



## Relationship between Meaning in Life, Attitudes toward Aging and Depression among Elderly

Hou Yongmei<sup>1\*</sup>, Mai Jingwen<sup>1</sup>

<sup>1</sup>Department of Psychology, School of Humanities and Administration, Guangdong Medical University, Dongguan, Guangdong, China

\*Corresponding author

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### Abstracts

**Objective:** To explore the status of sense of meaning in life, attitudes towards aging, and depression among the elderly, and analyze the relationship among the above three variables. **Method:** Totally 1109 old people were selected by stratified random sampling from 5 cities in Guangdong Province. They were investigated with Meaning in Life Questionnaire Chinese Version (C-MLQ), Attitudes toward Aging Questionnaire Chinese Version (AAQ-CV), and Geriatric Depression Scale-Short Form (GDS-15). **Results:** First, the total scores of MLQ, AAQ and GDS-15 were  $(30.38 \pm 4.57)$ ,  $(75.48 \pm 9.93)$ , and  $(9.40 \pm 2.76)$ , respectively. Second, the results of multiple linear stepwise regression analysis showed that the total score of GDS-15 was negatively correlated with the scores of the following 5 dimensions like Loss of Psychosocial Function (LPF), Experience of Life Meaning (MLE), Dealing with Physical Changes (DPC), Psychological Acquisition (PA), and Pursuit of Life Meaning (MLP) ( $\beta = -0.101$  to  $-0.229$ , all  $P < 0.01$ ). **Conclusion:** Depression is a common mental problem of old people, and low senses of meaning in life and negative attitudes towards aging may be risk factors of depression among the elderly. **Keywords:** Old people; Depression; Sense of meaning in life; Attitudes towards aging

### I. Introduction

By the end of 2020, the number of elderly people aged 60 and above in China had reached 260 million, and it will grow at a rate of about 10 million people per year in the next five years. Population aging is the basic national condition of China for a long period of time in the future [1]. With the arrival of a comprehensive aging society, the physical and mental health issues of the elderly have attracted attention from all sectors of society. Actively responding to the aging population is related to social

stability and national development [2]. In 2015, the World Health Organization proposed the goal of "healthy aging", which defined healthy aging as the process of functional development required to develop and maintain a healthy life for the elderly [3-4], clearly demonstrating that this goal is not only to extend the lifespan of life (lifespan), but also to make life meaningful. Therefore, studying the meaning in life is a crucial task for the mental health of the elderly.

Depression is a mental disease with high incidence in the elderly, and its incidence rate is 10.8% -56.9%, which has a huge impact on the elderly [5-6]. The pathogenesis of depression is very complex, among which psychological state is a subjective and controllable factor [7]. Compared to young patients, elderly patients with depression have poorer emotional experiences and feedback of themselves. Therefore, low mood is no longer their main complaint, but is more likely to result in cognitive changes, physical symptoms, loss of interest, negative pessimism towards the future, as well as a sense of unintentionalness and confusion towards life [8].

The sense of meaning in life is an extremely complex abstract concept, with many definitions but not yet unified, among which the most widely accepted is the definition given by Steger et al. Steger et al. [9] defined the sense of meaning in life as an individual's understanding and perception of the essence and importance of their existence, that is, the individual's perceived goals, missions, and primary goals of life. Furthermore, Steger et al. [9,10] divided the sense of meaning in life into two dimensions: cognitive and motivational. The cognitive dimension is the presence of meaning experience, and the motivational dimension is the search for meaning. The former emphasizes an individual's perception of the meaning of life, their cognition and evaluation of whether living is



meaningful, that is, to what extent an individual feels that their life is meaningful. The latter emphasizes the individual's pursuit of the meaning of life, that is, to what extent the individual wants to obtain a sense of meaning in life. Research has confirmed the protective effect of a sense of meaning in life on mental health. The sense of meaning in life not only positively predicts positive aging attitudes [11] and subjective well-being [12], but also negatively predicts anxiety and depression [13]. Further research has further found that different dimensions of the sense of meaning in life may have different effects on mental health. On one hand, experiences of meaning in life are positively correlated with mental health [14], such as enhancing meaningful experiences and enhancing happiness [15], reducing symptoms of depression and anxiety [10]. However, the relationship between pursuit of meaning in life and mental health is inconsistent. Scholars argued the pursuit of meaning in life is positively correlated with happiness [16,17] or negatively correlated [15], positively correlated with depression and anxiety symptoms, or negatively correlated, or unrelated [18]. On the other hand, from the perspective of the dual system model of constructing the sense of meaning in life, the two coping systems of tendency (seeking meaning in prosperity) and avoidance (creating meaning in adversity) will coordinate with each other in successfully adapting to the aging process, thereby jointly maintaining or constructing a meaningful life for the elderly [19].

Aging attitudes can affect the psychological and physiological functions of the elderly [20], and are also one of the important influencing factors of healthy aging [21]. Aging attitudes include two types: positive and negative aging attitudes [22]. Positive attitudes towards aging is a positive perception among elderly people towards their own aging, believing that aging can be controlled and that they can have richer life experiences and more resources to cope with aging related issues, thereby achieving good health outcomes. Negative attitudes towards aging refer to a negative perception and experience of the physiological, psychological, and social losses caused by aging, believing that the elderly have low status, poor abilities, declining physical functions, various uncontrollable diseases, and face more challenges. Elderly people with a positive attitudes towards aging usually pay more attention to their own health and are more willing to take preventive measures to protect themselves. On the contrary, elderly people who hold negative attitudes towards aging tend to have low emotions when they think of aging, and thus adopt negative coping strategies [23-24]. Many scholars believe that aging attitudes

have a stronger impact on the mental health of the elderly than most predictive factors [25]. For example, positive attitudes towards physical changes, psychological gain, and psychosocial loss can directly improve subjective well-being [26], reduce anxiety and depression [27], and helps achieve successful aging [21].

Based on the above analysis, it can be seen that the sense of meaning in life and attitudes towards aging have a strong impact on depression in the elderly, but there is limited research on their specific ways of influence. This study intends to use a large sample, multicenter questionnaire survey to explore the impact of sense of meaning in life and attitudes towards aging on depression in the elderly.

## **2.1 Objects**

### **2.1.1 Sample size estimation**

G\* Power 3 is used to calculate the minimum sample size [28], and the prevalence rate of depression among the elderly is adopted to calculate the sample size. Previous studies have shown that the incidence of depression among the elderly in China is 6.50% to 63.50%, with a medium test effect value [29-30], which means  $d$  value is 0.50 to 0.80 [31]. In this study, with the effect value  $d = 0.70$ , the statistical test power of  $1-\beta = 0.80$ , the type I error probability  $\alpha = 0.05$ , and the minimum sample size is calculated as 786. The minimum sample size is determined as 943 due to a 20% of possible follow-up loss rate.

### **2.1.2 Sampling**

A stratified random sampling was used to select 1200 elderly people from 5 cities in Guangdong Province including Shenzhen, Dongguan, Zhuhai, Shanwei, and Heyuan from January 2023 to March 2023. Inclusion criteria: Over 60 years old, with normal mental and intellectual health, and elderly residents living in nursing homes for more than six months. Exclusion criteria: Those who are unable to complete the scales due to dementia, severe physical illness, mental disorders, or other reasons. A total of 1149 people actually met, with a visit rate of 95.8%. Eight people (0.6%) were excluded from mental disorders and positively tested for the Mini-Mental State Examination (MMSE). Twenty people (1.7%) found it impossible to answer questions due to severe hearing and visual impairments, as well as 12 (1.1%) reported discomfort and unwillingness to cooperate with the survey. A total of 1109 people completed various surveys, with a survey efficiency of 92.4%. There are 297 in Dongguan, 330 in Shenzhen, 172 in Zhuhai, 159 in Shanwei, and 151 in Heyuan; 545 elderly



residents (290 males and 255 females) in nursing homes, 564 elderly residents (285 males and 279 females) at home; The average age is  $(68.6 \pm 8.92)$  years old, with 560 people aged 60-70, 472 people aged 70-80, and 77 people aged 80-90; 84 unmarried, 479 widowed, 546 married with surviving spouses; Average education years  $(9.75 \pm 3.89)$ , with 133 illiterate, 379 primary school graduates, 327 junior high school graduates, 173 high school or technical secondary school graduates, 49 junior college graduates, 36 undergraduate graduates, and 12 master's or above graduates; 404 people in cities, 394 in towns, and 311 in rural areas; 53 people live alone, 360 live with their spouses, 134 live with their children, 208 live with their spouses and children; 354 people live in nursing homes. The main source of income is as following: 482 retirees, 307 savings, 166 child providers, 98 other family members, 26 subsistence allowances, and 30 commercial insurance.

## 2.2 Tools

### 2.2.1 Meaning in Life Questionnaire Chinese Version, C-MLQ

MLQ is Compiled by Steger et al. (2006) [9], and revised by Liu Sisi et al. (2010) [32] into the Chinese version (C-MLQ). It consists of 9 items, divided into two dimensions, namely experience of meaning in life (MLE) and pursuit of meaning in life (MLP). The Likert 7-point scoring method is used to score from 1 to 7 points corresponding to "very disagree" to "very agree". The higher the total score, the more positive the meaning in life.

### 2.2.2 Attitudes to Aging Questionnaire, AAQ-CV

AAQ is Compiled by Laidlaw et al. (2007) [22], and revised by Huang Yifan et al. (2010) [33] into the Chinese version. It consists of 24 items, divided into three dimensions: Dealing with Physical Changes (DPC), Loss of Psychosocial Function (LPF), and Psychological Acquisition (PA). Each dimension has 8 items. The Likert 5-point scoring method is used to score from 1 to 5 points corresponding to "completely disagree" to "completely agree". The higher the total score, the more positive the attitudes towards aging.

### 2.2.3 Geriatric Depression Scale Short Form, GDS-15

GDS-15 is compiled by Burke et al. (1991) [34], revised by Mei JR (1999) [35] into Chinese version, and used for screening depression in the elderly. There are 15 items, including thoughts of low mood, reduced activity, irritability, withdrawal and pain, as well as negative evaluations of the past,

present, and future. The 2-level scoring method is used to score from 0 to 1 point corresponding to "no" and "yes". The highest score is 15, generally speaking, 0-7 points indicate normal (without depression), 8-11 points indicate mild depression, and 12-15 points indicate moderate to severe depression. In this study, the Cronbach's  $\alpha$  coefficient of the scale is 0.887.

### 2.2.3 Mini-Mental State Examination, MMSE

Also known as the simplified mental state checklist, MMSE is compiled by Folstein et al. (1975) [36] and revised by Zhang Mingyuan (2003) [37] into the Chinese version, it is mainly used for measuring cognitive function such as orientation, memory, language, computation, and attention. There are 5 items in total, including time and place orientation, language (i.e. retelling, naming, understanding instructions), mental arithmetic, immediate and short-term auditory word memory, and visual structure imitation. The highest total score is 30, with a cutoff value of  $\leq 17$  points for the illiterate group,  $\leq 20$  points for the primary school group, and  $\leq 24$  points for the middle school group or above. A score below the cutoff value indicates cognitive impairment. The scale has high reliability, validity, specificity, and sensitivity. In this study, the Cronbach's  $\alpha$  coefficient of MMSE is 0.813.

### 2.2.4 A self-compiled questionnaire on general personal information

It includes 16 items, namely gender, age, the city and area where you reside, marital status, elderly care methods, education level, source of income, and so on.

## 2.3 Collection and organization of data

Before the investigation, the researchers who participated in the survey were given unified training, and the survey process and rating standards were also unified. The consistency test ( $Kappa=0.81$  to  $0.90$ ) was conducted to meet the requirements of psychological measurement.

Through the checking way of meeting at home, questionnaires were given out by investigators and the elderly were invited to fill in by themselves. For those who cannot complete the questionnaires alone due to illiteracy or other reasons, investigators would read out the questions in a uniform way and make objective records according to answers.

The questionnaires with answers of more than 50% of the items missing were eliminated. The missing values of the valid questionnaires were estimated and filled with the average values. Two



researchers independently input the same data using Epidata3.0 software and conduct a unified logic check so as to ensure the accuracy of the data.

#### 2.4 Data processing

Data was exported from Epidata3.0 to SPSS 20.0 software for statistics and analysis. The main statistical methods include descriptive statistics, Pearson correlation analysis and multiple linear stepwise regression.

### III. Results

#### 3.1 Descriptive statistics

The total scores of GDS-15, C-MLQ and AAQ-CV of this group are  $(9.40 \pm 2.76)$ ,  $(30.38 \pm 4.57)$  and  $(75.48 \pm 9.93)$ , respectively. This indicates that the elderly in this group generally have mild or above depression, their sense of meaning in life tends to be vague and negative, and their attitude towards aging is not positive enough, as shown in Table 1.

**Table 1.** Descriptive statistics of GDS-15, C-MLQ, and AAQ-CV scores (n = 1109)

Dimension	Min	Max	$\bar{x} \pm s$	Mean of item	SD of item
GDS-15	0	14.00	9.40±2.76	0.63	0.18
MLE	10.00	25.00	16.98±2.69	3.40	0.59
MLP	8.00	20.00	13.40±2.43	3.35	0.63
C-MLQ	20.00	45.00	30.38±4.57	3.38	0.53
DPC	8.00	39.00	25.64±5.15	3.21	0.68
LPF	14.00	38.00	27.33±3.46	3.42	0.46
PA	8.00	32.00	22.51±4.13	2.81	0.57
AAQ-CV	42.00	106.00	75.48±9.93	3.15	0.41

#### 3.2 Correlation analysis among meaning in life, attitudes towards aging, and depression

As shown in Table 1, the total score of GDS-15 is significantly negatively correlated with the total scores of C-MLQ and scores in all dimensions, as well as the total score of AAQ-CV and scores in all dimensions ( $r=0.086$  to  $0.305$ , all  $P<0.01$ ).

**Table 2** Correlation analysis among GDS-15, C-MLQ, and AAQ-CV scores (r)

Dimension	1	2	3	4	5	6	7	8
1.GDS	1							
2.ELM	-0.236**	1						
3.PLM	-0.345**	0.593**	1					
4.C-MLQ	-0.323**	0.864**	0.881**	1				
5.DPC	-0.149**	0.233**	0.263**	0.277**	1			
6.LPF	-0.097**	0.216**	0.178**	0.222**	0.517**	1		
7.PA	-0.231**	0.240**	0.086*	0.171**	0.202**	0.562**	1	
8.AAQ-CV	-0.192**	0.296**	0.222**	0.292**	0.783**	0.850**	0.716**	1

Notes: \*  $P < 0.05$ , \*\*  $P < 0.01$

#### 3.3 Multiple linear stepwise regression analysis of the impact of meaning in life and attitudes towards aging on depression

Taking the total score of GDS-15 as the dependent variable and the scores of two dimensions of C-MLQ and three dimensions of AAQ-CV as the independent variables, multiple linear stepwise

regression analysis was performed within a 95% confidence interval, and the results are shown in Table 3.

From Table 3, it can be seen that the total score of GDS-15 was negatively predicted by scores of 5 dimensions like pursuit of meaning in life (MLP), psychological attainment (PA), dealing with



physical changes (DPC), experience of meaning in life (MLE), and psychological and social loss (LPF) ( $\beta = -0.119$  to  $-0.262$ , all  $P < .001$ ).

**Table 3** Multiple linear stepwise regression analysis of the impact of meaning in life and attitudes towards aging on depression

Dependent variable	Independent variables	B	SE	$\beta$	$t$	$PR^2$	$R_{adj}^2$
GDS-15	Constant	11.588	0.700		16.559	<0.001	0.212 0.209
	MLP	-0.298	0.039		-0.262	-7.701	<0.001
	PA	-0.162	0.022		-0.242	-7.247	<0.001
	DPC	-0.086	0.017		-0.161	-5.008	<0.001
	MLE	-0.131	0.035		-0.127	-3.692	<0.001
LPF	-0.095	0.030		-0.119	-3.177	0.002	

#### IV. Discussion

The elderly in this group generally suffer from mild or above depression, with a vague and negative sense of meaning in life, and a less positive attitude towards aging, consistent with previous studies [38-43]. It is suggested that the mental health of the elderly is poor, and they lack a clear and positive understanding of the connotation, goals, and values of life [9]. They usually hold a pessimistic attitude towards elderly life, fail to effectively cope with the negative effects of physical and mental aging, and fail to explore and play the constructive role of elderly life in a reasonable manner.

The results of multiple linear stepwise regression showed that the total score of GDS-15 was negatively predicted by scores of 5 dimensions like pursuit of meaning in life (MLP), psychological attainment (PA), dealing with physical changes (DPC), experience of meaning in life (MLE), and psychological and social loss (LPF).

The sense of life meaning experience refers to an individual's perception of the completeness, purpose, and significance of life [44]. Individuals with a high sense of life meaning experience tend to go beyond trivial and fleeting events to understand life experiences, set meaningful life goals, use limited life energy to achieve the desired future, and experience that life is valuable. Therefore, experiencing the meaning of life helps to enhance an individual's sense of control over life and is an important resource for coping with stress. Lack of a sense of life meaning experience can easily make individuals feel empty and lonely. Further analysis shows that individuals with a high sense of life meaning experience a greater sense of meaning in their lives, which means they have played a role and made contributions in life,

achieved their life goals, and enjoyed the joy of life from the rich content of life. Related studies have shown that the sense of life meaning experience plays an important role in coping with stress, reducing pain, and promoting mental health [45-46]. On the other hand, a positive sense of life meaning experience can promote changes in an individual's lifestyle, allowing them to enjoy life with a more optimistic attitude, while also having a higher evaluation of their own abilities and values, thus experiencing higher life satisfaction [47].

Steger et al. [10] found that seeking the meaning of life plays a significant role in enhancing the sense of meaning in life during personal growth and development. If life is meaningless, individuals will face a dull and decadent life. Only by actively seeking the meaning of life can they obtain true happiness and satisfaction in this process, and also have a truly meaningful life. Frankl (1946/2006) further regards the pursuit of meaning as the most fundamental and important motivation of humanity, believing that seeking the meaning of life can enhance one's ability to survive in harsh environments [48]. This pursuit is not only a need for self-awareness and growth, but also an understanding and exploration of life itself. In the process of seeking the meaning of life, individuals need to re-examine the relationship between the present and the future, strengthen the sense of connection between the present and future self, and thus contribute to the improvement of self-continuity and life integrity. Through this pursuit, people can have a clearer understanding of their goals and values, and are more likely to gain more meaning and satisfaction in their future lives. Pursuing creative values is one of the important ways for individuals to discover the meaning of life, which is reflected in



engaging in valuable work, creating, or nurturing the next generation. The temporal model theory proposed by Kaufman (2018) [49] provides a good explanation of the possible pathways through which creativity affects the meaning of life. Based on the analysis of the three dimensions of the sense of meaning in life, he believes that creativity helps people to integrate and reflect on past experiences, and can enhance the coherence and completeness of life experiences; Based on the current experience, creative ideas or behaviors can increase positive emotional experiences, help establish better quality interpersonal relationships, and thus enhance the sense of life value and importance; In response to future experiences, creative contributions connect tradition and the future, enabling people to recognize the significance of inheritance and better plan their lives and careers, clarifying the purpose of life. Kaufman's theory [49] suggests that due to a significant decrease in various creative abilities of the elderly (including work innovation, creativity, or nurturing the next generation) compared to young people, their sense of life meaning experience and sense of seeking meaning also decrease.

This study also found that all the three dimensions of AAQ-CV significantly negatively predicted the total score of GDS-15, consistent with previous studies [50-52], suggesting the dominant role of aging attitudes in depression among the elderly.

The Knowledge Attitude Practice (KAP) is a widely applied behavioral intervention theory proposed by British scholar Cust G in the 1960s [53]. This theory emphasizes that knowledge and its acquisition ("knowledge") are the foundation of behavior change, while beliefs and attitudes ("belief") are the driving force behind behavior change. By acquiring knowledge and engaging in positive thinking, people's beliefs and attitudes will change, leading to changes in behavior; As the link between "knowledge" and "action", "belief" can change people's acquisition and storage of relevant knowledge, as well as their subsequent behavior. Taking healthy aging as an example, in order to cultivate correct behavioral habits and establish a healthy lifestyle for the elderly, it is necessary to first make them understand the physiological and psychological development laws of the elderly, clarify relevant problems, limitations, and potential, form a correct attitude towards aging, master scientific health management methods, so that they can form positive beliefs, develop conscious, voluntary, and positive behavioral habits, have a good health experience, improve their quality of life and subjective well-being, and ultimately alleviate negative emotions such as

depression and anxiety [54].

## V. Conclusion

In summary, the negative predictive effect of sense of meaning in life and attitude towards aging on depression in the elderly is established, confirming that low levels of sense of meaning in life and negative attitude towards aging are risk factors for depression in the elderly. The shortcomings of this study are that the included cases are all from Guangdong Province, and the research results are difficult to generalize to the whole country. Moreover, this study only conducted a cross-sectional survey, which can understand the correlation between the sense of meaning in life, aging attitudes, and depression in the elderly, and cannot prove the causal relationship among them. In the future, it will be considered to include longitudinal survey studies or randomized controlled experimental studies in various regions to demonstrate the causal relationship among the three and promote the conclusions of this study.

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