



Mediating Effect of Self-worth and Depression on the Relationship between Subjective Age and Subjective Well-being of the Elderly

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ABSTRACT

This paper aims to disclose the mediating effect of self-worth and depression on the relationship between subjective age and subjective well-being of the elderly. For this purpose, 238 questionnaires were issued to elderly in Shaanxi, China. 219 (92.02%) of valid questionnaires were returned. During the survey, the respondents evaluated each item on the questionnaire against the age decade scale (ADS), geriatric depression scale (GDS-11), geriatric self-worth scale (GSWS) and Memorial University of Newfoundland Scale of Happiness (MUNSH). The main conclusions are as follows: Feel age, look age, behavior age and interest age were all lower than the actual age; The old people with a high level of education and a high involvement in leisure activities tend to have a young subjective age; Subjective age had a significant effect on subjective well-being, self-worth and depression, while self-worth and depression mediated the relationship between subjective age and subjective well-being. Therefore, the subjective well-being among the elderly can be promoted by reducing subjective age and enhancing self-worth. This research provides new insights into the research on subjective well-being of elderly.

Key Words: Subjective Age, Self-worth, Depression, Subjective Well-being, Elderly

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Introduction

Ageing is a hot issue across the world. The life quality of the elderly rests on both physical health and spiritual pleasure. According to the theory of successful ageing, the meaningfulness of old age is measured by physical health, mental health and social relations.

The research on successful ageing helps the elderly enhance their social management and achieve more success. Previous physiological studies have shown that successful ageing has three main components, namely, reducing the risk of illness or disability, maintaining physical and cognitive function and involving in social activities (Bowling & Dieppe, 2005; Wang, 2015; Chen, 2017; Mermeklieva and Matveev, 2017; Simov, 2016).

Successful ageing is not only a personal

goal of the elderly, but also the common aspiration of families and the society. It can be depicted by two indices: subjective well-being and self-worth of the elderly (Li, 2006). Specifically, subjective well-being is a psychological parameter reflecting the social quality of the elderly. To understand and improve the life quality of the elderly, it is necessary to explore the subjective well-being.

Literature Review

Subjective age, the age people think of themselves as being, is an important sign in the psychological development of lifespan. It reflects how a person assesses his/her position in the course of life (Barak and Schiffman, 1981). The bias towards a young subjective age reveals the elderly's self-enhancing strategy against ageing stereotypes.

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Rubin and Bernrsen (2006) suggested that most of the elderly reject the labelling of ageing and tend to report a young subjective age.

Subjective age indirectly bears on the health and life quality of the elderly (Kotter-Grühn *et al.*, 2009). Those with a young subjective age often maintain a better cognitive function (Stephan, 2014). As they grow older, the elderly will undergo an irreversible decline in cognitive function. The rate of decline varies from person to person. Scholars agree that those with better memory function do better in daily activities and face less risk of death (Zahodne, Manly, Mackey-Brandt & Stern, 2013). Besides, it is more accurate to predict the mental and physical health of the elderly based on their subjective age than their actual age. Therefore, the elderly should be encouraged to maintain a bias towards young subjective age.

The bias towards young subjective age is closely related to individual subjective well-being and mental health (Liang K., 2014). However, the relationship between subjective age and mental health is extremely complicated. Compared with Germans, Americans show a younger subjective age and have a unique negative correlation with negative emotions (Westerhof and Barrett, 2005). This means the relationship between subjective age and mental health is affected by cultural values. Focusing on old Chinese people, Wu (2016) pointed out that subjective age bias has a significant negative correlation with elderly depression.

Methods

Recipients

From September to November 2017, 238 senior citizens aged 60 and above were selected for our questionnaire survey in Shaanxi Province, China. A total of 219 valid questionnaires were returned. Of the 219 respondents, 91 (41.6%) were males and 128 (58.4%) were females; 93 (42.5%) often participated in leisure activities and 126 (57.5%) only sometimes joined such activities; 38 (17.4%) were graduates from primary schools, 62 (28.3%) from junior high schools, 76 (34.7%) from senior

high schools or technical secondary schools and 43 (19.6%) from universities. All respondents were aged between 60 and 82, putting the mean age at 65.16 (SD=5.13) (Table 1).

Scales

Using the Age Decade Scale (ADS) revised by Barak and Schiffman (1981) and Kotter and Hess (2012), four subjective ages were measured: feel age, look age, behavior age and interest age. Among them, the feel age refers to the age perceived by a person in normal circumstances; the look age stands for the age perceived by a person based on his/her appearance; the behavior age means the age perceived by a person based on his/her activities; the interest age reflects the age perceived by a person based on his/her favorite activities. Each of the four subjective ages was determined between 0 and 120. The subjective age can be considered as young if its numerical value is smaller than the actual age. The Cronbach's alpha, i.e. internal consistency of the scale was 0.86. The confirmatory factor analysis reveals a good structural validity $\chi^2/df = 2.84$, CFI=0.92, NFI=0.93, GLI=0.92 and RMSEA=0.017.

The subjective well-being of the elderly was assessed against the Memorial University of Newfoundland Scale of Happiness (MUNSH), which was designed by Kozma and Stones (1980) and Liu & Gong (1997). The 24 items of the scale were allocated to 4 subscales, namely, positive emotion (PA), negative emotion (NA), positive experience (PE) and negative experience (NE). The total score was calculated as PA-NA + PE-NE and its value fell between 0 and 48 points. For simplicity, a constant of 24 was added to the total score. The higher the total score, the better the well-being. The internal consistency of the four subscales was 0.78, 0.82, 0.80, and 0.83, respectively. The confirmatory factor analysis confirms that the structural validity was good: $\chi^2/df = 3.16$, CFI=0.91, NFI=0.92, GLI=0.91 and RMSEA=0.022. The self-worth of the elderly was evaluated against the geriatric self-worth scale (GSWS) compiled by Song (2013).

Table 1. Basic information of the respondents

Variable	Item	Education Level				Total Elderly Sampling
		Primary school	Middle school	High school	College and above	
Gender	Man	15	36	35	20	106
	Female	28	34	46	24	132
Leisure Activity Involvement	Often	19	29	28	21	97
	Sometimes	24	41	53	23	141
Total		43	70	81	44	238

Table 2. Paired sample t-test for elderly subjective age and actual age

Variables	M	SD	Mean	Standard Deviation	t
Actual age	65.16	5.13			
feel-age	58.13	9.03	7.03	7.32	14.21**
look-age	61.78	6.05	3.38	5.57	8.99**
behavior-age	56.63	10.29	8.53	8.45	14.94**
interest-age	53.10	12.74	12.05	10.84	16.46**
subjective age	57.20	8.19	7.96	6.38	18.44**

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. The same below

Table 3. Differences in education age and leisure activity participation (M ± SD)

Variables	Item	n	feel-age	look-age	behavior-age	interest-age
Years of education	≤9Years	100	59.79±7.83	63.21±5.20	58.40±9.09	56.68±10.04
	>9Years	119	56.74±9.75	60.58±6.47	55.14±11.03	50.09±13.97
	t		2.52*	3.28**	2.36*	3.94**
Leisure Activity Involvement	Often	93	55.46±9.02	60.65±6.29	53.60±9.62	50.98±13.32
	Occasionally	126	60.10±8.56	62.61±5.76	58.87±10.24	54.67±12.10
	t		-3.88**	-2.40*	-3.85*	-2.14*

Table 4. Differences of subjective well-being in subjective age (M±SD)

Variables	Item	n	subjective well-being	Positive factor	Negative factor
subjective age	younger	59	38.85±5.63	21.64±5.54	4.64±3.05
	Moderate	98	33.04±4.14	16.07±4.12	5.82±3.49
	Elderly	62	31.52±4.01	14.65±3.90	11.11±5.61
F			44.63**	41.94**	44.81**
LSD Multiple comparisons (I-J)	I ₁ -J ₂		5.81**	5.57**	
	I ₁ -J ₃		7.33**	6.98**	-6.47**

Table 5. Correlation of subjective age, self-worth, depression and subjective well-being of the elderly

Variables	M	SD	feel-age	look-age	behavior-age	interest-age	subjective age	self-worth	depression
look-age	61.78	6.05	0.53	1					
behavior-age	56.63	10.29	0.62**	0.54**	1				
interest-age	53.10	12.74	0.45**	0.42**	0.51**	1			
subjective age	57.20	8.19	0.69**	0.68**	0.77**	0.73**	1		
self-worth	3.01	1.02	0.25**	0.29**	0.26**	0.20**	0.33**	1	
depression	3.42	1.41	-0.42**	-0.37**	-0.39**	-0.33**	-0.51**	-0.68**	1
subjective well-being	34.17	5.39	0.37**	0.29**	0.28**	0.36**	0.44**	0.53**	-0.62**

Table 6. Regression Analysis of Variables Relationship in Multiple Mediating Model

Equation		Overall fit index			Regression coefficient significance	
Result Variables	Predictor variable	R	R ²	F	β	t
self-worth	subjective age	0.45	0.20	54.41**	0.45	7.38**
depression	subjective age	0.74	0.55	136.18**	-0.31	6.49**
	self-worth				-0.58	-12.15**
subjective well-being	subjective age	0.65	0.42	53.17**	0.19	3.07**
	self-worth				0.21	2.95**
	depression				-0.38	-4.83**

The scale has five dimensions, including interpersonal value, impact value, physiological value, rule value and psychological value. There are a total of 25 items for these dimensions. The scale has five points, with 1 being strongly disagree and 5 being strongly agree. The higher the value, the better the self-worth is. The Cronbach's alpha of the scale was 0.88. The confirmatory factor analysis demonstrates a good structural validity: $\chi^2/df = 3.31$, CFI=0.94, NFI=0.93, GFI=0.94 and RMSEA=0.019. The depression of the elderly was rated against the

geriatric depression scale (GDS-11) revised by Brink & Yesavage (1982) and Tang (2013). Eleven items were answered with "yes" or "no". "Yes" was counted as 1 point and "no" as 0 point. The higher the score, the more depressive the old person is. The Cronbach's alpha of the scale was 0.83, and the internal consistency of the scale exhibited a rising trend. The confirmatory factor analysis reveals a good structural validity: $\chi^2/df = 3.94$, CFI=0.90, NFI=0.92, GFI=0.92 and RMSEA=0.034.



Statistical analysis

The data collected from the questionnaire survey were analysed on SPSS 19.0 through common-method variance test, descriptive statistics, independent or paired-sample t-test, Pearson's correlation analysis, and hierarchical regression analysis.

Results

Common-method variance test

Owing to the objective conditions, the self-report method of the questionnaire survey may lead to variance of the common method. Thus, the data collection process was controlled. For instance, the survey was performed anonymously and reverse problems were designed for some topics. Then, the common-method variance was measured by Harman's single-factor test. The results show that all the eigenvalues of non-rotating and rotating factors were greater than 1, indicating that the common-method variance falls within the acceptable range.

Descriptive Statistics

Table 2 shows that the values of the four subjective ages were all shorter than the actual age. Hence, the subjective age of the elderly was on the rise, indicating a significant difference between the four dimensions of subjective age and the bias towards the younger age. This bias was confirmed in the paired sample t-test ($P < 0.01$). This finding echo with the results of existing studies (Wu, 2016; Zhou *et al.*, 2016; Liu *et al.*, 2017).

The independent sample t-test shows that the feel age, look age, behavior age and interest age were significantly different among those with different education backgrounds and involvement in leisure activities ($P < 0.05$). In general, the educational level and leisure activity involvement are negatively correlated with the subjective age (Table 3). The subjective ages were grouped by the statistical 27% principle. Overall, there were 59 young people (total score: 54.75), 98 middle-age people (total score: 54.76~61.24), and 62 old people (total score: 61.25). Through one-way analysis of variance, it is learned that subjective well-being, together with its positive and negative factors, were significantly different among people in different age groups ($P < 0.01$). Thus, subjective well-being is negatively correlated with subjective age (Table 4).

Relationship among variables

Table 5 lists the mean, standard deviation and correlation coefficients of subjective age, self-worth, depression and subjective well-being. As shown in the Table, subjective age was significant positively correlated with subjective well-being and self-worth ($P < 0.01$), and significant negatively correlated with depression ($P < 0.01$); there is a significant positive correlation between subjective well-being and self-worth ($P < 0.01$), a significant negative correlation between subjective well-being and depression ($P < 0.01$), and a significant negative correlation between depression and subjective well-being ($P < 0.01$).

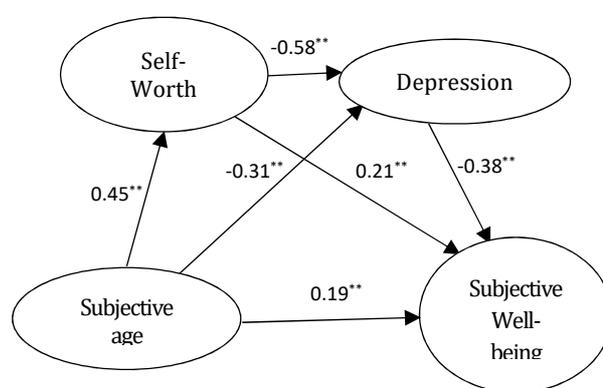


Figure 1. Chain mediation model of self-worth and depression

Mediating effect

This subsection explores the mediating effect of self-worth and depression on the relationship between subjective age and subjective well-being of the elderly. According to regression analysis, subjective age had a significant predictive effect on the subjective well-being of the elderly subjective age positively predicted self-worth ($\beta = 0.45$, $p < 0.01$), and negatively predicted depression ($\beta = -0.31$, $p < 0.01$); self-worth had a positive predictive effect on subjective well-being ($\beta = 0.21$, $p < 0.01$) and a negative predictive effect of depression ($\beta = -0.58$, $p < 0.01$). In addition, depression had a negative predictive effect on the subjective well-being of the elderly ($\beta = -0.38$, $p < 0.01$). The above analysis indicates the partial mediating effect of self-worth and depression between subjective age and well-being. The mediating effect was valued at 0.31, about 62% of the total effect (0.50) of subjective well-being on subjective age. This effect falls into three categories: the indirect effect of subjective age on subjective well-being through Self-Worth ($\beta = 0.09$, $p < 0.01$); the indirect effect of subjective age on

subjective well-being through depression ($\beta=0.12$, $p<0.01$); the indirect effect of subjective age on subjective well-being through self-worth and depression ($\beta=0.10$, $p<0.01$). The three indirect effects respectively account for 18%, 24% and 20% of the total effect. The 95% confidence interval for the mediating effect had no zero value, indicating that the three indirect effects all reach significant levels.

Conclusions

There is a bias towards a young subjective age among the elderly.

Paired-sample t-test show a significant difference between the four dimensions of subjective age and actual age ($t=8.99$ to 18.44 , $P<0.01$). Overall, the subjective age is smaller than the actual age, an evidence for the bias towards a young subjective age among the elderly. The largest deviation from the actual age belongs to the interest age and the smallest to the look age. Therefore, the old people feel young when they are involved in their favourite activities and perceive a similar age to the actual age based on their own appearance.

The old people with a high level of education tend to have a younger subjective age.

The research finds that the level of education is negatively correlated with the subject age. Thus, education is an important influencing factor of the subjective age among the elderly. In general, highly educated old people boast better knowledge, skills and social experience, and more social and psychological resources than those less educated. That is why they could maintain a relatively young subjective age, an essential strategy for successful ageing.

The old people frequently involved in leisure activities tend to have a younger subjective age.

Through an independent sample t-test, the author concluded that the old people who often participated in leisure activities enjoyed a younger subjective age than those who only sometimes joined such activities. The frequent participation in leisure activities naturally brings about a variety of social opportunities. These activities slow down the decline of cognitive function of old people, strengthen their physical function, and comfort their souls, thus increasing the sense of well-being.

The old people with a young subjective age enjoy a high sense of well-being.

Through one-way analysis of variance, it is learned that subjective well-being, together with its positive and negative factors, were significantly different among people in different age groups. The younger the subjective age, the higher the sense of well-being is. This finding agrees well with the previous research (Y. Stephan *et al.*, 2011; Huang *et al.*, 2016). Therefore, it is important to cultivate a young subjective age among the youth. With a young subjective age, the old people can maintain a good health, participate in various leisure activities and experience positive emotions, thus enhancing the life quality and well-being.

Relationship between subjective age, self-worth, depression and well-being

The correlation analysis shows that subjective age was significant positively correlated with subjective well-being and self-worth; self-worth was significant positively correlated with subjective well-being. Hence, a young subjective age enables elderly to improve their sense of self-worth and subjective well-being, which can mutually enhance each other.

It is also learned that subjective age was significant negatively correlated with depression, and depression was significant negatively correlated with subjective well-being. These findings are consistent with the previous research (Huang *et al.*, 2017). This means those who are young in physical and mental dimensions have less depression, and positive emotions can enhance the subjective well-being of the elderly.

Mediating effect of self-worth and depression on the relationship between subjective age and subjective well-being

The mediating test proves the mediating effect of self-worth and depression in the relationship between subjective age and subjective well-being of the elderly. In other words, the subjective age of the elderly influences subjective well-being through self-worth and depression. Thus, the value experience (e.g. self-worth) and emotional experience (e.g. depression), relative to age experience (e.g. subjective age) are influencing factors on subjective well-being among the elderly. This is consistent with the previous studies (Westerhof *et al.*, 2005; Shrira *et al.*, 2015), and the theory of positive psychology.

According to the above results, reducing subjective age is an effective way to achieve a successful ageing. The young subjective age promotes the sense of self-worth, which in turn protects emotional health, eases depression and enhances subjective well-being. This measure can slow down cognitive decline and improve cognitive performance among the elderly (Wei *et al.*, 2013). The decline of cognitive function in old age is attributed to the reduction in the centrality of the hemispherical homotopy junction connection network in the precuneus and posterior cingulate cortical areas (Zuo *et al.*, 2010; 2012).

All in all, subjective age has a significant positive effect on elderly self-worth and a significant negative effect on depression; self-worth and depression play a mediating role between subjective age and subjective well-being of old people. Besides, a viable option to ease depression and enhance subjective well-being among the elderly lies in the reduction of subjective age and increase of self-worth.

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