of research to extend to the aging perception that can represent the elderly patients with chronic disease.

- The participants of this study were from the outpatient clinics and the community health care centers. Therefore, disabled elderly were not included in this study.

Acknowledgements

References

- Barker, M., O'Hanlon, A., McGee, H. M., Hickey, A., & Conroy, R. M. (2007). Cross-sectional vali dation of the Aging Perceptions Questionnaire: a multidimensional instrument for assessing self-perceptions of aging. *BMC Geriatr, 7*, 9. doi:10.1186/1471-2318-7-9

- Chen, X., Hu, Y., Zhu, D., Li, J., & Zhou, L. (2016). Chinese version of the Aging Perceptions Qu estionnaire (C-APQ): assessment of reliability and validity. *Aging Ment Health, 20*(6), 567-574. d oi:10.1080/13607863.2015.1028332

- Hsu CC, Chang HY, Wu IC, Chen CC, Tsai HJ, Chiu YF, et al. Cohort Profile: The Healthy Aging Longitudinal Study in Taiwan (HALST). Int J Epidemiol. 2017. Epub 2017/04/04. doi: 10.1093/ije/dyw331. PubMed PMID: 28369534.

- Ingrand, I., Houeto, J. L., Gil, R., Mc Gee, H., Ingrand, P., & Paccalin, M. (2012). The validation of a French-language version of the Aging Perceptions Questionnaire (APQ) and its extension to a population aged 55 and over. *BMC Geriatr, 12*, 17. doi:10.1186/1471-2318-12-17

- Kotter-Gruhn D, Kleinspehn-Ammerlahn A, Gerstorf D, Smith J. Self-perceptions of aging predict mortality and change with approaching death: 16-year longitudinal results from the Berlin Aging Study. Psychol Aging. 2009;24(3):654-67. Epub 2009/09/11. doi: 10.1037/a0016510. PubMed P MID: 19739922.

- Leventhal H, Nerenz DR, Steele DJ. Illness representations and coping with health threats. In : Baum A, Taylor SE, Singer J, editors. Handbook of psychology and health: Social psychological aspects of health. 4. New Jersey: Lawrence Erlbaum Associates; 1984. p. 219-52.

- Ku PW, Sun WJ, Chang CY, Chen LJ. Reliability and Validity of the Chinese Version of the Physical Activity Scale for the Elderly. Sports 　 Exercise Research. 2013;15(3):309-19. doi: 10.5297/ser.1503.006.

- Levy, B. R., Slade, M. D., Kunkel, S. R., & Kasl, S. V. (2002). Longevity increased by positive self-perceptions of aging. *J Pers Soc Psychol, 83*(2), 261-270.

- Ministry of Health and Welfare. Report of the Senior Citizen Condition Survey 2013 2013. Available from: http://www.mohw.gov.tw/cht/DOS/DisplayStatisticFile.aspx?d=47398&s=1.

- Ministry of Health and Welfare.. 2015 medical service statistics 2017. Available from: http://dep.mohw.gov.tw/DOSAASW/cp-1921-9763-113.html.

- Ministry of the Interior. Resident population grouped by age 2018. Available from: http://sowf.moi.gov.tw/stat/month/m1-06.xls.

- Sadegh Moghadam, L., Foroughan, M., Mohammadi Shahboulaghi, F., Ahmadi, F., Sajjadi, M., & Farhadi, A. (2016). Validity and reliability of the Persian version of the Brief Aging Perceptions Questionnaire in Iranian older adults. *Clin Interv Aging, 11*, 507-511. doi:10.2147/CIA.S101620

- Sexton, E., King-Kallimanis, B. L., Morgan, K., & McGee, H. (2014). Development of the brief ageing perceptions questionnaire (B-APQ): a confirmatory factor analysis approach to item reduction. *BMC Geriatr, 14*, 44. doi:10.1186/1471-2318-14-44

- Slotman, A., Cramm, J. M., & Nieboer, A. P. (2015). Validation of the Dutch Aging Perceptions Questionnaire and development of a short version. *Health Qual Life Outcomes, 13*, 54. doi:10.1186/s12955-015-0248-y

- Slotman, A., Cramm, J. M., & Nieboer, A. P. (2017). Validation of the Aging Perceptions Questionnaire Short on a sample of community-dwelling Turkish elderly migrants. *Health Qual Life Outcomes, 15*(1), 42. doi:10.1186/s12955-017-0619-7

- WHO. (2012). Process of translation and adaptation of instruments. . Retrieved from http://www.who.int/substance_abuse/research_tools/translation/en/

- Wolf EJ, Harrington KM, Clark SL, Miller MW. Sample Size Requirements for Structural Equation Models: An Evaluation of Power, Bias, and Solution Propriety. Educ Psychol Meas. 2013;76(6):913-34. Epub 2013/12/01. doi: 10.1177/0013164413495237. PubMed PMID: 25705052; PubMed Central PMCID: PMCPMC4334479.

- Yao KP. Development and Applications of the WHOQOL-Taiwan Version. Formosan Journal of Medicine. 2002;6(2):193-200. doi: 10.6320/FJM.2002.6(2).09

THANKS FOR YOUR ATTENTION!