

**A PSYCHOSOCIAL MODEL OF GERIATRIC DEPRESSION:  
MEDIATING ROLES OF FAMILY SUPPORT AND  
CONFUCIAN COPING**



**Yajun Qiao**

**A Dissertation Submitted in Partial  
Fulfillment of the Requirements for the Degree of  
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## ABSTRACT

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| <b>Title of Dissertation</b> | A PSYCHOSOCIAL MODEL OF GERIATRIC DEPRESSION: MEDIATING ROLES OF FAMILY SUPPORT AND CONFUCIAN COPING |
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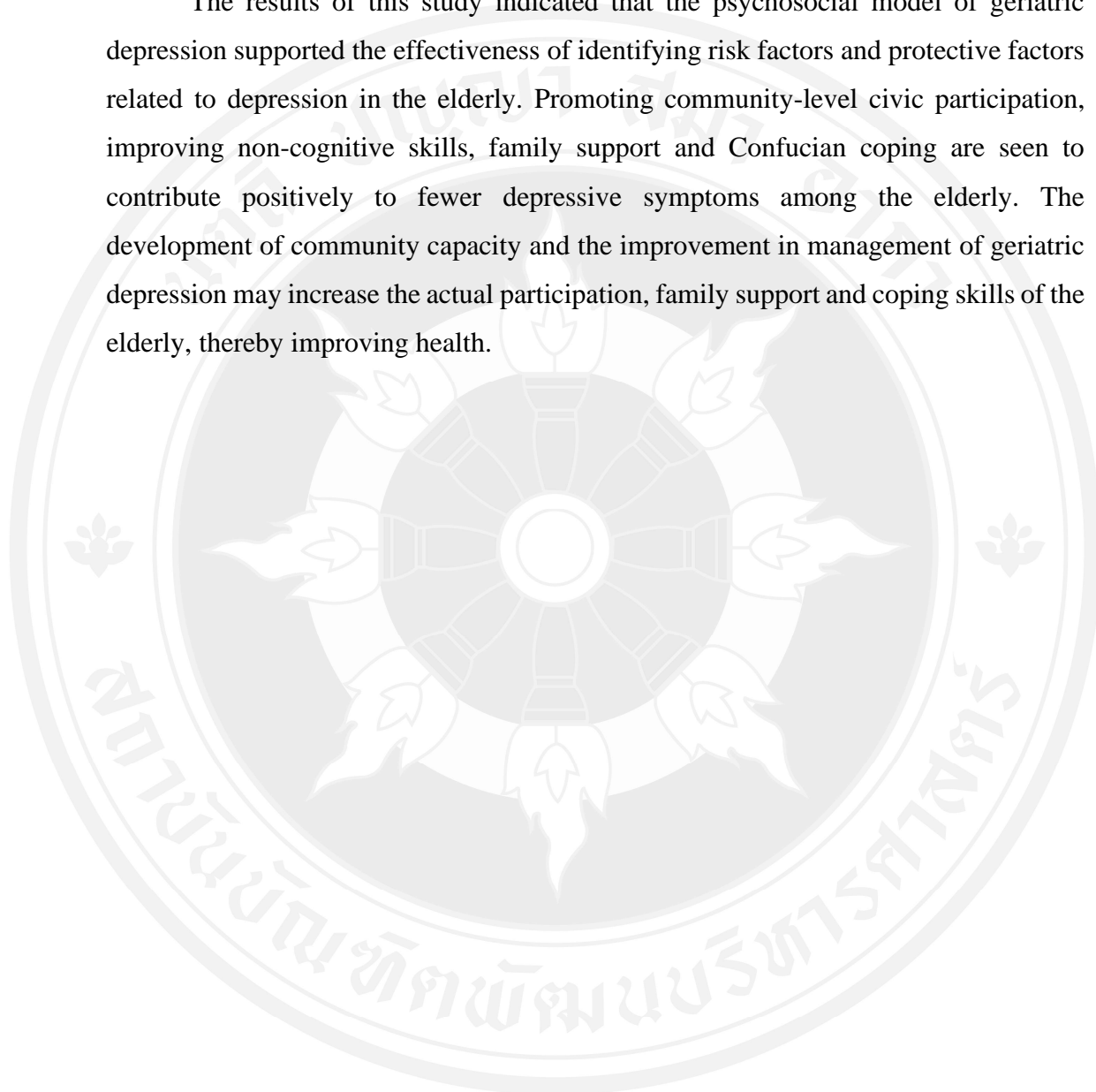
Geriatric depression is a serious public health issue worldwide, and also closely related to successful aging. With the intensification of the aging population in China, the issues in geriatric depression require more attention. This study aimed to further explore the relationship of psychosocial factors to geriatric depression from a holistic view, focusing on the impact of social resources, personal skills, coping styles on depression in Chinese older adults under influence of Confucian culture. Non-cognitive skills and Confucian coping variables which were rarely considered in previous studies were incorporated into a psychosocial model of geriatric depression. This study sought to fill the research gap in successful aging in terms of mental health, thus helping people obtain a more comprehensive understanding of geriatric depression and successful aging.

The data were collected via a community survey targeting 394 adults aged 60 and above living in urban communities in Beijing, Chengdu, and Zhengzhou, which are aging cities in China. SPSS and a structural equation model (SEM) were used for the analysis of data and model fit test. SEM was also used to answer the two research questions: To what extent do social capital and non-cognitive skills directly or indirectly relate to geriatric depression; to what extent do family support and Confucian coping directly or indirectly relate to geriatric depression.

The findings showed that civic participation, non-cognitive skills, family support, pro-setback thinking and responsibility thinking were significantly related to geriatric depression, respectively. Family support played a mediating role between civic participation and geriatric depression. Pro-setback thinking mediated the relationship between non-cognitive skills and geriatric depression. Responsibility thinking played a mediating role between non-cognitive skills and geriatric depression. Family support

and pro-setback thinking played a chain mediating role in the associations between civic participation and geriatric depression. Family support and responsibility thinking played a chain mediating role in the relationship between civic participation and geriatric depression.

The results of this study indicated that the psychosocial model of geriatric depression supported the effectiveness of identifying risk factors and protective factors related to depression in the elderly. Promoting community-level civic participation, improving non-cognitive skills, family support and Confucian coping are seen to contribute positively to fewer depressive symptoms among the elderly. The development of community capacity and the improvement in management of geriatric depression may increase the actual participation, family support and coping skills of the elderly, thereby improving health.



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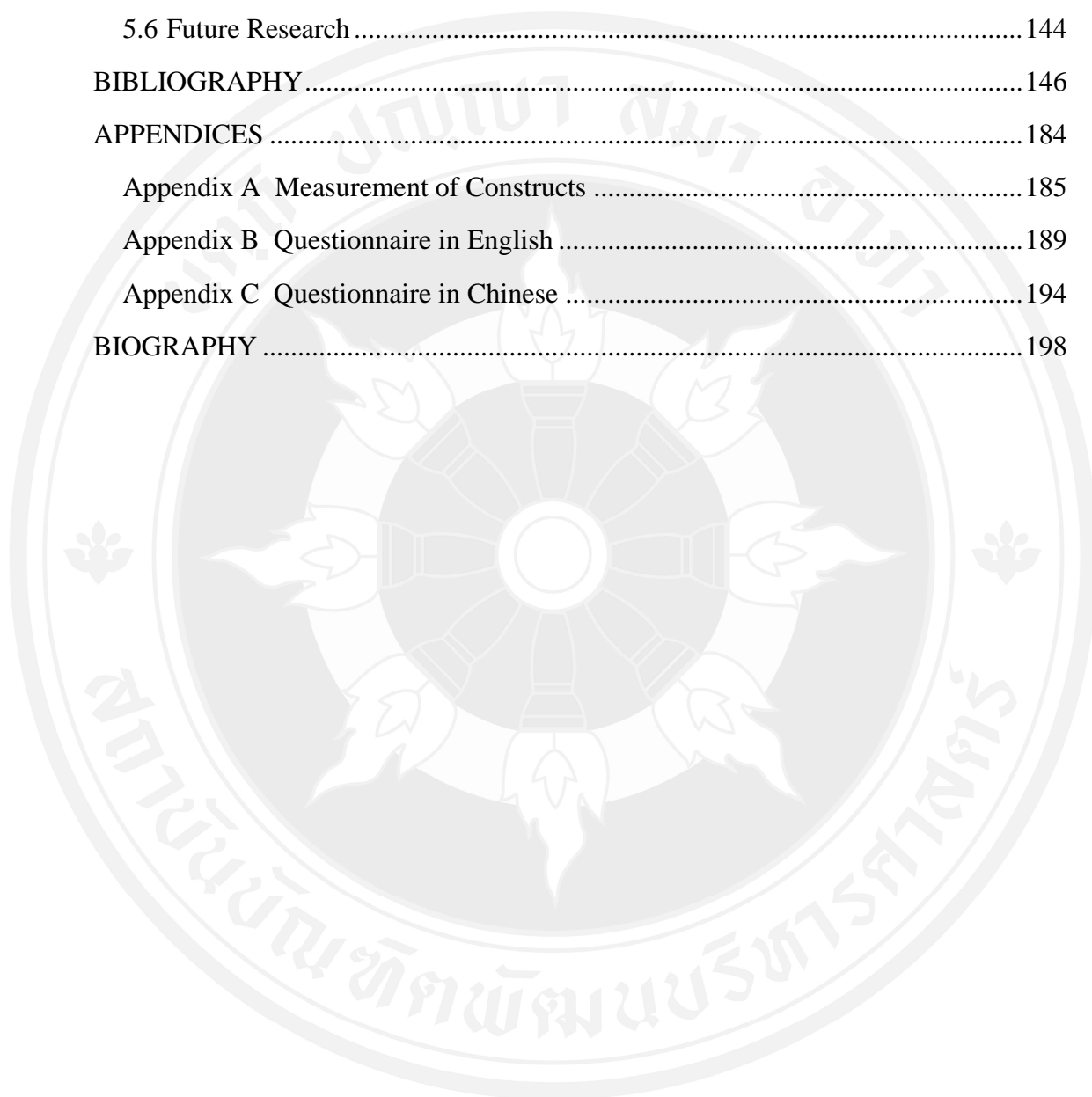
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# CHAPTER 1

## INTRODUCTION

### 1.1 Background Introduction

#### 1.1.1 Aging Population and Successful Aging

Aging population is one of the most important issues worldwide today. As the fertility rate decreases, life expectancy increases, and infectious diseases are effectively controlled (Wen, 2016), The global population of 60 years and above is growing at an unprecedented level in history. According to the latest estimates, by the middle of this century, the number of elderly people aged 60 and above will increase tremendously, reaching a total of about 2 billion, and accounting for 22% of the global population (Wen, 2016). Most of the spatial distribution of population growth over 60 years old will be occupied by developing countries in Asia (Polivka & Luo, 2017).

With the intensification of the aging population, the aging problem has attracted more and more attention from the society. Aging, as a trend in the development of the world today, affects various areas of public life (Ciutiene & Railaite, 2015). The areas affected by the aging process include: social security, healthcare system, education and employment, income distribution and savings, and intergenerational relationships (Čepinskis & Kanišauskaitė, 2009; Ciutiene & Railaite, 2015). At the same time, aging has also attracted great attention from policy makers and the academic researchers. In the last two decades, although academic research and policy discussions have focused on all these related topics, there are still many questions that have not been effectively answered (Angrisani & Lee, 2020).

As a developing country, China's aging population is increasing rapidly with the continued low fertility rate and low elderly mortality rate (Y. Xu et al., 2016). The percentage of older adults aged 60 and over through 2050, is estimated to reach a relatively high proportion of about 30% (Wen, 2016). The results of China's seventh

census shows that the total number of adults aged 60 years and over is 264.02 million in 2020, accounting for 18.70% of the total population (specifically, the total number of 65 years and above is 190.64 million, representing 13.50% of total population) (National Bureau of Statistics of China, 2021a). As the ageing population, the burden on elderly families will increase. At the same time, the cost of public medical system will continue to increase (Fang et al., 2020). Due to the transformation of social economic development and population reproduction from traditional style to modern style, population aging will become the norm in Chinese society, which is also one of the important indicators of social modernization (Zhan & Xizhe, 2011). China has the largest population among developing countries, and its aging development faces more challenges. These challenges include: An economic inequality between coastal and inland regions; A rapidly growing ratio of urban to rural population, and an increase in medical expenses for the aging population (Wen, 2016). The shortage of labor supply in the market and the overburden of pensions have become the dual dilemmas faced by the government. At the same time, high-quality elderly care services that can meet the diverse needs of the elderly are inadequate (Nan, Feng, Hu, & Qi, 2020). There is also insufficient government financial support for the development of community and home care services (Fang et al., 2020). In 2000, the 65-year-old population exceeded 7%, marking China's entry into an aging society. During the ten years from 2000 to 2010, the rate of population aging, and the rate of 287 cities entering aging cities accelerated, and increased from 49.8% in 2000 to 89.2% in 2010. Moreover, the large-scale internal migration of the population is the main factor affecting the regional differences in population aging (R. Chen, Xu, Li, & Song, 2018). In 2010, most areas of China have already entered an aging population. In 2010, except for urban areas other than the eastern coastal areas, the population ageing in majority regions of China was also distributed in northeast China and central and southwestern regions such as Sichuan, Chongqing and Hunan (Cheng, Gao, Li, Zhang, & Rosenberg, 2019).

Be faced up with the grim situation of accelerated aging, Chinese central government has formulated a series of plans and policies to deal with the problems caused by aging population (General Office of the State Council, 2011). As the world's fastest growing economy and the most populous country, China has attracted more and more attention from other countries facing similar aging problems. The changes in

population structure, family structure, and urbanization brought about by aging have a huge impact on economic growth, social welfare and other public welfare, and elderly care services. How to balance aging population and economic development requires innovative strategies, and it also provides challenges and opportunities for China. As a complex and dynamic collaborative process, the management of aging population needs to focus on multifaceted wisdom and innovation (Z. Feng, 2019; N. J. Zhang, Guo, & Zheng, 2012), to explore effective aging models and their successful experiences.

Successful aging research provides a reference for aging population management. The concept of successful aging involves some basic issues of aging, and has played a central role in public discussions about aging population for more than two decades (Bulow & Soderqvist, 2014). Rowe, & Kahn proposed three necessary components for successful aging in 1997, which include a state of low incidence of disease, good physical and mental function and energetic participation in life (Rowe & Kahn, 1997). In Rowe and Kahn's latest statement in 2015, successful aging has a broader meaning, including three main parts, such as low risk of disease and low disease-related disability, maintaining high mental and physical function, continuing to participate in life including relationships with others and paid or voluntary production activities (Mitra & Brucker, 2020; Rowe & Kahn, 2015).

Successful aging is one of the most successful ideas in aging related research. It is used as a research model and concept, research methods and experience. Around this concept, researchers have launched many discussions and researches on healthy aging, active aging, positive aging, and productive aging. Based on the challenge to the declining senileism tradition, successful aging is considered to be a measure of the satisfaction and ideal life state of old age (Katz & Calasanti, 2015).

Medical research shows that with the increase in life expectancy, more and more elderly adults will live in health conditions with restricted functions (Katz & Calasanti, 2015; Mitra & Brucker, 2020), and thus fail to meet the conditions of successful aging. There are many criticisms of the successful aging model in the academic circles and extensive discussions on it. It is generally believed that the number of people involved in successful aging is limited, and people with poor health and functional limitations have not considered how to age; There are too few subjective factors considering about

successful aging; Other extensions to the model are required, and a more comprehensive definition of successful aging should be made (Katz & Calasanti, 2015; Mitra, 2017; Mitra & Brucker, 2020; Tesch-Romer & Wahl, 2017). Now, further research on successful aging is needed in the academic world. Not only the aspects of success, but the aspects of unsuccessfulness need to be considered, and reference can be provided for the research, policy and practice of the diverse experience of aging.

Physical and mental health plays a significant role in successful aging. Studies shows that unsuccessful aging is most closely associated with depression (Golja, Daugherty, & Kavcic, 2020). Mental health is one of the main factors that determine successful aging. In order to promote health and successful aging, public policies and programs related to aging management should focus on mental health and depression (Dahany et al., 2014; Shen, 2014).

### **1.1.2 Causes and Management Strategies of Geriatric Depression**

As a type of mental disorder, geriatric depression seriously affects the health of the elderly. In the past three decades, depression has become one of the three main causes of non-fatal health loss worldwide (James et al., 2018). Geriatric depression has become a serious public health problem worldwide because it leads to increased medical expenses and mortality (Vanoh, Shahar, Yahya, & Hamid, 2016).

The World Health Organization (WHO) ranks depression as the largest contributor to disability globally (7.5% of all disabled people in 2015). Depression is also the leading cause of suicide deaths, with nearly 800,000 suicide deaths per year (World Health Organization, 2017). Depression and dementia are the main mental health disorders for the elderly in China (Fang et al., 2020). From 1987 to 2012, the prevalence of geriatric depression in China was 23.6% (D. Li, Zhang, Shao, Qi, & Tian, 2014). A study has shown that the average prevalence of geriatric depression in China from 2010 to 2019 was 25.55% (Rong, Ge, Meng, Xie, & Ding, 2020). The prevalence of depression in China in those aged 60 and above is much greater than in other East Asian countries, and the development of depression has been on the rise over the past 30 years (Lei, Sun, Strauss, Zhang, & Zhao, 2014).

There are many factors that impact on geriatric depression. Many research indicates that social capital is closely related to mental health. Social capital refers to



the resources and benefits we obtain in the form of individuals or groups, through our connections with others (Rodgers, Valuev, Hswen, & Subramanian, 2019). Social capital as a theoretical concept which entails civic participation, social cohesion, reciprocity (Saito et al., 2017). There is a significant correlation between cognitive social capital (including interpersonal trust and reciprocity) and depressive symptoms in Korean elderly (Han et al., 2018). Strong neighborhood cohesion can prevent geriatric depression in Japan (Murayama et al., 2015). Community-level civic participation is related to the lower prevalence of depression in men and women. Promoting community activities may be an effective intervention to benefit the mental health of vulnerable groups (Nakagomi, Shiba, Hanazato, Kondo, & Kawachi, 2020).

Chinese elderly living in a economically disadvantaged situations are more prone to suffer from depression, and older adults living in rural areas are more prone to suffer from depression than urban residents (Y. Xu et al., 2016). From the perspective of living conditions, empty nester elderly who have no children or whose children have left the home and thus live alone or with their spouse or older parents (Long & Martin, 2000; H.-H. Zhang et al., 2020), have a higher prevalence of depression than non-empty nester elderly in China (H.-H. Zhang et al., 2020). The present studies conducted in developed countries found that geriatric depression was significantly higher among older urban residents, as opposed to older rural residents. While the present studies conducted in developing countries found that geriatric depression was not significantly higher among older urban adults than older rural residents. It is also possible that the increasing prevalence of geriatric depression in rural China could be the result of an “empty nest” trend, in which the children of rural elderly are leaving their home to work in cities at a faster rate, resulting in elevated prevalence of depression in the rural elderly (Purtle et al., 2019). Older adults living in economically disadvantaged conditions in China are more prone to depression (Y. Xu et al., 2016). Research also found that the combined prevalence of depressive symptoms in Chinese elderly women is relatively high additionally, and married elderly people has a lower prevalence of depressive symptoms than single older adults (including divorced, unmarried, or widowed). The higher the education level, the lower the prevalence of depression in the elderly. Different measurement tools can also affect the prevalence of depression (D. Li et al., 2014).

In addition, poor physical fitness, functional limitations, poor social support, lack of religious activities, chronic diseases, as well as loneliness and personality abnormalities are risk factors for geriatric depression (Blazer, 2003; Cole & Dendukuri, 2003; Konda, Sharma, Ganguly, & Gandhi, 2019). Personality-related diseases are one of the risk factors for geriatric depression. The neurological symptoms of moodiness are closely related to geriatric depression (Chien, Ko, & Wu, 2007).

Different cultural groups have different conceptual cognitions and coping styles of depression (Karasz, 2005). The traditional Confucian concept of mental health has a significant impact on the mental health of Chinese people (K.-S. Yip, 2003). For Chinese immigrants in the United States, the influencing factors of depression in the elderly are more complex. Culturally appropriate interdisciplinary methods to improve the quality of life and care are crucial for geriatric depression (Dong, Chang, & Simon, 2011). It is helpful to discover and solve the existing problems in aging management by considering these influencing factors of geriatric depression.

Studies have shown that stressful events can also cause depression in the elderly. The elderly's fears of dependence on family members can cause stress and affect their geriatric depressive symptoms (Shibusawa & Mui, 2002). Increased stress brings more risks of depression. Older adults with more high-quality coping resources are more likely to adopt the most appropriate way to combat stressors and reduce the occurrence of depressive symptoms (Trouillet, Gana, Lourel, & Fort, 2009). Developing community organizations and improving community administration is conducive to the mental health of middle-aged and elderly people in China (Shen, 2014). The social capital, social support, sociodemographic factors, personality, and cultural psychology mentioned above as individual coping resources to cope with stress Folkman et al. (1991) may affect geriatric depressive symptoms. These factors may also affect the management of geriatric depression.

The management issues in geriatric depression is part of mental health services. As a developed country, the United States is at the forefront of resolving mental health and other major policy issues for the elderly. As early as November 1999, the working group of the American Association of Geriatric Psychiatry (AAGP) decided to develop research on geriatric mental health services into a scientific discipline. The resulting consensus summarized the principles guiding mental health services to study elderly mental disorders, clarified the focus of thematic surveys that benefit the lives of the elderly and their families, and clarified a systematic plan to expand the supply of mental health services (Borson, Bartels, Colenda, Gottlieb, & Meyers, 2001). With the emphasis on geriatric depression, the United States believes that many health care and mental health problems, including depression in the elderly, cannot be dealt with only through research and education. It can be solved only through large-scale policy reforms within the country or even globally. Under this premise, the Health and Aging Policy Research Fellow (HAPF) training program was established in 2008. The goal is to cultivate a team of leaders with skills, experience and networks to influence policies and solve problems such as geriatric mental health (Pincus, Spaeth-Rublee, & Pike, 2019).

According to the results of the mental health survey conducted by the World Health Organization (WHO) in 17 countries in 2007, the use of mental health services by middle-aged and elderly people is relatively low, which is more pronounced in developing countries. There is widespread mismatch between existing mental health resources and treatment needs (Guo, Kong, Fang, Zhu, & Zhang, 2021; P. S. Wang et al., 2007). China officially incorporated mental health into public health in 2004, but the management and development of mental health service system still faces many challenge (J. Liu et al., 2011). In order to address these problems, China has embarked on a number of activities, such as the recently completed 10-year medical reform plan, the implementation of the China Health 2030 Action Plan, and the opening of the National Clinical Research Center for Geriatric Diseases to strengthen research (Fang et al., 2020).

Although geriatric depression is more serious in China, the research and provision of policies and services have failed to keep up with the demand for defense and treatment. Many people have studied the successful aging model and the problem

of geriatric depression, but most of them discuss the problem of geriatric depression from some aspects such as social capital or social support. In view of the deficiencies of the existing research, comprehensive knowledge of medicine, psychology, sociology, management and other disciplines is required to study issues of geriatric depression, and more perspectives are adopted to study successful aging. It will contribute to build a more holistic successful aging model as well as increase more public discussions and has higher predictive value. In the long run, better prospects brought about by these studies will allow more older adults to experience successful aging (Jopp et al., 2015), and prevent geriatric depression or other problems of unsuccessful aging.

This study started with social resources and personal skills possessed by the elderly, and combined coping styles to study the impact of these variables on geriatric depression, and consider adding some psychosocial variables and some effective measurement methods. In addition, the authors of this study also assessed the influence of sociodemographic variables as control variables on depression in the elderly. From the perspective of preventing unsuccessful aging, this study explores how to reduce depression in the elderly, lower the negative effects of aging, and provide more beneficial experiences for aging management.

## **1.2 Problem Statement**

Based on the background of aging population and geriatric depression, a more comprehensive view was hoped to provide an understanding of geriatric depression in China. Risk factors of geriatric depression not only affect successful aging of the elderly, but also brings challenges to public health management.

According to successful aging research, we can better understand how to promote successful aging from the perspectives of personal characteristics, social culture, environmental characteristics, and life course. The results of these studies are very important for us to identify interventions to improve the quality of life of the elderly (Hicks & Siedlecki, 2017; Kok, Aartsen, Deeg, & Huisman, 2017; Mejia, Ryan, Gonzalez, & Smith, 2017; R. Pruchno & Carr, 2017), and are also conducive to prevent adverse consequences such as geriatric depression.

Individual social resources can impact on the occurrence of geriatric depression. As a type of social resources, social capital refers to the resources and benefits in the form of individuals or groups that we obtain from social connections (Rodgers et al., 2019). Community-level social capital may positively affect the symptoms of depression in the elderly (Nakagomi et al., 2020; Yamaguchi et al., 2019).

Communities are the main area of life and activities for the elderly. Community level social capital plays an important role in life of older people. Communities with rich social capital can have greater influence on government decision-making, so that the communities where they live have obvious advantages in accessing public health care services. In terms of information dissemination, health information or positive emotions are easier to disseminate in communities with high levels of social capital. Meanwhile, communities with high levels of social capital and safety, the elderly may have less psychological stress and depressive symptoms (Kawachi & Berkman, 2014; Nakagomi et al., 2020; Yamaguchi et al., 2019). Besides social capital, geriatric depression is closely related to individual non-cognitive skills.

Non-cognitive skills, as a range of personal characteristics and skills, are believed to increase the chances of success and happiness. Studies have shown that non-cognitive skills are related to individual success, subjective well-being, and the health of the elderly in both cross-sectional and longitudinal analyses (Steptoe & Jackson, 2018; Andrew Steptoe & Jane Wardle, 2017). Studies also found that the level of non-cognitive skills in adolescence plays an important role in their later health status (Atkins, Turner, Chandola, & Sutton, 2020). Therefore, non-cognitive skills may be an important protective feature in the life course of the individual, and it has value in terms of policy to improve health inequality (Carter, Richards, Hotopf, & Hatch, 2019). Currently, there are few empirical studies on non-cognitive skills related to geriatric depression, and there is little research in this area in China. In addition to non-cognitive skills, geriatric depression is also closely related to the process of individuals coping with problems. Coping is one of the main factors affecting depression (Folkman, Lazarus, Dunkel-Schetter, DeLongis, & Gruen, 1986). The cultural background also affects individual coping style and depressive symptoms in the elderly.

Culture can be regarded as a social determinant of mental and behavioral health for its impact on individual's mental health. Social cultural factors also affect how people understand, experience and solve health problems (R. D. Campbell & Long, 2014; Murray, 2015). China has a long history of family values based on Confucian culture, and this culture promotes a close relationship between children and parents. It is helpful to maintain vitality and optimism of the older members through intergenerational ties formed in this close family bond (Wen, 2016). At the same time, people from different cultural backgrounds have unique ways of coping with problems and stress. Chinese people are deeply influenced by Confucianism. Exploring the impact of coping styles on geriatric depression from the perspective of Confucian culture are very useful for Chinese people, which can provide them with effective thinking methods to cope with setbacks and difficulties from traditional culture (T.-r. Li & Hou, 2012).

Confucian coping is the coping thinking that Chinese exhibit when facing difficulties and setbacks, which focuses on three dimensions: fate thinking, pro-setback thinking, and responsibility thinking (T.-r. Li & Hou, 2012; Lihua, Gui, Yanghua, Liqiong, & Jian, 2017). There are very few quantitative studies on Confucian coping in China currently, and most of them believe that Confucian coping is beneficial to the mental health of Chinese people, while few of them think that fate thinking is negatively related to depression (T.-r. Li & Hou, 2012; Lihua et al., 2017). In addition, some researchers believe that with the rapid development of industrialization and urbanization, the pace of Chinese life has also been accelerating. The protective effect of traditional culture on geriatric depression is weakened by the Shrinking family structure and impaired family functions (Lei et al., 2014; D. Li et al., 2014).

Because depression was one of the important issues stressed on, this research focused on how Confucian coping styles affect the high incidence of depression in Chinese elderly, therefore managers can make policy adjustments to cultural factors related to geriatric depression. On the other hand, the concept of health and disease influenced by culture has a great influence on individuals seeking help and coping. Compared with other aspects such as structural factors, cultural factors have received less attention in research (R. D. Campbell & Long, 2014). In particular, different cultural backgrounds have different influences. this research is hoped to add the content

about Confucian coping.

Most of the definitions of successful aging in previous studies are based on the fact that the elderly without disabilities, and less consideration is given to the influence and role of psychosocial variables (Amin, 2017). In view of the insufficient research on successful aging and geriatric depression, future research needs to incorporate social and psychological factors in the current and future needs of older adults. Research should focus on diseases as well as improving the internal abilities of the elderly. The psychosocial functions of the elderly and the broader environmental background should also be focused on to improve the life quality (Bulamu, Kaambwa, & Ratcliffe, 2018; Kadu, Ehrenberg, Stein, & Tsiachristas, 2019; Path-Theta Collaboration, 2013; Rudnicka et al., 2020).

Based on the above mentioned, this study focused on the impact of individual social capital, personal skills, social support and coping styles on geriatric depression in China under the influence of Confucian culture. A model of holistic evaluating the psychosocial factors of geriatric depression will be produced by this study. In particular, the gap will be filled by community-level social capital, non-cognitive skills, Confucian coping these variables lacking in previous successful aging models, and more research is hoped to focus on these variables that have potential long-term effects.

This study investigates social and psychological factors influencing the Chinese geriatric depression serves a very important role for further research, as well as provides a reference for solving the problem of geriatric depression. At the practical level, it is necessary to consider the actual needs of the elderly in many aspects. Government, non-governmental organizations, private organizations, communities and families should coordinate the efforts and provide comprehensive medical and social services. The research results also provide references for policy formulation, project expansion, service and industrial planning in aging population management.

### **1.3 Research Objective**

This dissertation aimed to explore the relationship between social factor and psychological factors and geriatric depression. In view of research issues related to geriatric depression, this study drew on the beneficial experience and results of successful aging to promote a more positive view of geriatric depression in China. The factors affecting successful aging include both objective and subjective factors (R. Pruchno & Carr, 2017; R. A. Pruchno, Wilson-Genderson, & Cartwright, 2010). In addition to social capital and non-cognitive skills impacting on geriatric depression, psychosocial factors such as family support and Confucian coping, also affect geriatric depression.

Based on the theory of successful aging, a holistic psychosocial model of geriatric depression was produced to expand the relationship between individual social resource factors, personal skills factors, and geriatric depression. This research focused on exploring the influence mechanism of social capital, non-cognitive skills, family support, and coping styles on geriatric depression under the influence of Confucian culture. The results from this study were hoped to provide reflections and suggestions on the social issues such as reducing the suicide rate and the burden of chronic diseases caused by geriatric depression in the depression management for an aging population. Therefore, this research aimed to explore the impact of family support and Confucian coping on the prevention and control of geriatric depression from the perspective of social capital and non-cognitive skills. to provide a theoretical basis for the management of geriatric depression in the future. It was hoped that a comprehensive psychosocial model of geriatric depression based on the theory of successful aging will be formed.

### **1.4 Research Questions**

It is very important for understanding and helping the elderly to age well by studying the factors that affect geriatric depression. This study investigated social and psychological factors that lead to the occurrence of geriatric depression mainly from two aspects of social resource and personal skills factors. How these social and psychological factors affected geriatric depression and to what extent of the influence



were discussed and identified in this study. Moreover, recommendations for the management of geriatric depression was also provided in this study. According to research problem statement and research objectives, the question to be proposed was what is the relationship between individual social capital as social resource factors, non-cognitive skills as personal skills factors, and geriatric depression as dependent variable? What are the roles that family support and Confucian coping play in this influencing relationship, and what is the impact on management?

There were four aspects of questions in the research to be answered:

- 1) To what extent are individual social capital and non-cognitive skills related to geriatric depression in China? What are the specific influence of social capital and non-cognitive skills on geriatric depression in China?
- 2) To what extent is family support related to geriatric depression in China?
- 3) To what extent are coping styles related to geriatric depression in China under the Confucian cultural background?
- 4) How does the relationship between social and psychological factors and geriatric depression affect the management of geriatric depression?

## **1.5 Scope of the Research**

This research focused on studying both individuals social capital (civic participation, social cohesion) and non-cognitive skills that determine geriatric depression in China. It also studied how family support and Confucian coping (fate thinking, pro-setback thinking, responsibility thinking), directly or indirectly impact on geriatric depression in China.

On the other hand, according to these influencing factors, effective policy interventions can be realized in the aging management. Public policies should address the diversity of health problems experienced by the elderly, enhance coping strategies, maximize the number of successful aging populations to reduce the proportion of geriatric depression. The management integration plan requires more effective actions at the macro level (legislation, funding), meso level (improvement of the environment) and micro level (clinical, education and training) (Rudnicka et al., 2020).

The data were collected via a community survey targeting 394 older adults living in urban communities in Beijing, Zhengzhou and Chengdu, which are three representative of Chinese cities with an aging population in eastern, central and western China. Regarding the definition of old age, society and academia usually tend to see the government's "pension age" or "retirement age" as the demarcation standard between adulthood and old age. Therefore, most public statistics on pensions regard 60 and 65 as synonymous with retirement age. Many medical and physiological studies on the elderly also consider people over 60 and 65 years old as old age (Roebuck, 1979). In many community-based studies of geriatric depression, adults aged 60 and older are considered as older adults (Das Gupta, Kelekar, & Rice, 2020; J. Liu, Li, Zhang, & Xu, 2016; Sahni, Bala, Kumar, & Narangyal, 2020; Sherin Susan Paul et al., 2019). Since 1950, China has implemented a compulsory scheme to regulate retirement age, in which the retirement age is 60 for men, 55 for female professionals and cadres, and 50 for the rest of the female workers. No substantial changes during the past three decades (Q. Feng, Yeung, Wang, & Zeng, 2019). Therefore, this study took adults 60 years and older as the elderly in the survey.

## **1.6 Implications of the Study**

### **1.6.1 Theoretical Implications**

From an academic point of view, this study not only attempted to verify the factors that influence the mental health of successful aging, but also provided a perspective on the internal impact mechanism of aging regarding this issue. This study was also an empirical one which was launched to explore the relationship between social and psychological factors and geriatric depression. At the same time, in this research, based on the theory of successful aging, a multi-dimensional psychosocial model of geriatric depression was constructed from the relationship between social capital, personal skills, social support, coping styles and depression in the elderly. Social capital (including civic participation, social cohesion), non-cognitive skills, family support, Confucian coping (including fate thinking, pro-setback thinking, and responsibilities thinking), and geriatric depression are incorporated into the conceptual model. This study made up for the lack of personal skills and cultural influence

variables in China's research in this area, as well as provided interdisciplinary exploration and more comprehensive and novel perspectives. The field of geriatric depression management and aging research was enriched and expanded through focusing on the improvement of individual social resources, and the development of personal skills and psychology.

In the theoretical framework of successful aging, this study established a connection between social participation and mental health, which are important factors in successful aging, and formed specific impact mechanism of social capital, including social participation affecting mental health and depression through family support and Confucian coping. At the same time, the influence of non-cognitive skills on mental health and depression was considered. The research increased the dimensions of successful aging research, and also expanded the research on the internal impact mechanism and development of successful aging. This research not only considered the important influence of social resource and personal non-cognitive skills of older adults, but also analyzed the family influence of the Chinese elderly and the impact of the Confucian cultural background, which further enriched the research content of geriatric depression and successful aging.

Moreover, due to the global impact of aging population, people have not yet had a clear understanding of aging-related issues such as geriatric depression. This research also expanded the research of successful aging on mental health and depression in the elderly, and raised awareness for helping people address the challenges of aging. At the same time, it also provided a reference for the research and management on an aging population and geriatric depression. People in different cultural backgrounds have different perceptions and evaluation criteria for successful aging (Q. Feng & Straughan, 2017), and also have different understandings of geriatric depression. Furthermore, In China, research on geriatric depression is far less than in developed countries, and there are research gaps. Conducting research in this area will help us to deepen understanding these issues of depression and successful aging of Chinese elderly.

### **1.6.2 Practical Implications**

The empirical findings of this study highlighted the influence of these social and psychological factors including individual social capital, non-cognitive skills and family support, Confucian coping. The Chinese government attaches great importance to the issue of aging and has taken corresponding measures to support the development of the elderly. This research provided empirical research support for the management and practice of aging, and also provided reference value at the practical level. For managers, more attention will be promoted to focus on the needs and realities of the elderly through geriatric depression research in the field of aging management. A supportive environment that promotes successful aging will be created and community cohesion will be strengthened in aging management. A platform for participation and psychological care is provided, and the support system is also consolidated by management agency. Furthermore, management department will pay more attention to the cultivation of non-cognitive skills to improve the education level of the whole society, strengthen the construction of social security, thereby prevent the occurrence of geriatric depression.

For the elderly, this study can help older adults to correctly understand geriatric depression, adjust their mentality, thereby adapt to various new situations. Geriatric depression research can not only support the elderly to achieve better aging, but also promote the efforts of the elderly family members to build good family relationships, meet the needs of the elderly family members, and assist them to achieve autonomy or independence. Research can also help young people pay attention to the development trend of aging, find more opportunities in learning and entrepreneurship, and prepare for successful aging as soon as possible.

## **CHAPTER 2**

### **LITERATURE REVIEW**

In this chapter, the social and psychological factors associated with successful aging will be discussed. Firstly, this research gave new thinking about successful aging. The need for unsuccessful situations such as depression in successful aging research was also considered. Secondly, this study had a new understanding of the late stage of life-old age, and introduced the characteristics of depression, the risks of old age and global statistics. Research had clarified and reviewed the research progress of geriatric depression and proved the complexity of the causes of depression and the specific management of geriatric depression. Thirdly, the researcher reviewed the relevant literature on social capital and non-cognitive skills factors that affect depression in the elderly. It provided a new direction for the prevention and management of geriatric depression. Fourth, this study reviewed the relevant literature on family support and Confucian coping that affect depression in the elderly, showing the importance of these social and psychological factors to the mental health of the elderly. Finally, based on the literature review, a psychosocial model and research hypothesis of geriatric depression were proposed.

#### **2.1 Successful Aging and Influencing Factors**

The theory of successful aging believes that in the process of aging, the low risk of disease and the low disability associated with the disease, good physical and mental health, and actively participating in life, are the critical success factors (Rowe & Kahn, 1997, 2015). With the development of society, the advancement of medical technology, and the continuous improvement of social pension benefits, it is possible for the elderly to have a higher quality of life. The classic theoretical successful aging model needs to consider more aspects in order to adapt to today's society. As a measure of mental

health, geriatric depression has become an important aspect that impacts on successful aging.

Many studies on successful aging have contributed to useful thinking. Some studies have added the influencing factors of mental health, spirituality, and financial security to the model. Among them, mental health is measured using criteria for measuring geriatric depression. Moreover, social cultural influences and experiences are also incorporated into the model, which provides a more comprehensive understanding of successful aging (Iwamasa & Iwasaki, 2011). Reducing the probability of depressive episodes plays a significant role in promoting successful aging, and its role in successful aging may be as important as reducing the effects of physical disability (Jeste et al., 2013). The proportion of older persons were ageing successfully among all the elderly also varies across countries. A comparative study of differences in successful ageing across Asian countries found that rates of successful ageing were highest in Japan and lowest in China, which used a measure of depression as a measure of mental health (Nakagawa, Cho, & Yeung, 2021). Another comparative study on the rate and influencing factors of successful ageing in China and South Korea also found that the rate of successful ageing in China was significantly lower than that in South Korea (Q. Feng, Son, & Zeng, 2015). It can be seen that the successful aging of China requires the government to coordinate the joint efforts of multiple departments to ensure that more elderly people have a satisfying life in old age. Successful aging is strongly associated with geriatric depression as well as social capital.

Social capital can positively affect successful aging of the elderly. Participation in sports activities, trust, security, and neighbor relationships significantly impact on wellbeing among older adults (A. C. H. Kim, Ryu, Lee, Kim, & Heo, 2020). Personal social capital, community social capital, and social cohesion may affect elderly happiness and successful aging (Cramm, van Dijk, & Nieboer, 2013). Social participation is not only positively associated with physical and mental health, but also a key factor for successful aging (Douglas, Georgiou, & Westbrook, 2017). Some recent studies have emphasized the influence of community capacity on successful aging. The personal level of community capacity refers to the ability of individuals to support local schools and participate in community activities by investing money or time to promote community development. Community capacity is also an important

resource for active aging of the elderly (J. Kim et al., 2020). Besides successful aging, social capital may directly or indirectly affect depression in the elderly (Cao, Li, Zhou, & Zhou, 2015). The successful aging theory believes that continuous participation in social activities or production activities plays a key role in successful aging. While less pleasure during activity and reduced social participation are characteristic manifestations of depression. Therefore, geriatric depression is an important obstacle to successful aging (Paulson, Bowen, & Lichtenberg, 2011).

Non-cognitive skills can affect successful aging (Roanova, Noulas, Southwick, & Pietrzak, 2015). there are few studies that incorporate non-cognitive skills or personality traits into the framework of successful aging models. Non-cognitive skills or personality traits may reflect the effects of potential disease mechanisms on health (Eaton et al., 2012). Emotional stability and optimism are conducive to aging, and personality intervention may be beneficial to the sustainable well-being of the elderly (Pocnet, Popp, & Jopp, 2021). Non-cognitive skills, social participation and healthy behaviors are also key factors for successful aging. Preventive measures regarding these factors may help promote successful aging (Roanova et al., 2015). Individual non-cognitive skills are also important influencing factors of geriatric depression (A. Steptoe & J. Wardle, 2017).

Social support also plays an important role in affecting geriatric depression and successful aging of elderly (Sharma, 2020). Due to the decline in physical health, insufficient social support can affect successful aging of the elderly (Howie, Troutman-Jordan, & Newman, 2013). Different regions and cultures have different perceptions of the impact of social support. Asians attach great importance to family relationships, and family relationships play an important role in the successful aging of Asian elderly. Family support is also critical to the successful aging of elderly (Q. Feng & Straughan, 2017). Furthermore, it is also necessary to consider and refine the connotation and meaning of successful aging from a different cultural perspective (Martinson & Berridge, 2015). Successful aging has been criticized by the academic community for emphasizing independence, control, and positive state of the individual and ignoring senescence and death as limitations of old age (Lamb, 2014). How to deal with the limitations and dilemmas of old age is also one of the important concerns of successful aging. Some studies with emphasis on coping style and culture, add positive coping

factors to the successful aging model (Ouweland, de Ridder, & Bensing, 2007). Effective coping is a crucial factor for successful aging (Rowe et al., 2010), however people may choose different coping styles in different cultural backgrounds (Bailey & Dua, 1999; Bhagat et al., 2010). Culturally influenced coping styles can affect not only successful aging, but also mental health and geriatric depression (Trouillet et al., 2009).

In summary, social capital, non-cognitive skills, family support, and coping styles affect not only successful aging but also mental health and depression. Successful aging is an important thought influencing global public policy, and it is closely related to the mental health and depression of the elderly. How to achieve successful aging and reduce failures requires attention to geriatric depression in both research and management.

## **2.2 Old Age and Depression**

### **2.2.1 Old Age**

As people grow older, people will experience different stages from family life, education, occupation to retirement and eventually death. Age is regarded as the main criterion for the entry or exit of people's roles in society (Clarke, Marshall, House, & Lantz, 2011). Many studies consider people over age 60 or 65 reaching retirement age as seniors (Roebuck, 1979).

Old age is a part of the life course. In *On Old Age*, Cicero believes that old age is considered unhappy because older adults have too weak body to engage in active work, and have lost all sensory pleasure as well as face the threat of death. He also believes that the course of life is fixed and that each stage of our life has its own characteristics, therefore, each stage has certain natural advantages. Old age is not only the decline of life, but also has the advantage of wisdom. People should use this advantage appropriately (Cicero, 1884). Furthermore, old age marks the boundaries of life, it can become an important part of life. Also, old age can shine on the elderly and achieve happiness (Agronin, 2014).



### 2.2.2 Depression

Mental health is generally considered to be the main health issue, and depression is an important part of hindering mental health. Depression is characterized by sadness, loss of interest or pleasure, guilt and low self-esteem, sleep disturbance, loss of appetite, fatigue, and difficulty concentrating. Depression may persist or recur, severely affecting the individual's ability to work or daily life. Depression includes two main categories, which are major depression and depressive episodes (World Health Organization, 2017). Depression may increase the risk of illness with age. The later life is characterized by role withdrawal, decline in physical function and decreased sense of control, and so forth, especially the increase in the average level of depression in the elderly, which brings challenge to individual mental health (Mirowsky & Ross, 1992).

The World Health Organization reported that in 2015, globally, an estimated 322 million people suffered from depression, which is equivalent to 4.4% of the world's population. Among them, women accounted for 5.1 and men accounted for 3.6%. Compared with men, women are more prone to depression. In terms of age characteristics, the prevalence rate reaches its peak in the middle-aged and elderly stages (55-74 years old). Among them, women are higher than men, with 7.5% for women and 5.5% for men (World Health Organization, 2017). In the regional distribution of depression, in 2015, nearly half of the total number of people suffering from depression in the world lived in Southeast Asia and the Western Pacific. This data reflects the relatively large population prevalence ratios in these two regions. In particular, countries with large populations such as India and China have more patients. Between 2005 and 2015, the global proportion of people suffering from depression showed a clear upward trend, with the total number increasing by 18.4% (T. Vos et al., 2016). This trend reflects not only the overall increase in the population suffering from depression, but also the increase in the number of the middle-aged and elderly people who are in the vulnerable age group. Depression led to a global share of more than 50 million people with disabilities in life insurance (YLD) in 2015 in terms of the burden of non-fatal diseases. Among them, the highest incidence occurred in low- and middle-income countries, with more than 80%. The World Health Organization's global statistics on depression are the basis and an important part of countries' effective health policies formulation and rational planning and evaluation in management (World

Health Organization, 2017). Therefore, It is necessary to pay attention to the problem of depression, especially to examine the risk and protective factors of depressive symptoms in vulnerable elderly populations.

### **2.2.3 Geriatric Depression and Influencing Factors**

Geriatric depression is a type of mood disorder of the elderly, including depression, sadness, crying, hopelessness, helplessness and sense of worthlessness, as well as the destruction of sleep, appetite, thinking and energy levels. If these symptoms occur for more than two weeks and interfere with daily life, they are classified as depressive episodes (Brown, Woods, & Storandt, 2007). Geriatric depression is also an obstacle to successful aging. Then, what causes depression in old age?

The biopsychosocial model of illness believes that illness and health are the result of the interaction between biological, psychological and social factors. This model has been successfully applied to a better understanding of the disease process and its causes, and it is conducive to health care management (Alonso, 2004; Wade & Halligan, 2017). This theory also helps to better understand issues regarding depression in the elderly.

In recent years, the prevalence of geriatric depression in China is very high. According to an evaluation conducted by the Center for Epidemiological Research Depression Scale (CES-D), more than 32.55% of the elderly in China have depressive symptoms. Among them, the prevalence of women is higher than men. China has the largest elderly population in the world, and will face more and more challenges of geriatric depression with the rapid development of aging population (Y. Chen, Hicks, & While, 2011). Furthermore, geriatric depression is a major public health problem, requiring effective intervention for this vulnerable group in China (C. Li & Zhou, 2020).

Both depression and disease risk factors are associated with successful aging. The social and psychological aspects of the elderly are even more important than physical and cognitive functions for successful aging. Aging will lead to a gradual decline in physical and cognitive skills, and it may take a long time to reach the end of life. If the elderly actively participate in social interaction and have strong psychological adaptability, they can still achieve successful aging. Therefore, aging

health management can play a role in helping and supporting the elderly through psychological adaptability intervention and planning to increase participation in social activities (S. H. Kim & Park, 2017). Geriatric depression can hinder the achievement of successful aging. Therefore, how to avoid depression in old age is still within the narrative framework of successful aging. Since the factors that affect successful aging also affect depression in the elderly, the theory of successful aging may provide a reference for addressing geriatric depression.

There are many risk factors for depression in the elderly. Many studies have found that long-term chronic diseases are predictors of geriatric depression (Curran, Rosato, Ferry, & Leavey, 2020; Kugbey, Nortu, Akpalu, Ayanore, & Zotor, 2018). High rates of cerebrovascular disease and other neurologic disorders are related to geriatric depression (Aziz & Steffens, 2013). Hypertension and osteoarthritis have significant association with depression in the elderly (Vanoh et al., 2016). Furthermore, disease expression is a key determinant of depressive symptoms in patients. In clinical interventions for depression, reference information can be provided based on disease manifestations (Mavroeides & Koutra, 2021). Risk factors for geriatric depression also include social and psychological factors (Diniz, 2020).

In terms of social factors, social network structure affects people's health by providing social support, social influence, social participation, attachment, and access to resources and goods (Berkman, Glass, & Seeman, 2000). Individual-level social distancing, as measured by the distance between the sociodemographic background characteristics of older adults and the sociodemographic characteristics of neighbors, significantly affects depressive symptoms in older adults (Takagi, Kondo, Kondo, et al., 2013). Both social network characteristics and psychosocial dimensions of community social capital can affect the level of depression in the elderly (Bassett & Moore, 2013). Studies also show that depression symptoms account for more than stress and other factors in the association between social environment and mental health, and affect individual health and well-being (Mama et al., 2016). Inadequate social support increases the risk of depression. The buffer hypothesis argues that social support can reduce the severity of the association between negative life events and depression, thereby reducing the risk of depression (Ibarra-Rovillard & Kuiper, 2011). Chinese

community-dwelling seniors have higher levels of support from friends, family, and the government, and lower rates of depression (D. Liu et al., 2020).

Among sociodemographic factors, women, age 75 or older, divorced, widowed or single, and people without secondary education, usually have the highest prevalence of depression (Richardson, Keyes, Medina, & Calvo, 2020). Depression is the highest among elderly people 80 years and older living alone (Das Gupta et al., 2020). The elderly in India who prone to suffer from depression are mainly: over 80 years old, women, widows, living with children, lack of family support and poor independence. In addition, diabetes and a history of falling are also associated with depression (Bincy, Logaraj, & Ramraj, 2021). Furthermore, the inequality in countries, gender, wealth, and education in the prevalence of depression, the increase in fruit and vegetable intake is significantly related to the incidence of depression, which indicates that diet plays a regulatory role in solving the burden of depression (Lotfaliany et al., 2019). There are also some early influencing factors for depression in the elderly. For those with higher levels of education, less loneliness in childhood has a stronger effect on reducing depression in middle-aged and elderly people, and low participation in peer relationships in childhood has a weaker effect on depression in middle-aged and elderly adults (Jiang & Wang, 2020). Among the social influencing factors of geriatric depression, the influence of social environment and social development cannot also be ignored.

The processes of urbanization and aging population have merged with each other, increasing the burden of depression for the elderly globally. The pathways that affect the risk of geriatric depression in urban and rural residents have different manifestations in different countries (Purtle et al., 2019). A study in China shows that population migration can affect depressive symptoms among the elderly. Temporary and permanent immigrants from rural to urban areas have higher levels of depression in the elderly than local older residents in cities (Guo et al., 2017). The inequality of depression has different manifestations in different countries, and the social environment within a country may play an important role in the inequality of depression. Identifying inequalities in depression is the basis for designing and evaluating social, economic, and mental health-related interventions (Richardson et al., 2020). The socioeconomic factors in the inequality of depression may cause the

induction, aggravation or long-term existence of geriatric depression in low- and middle-income countries. The relative lack of health safety nets puts the elderly in poor socio-economic situations at risk of illness in low- and middle-income countries. Public health interventions and policies cannot be limited to population-based models for effective prevention and management of depression among older adults in low- and middle-income countries (Brinda et al., 2016).

In addition to social factors, psychological factors also play an important role in influencing elderly depression. Psychological factors include many aspects, among which the cognitive skills of an individual has an important influence on geriatric depression. In the process of aging, with the loss of old age and the increase of stressful events, elderly depressed patients show deficits in social skills, and self-critical cognition after activities, which may lead to less participation and increased negative cognition. In this feedback loop, negative cognition reduces the initiative to contact the environment and maintains cognition through passively avoiding the risk of failure, resulting in a vicious cycle (Fiske, Wetherell, & Gatz, 2009). Regarding the perception of negative events, the degree of bias in negative interpretation is directly proportional to the severity of depression. This finding may help improve the cognitive theory of depression and guide treatment (Lee, Mathews, Shergill, & Yiend, 2016). Individual needs can also affect depression in old age. The basic psychological needs satisfaction is a decisive social process that affects geriatric depression. The impact of social relationships on the elderly ultimately depends on the individual perception of whether these relationships meet basic psychological needs (Ibarra-Rovillard & Kuiper, 2011). In addition, cognitive coping strategies are also associated with depressive symptoms in later life (Aziz & Steffens, 2013).

The non-cognitive skills of an individual also have an important impact on geriatric depression. Generally, the higher the non-cognitive skills of the individual, the less depression in the elderly (A. Steptoe & J. Wardle, 2017). Some personality traits such as neuroticism also predict a higher level of geriatric depression (X. Chen, Pu, Shi, & Zhou, 2020), and personality aberrations are also associated with the recurrence of depression in later life (Aziz & Steffens, 2013). Different cultural backgrounds also affect depression in the elderly. The Confucian doctrine of the mean is related to

geriatric depression (Hou et al., 2020), and Confucian culture impacts on people's perception of depression in the elderly (X.-W. Lu, Chauhan, & Campbell, 2015).

Moreover, the quality of life in old age is closely related to physical and mental health, furthermore, the quality of life of many elder adults is reduced by depression. Geriatric depression is usually related to loss, and loss is not unilateral. Long-term chronic diseases and life span are closely related to depression. Impairment of daily living is a risk factor that increases depressive symptoms in middle-aged and elderly people and their spouses (He et al., 2019). Life quality is also closely related to the environment and social interaction. Living indoor and outdoor spaces also have contributed to depression in the elderly (C. Li & Zhou, 2020). A certain intensity of leisure sports activities can protect people suffering from depression, prevent their cognitive decline, and improve the quality of life (Hu, Smith, Imm, Jackson, & Yang, 2019). Better self-care, and sleep quality, social support, social participation, are all important factors that reduce depression in the elderly (Worrall, Jongenelis, & Pettigrew, 2020).

Geriatric depression is a complex disease involving a multi-disciplinary physiological and psychosocial model, and this reality makes the prevention and management of geriatric depression very challenging. Elderly people face losses at various stages of life, and these losses increase life, genetic, psychological, and social problems. Therefore, the study of geriatric depression is complicated (Steffens, 2005). On the other hand, the elderly face more stressful events in life, and those who lack effective coping resources are more prone to suffer from depression (Mui, 2000). In the face of stressful events, the coping styles which the elderly choose can also play a mediating role between coping resources and geriatric depression (Trouillet et al., 2009).

Facing the complexity of geriatric depression, it's necessary to across the social, economic, environmental, medical, and biological fields before the relevant government departments can adopt more effective strategies to prevent and control geriatric depression. The government takes action throughout the life course to solve the inequality of geriatric depression, which will have a major protective impact on the mental health of the elderly (Blazer, 2000; Godfrey, 2005). Meanwhile, improving the health and well-being of the elderly to facilitate them to lead independent, active and

fulfilling lives. It is not only the responsibility of health and social care services, but also requires the national and local governments to coordinate their efforts in the policy field, mobilize various departments, understand and listen to the needs of the elderly, and participate in the local community (Hendry, 2017).

Regarding the issues of specific management strategies, it is necessary to formulate a more specific policy agenda based on understanding the real needs of elderly depressed patients to improve the quality of social life of the elderly (Curran et al., 2020). For some developing countries with imperfect medical and health conditions, strengthening the screening of primary medical institutions can help to detect geriatric depression earlier (Bincy et al., 2021). Depression as a mental illness has great negativity and reflects a certain degree of the lack of knowledge about mental health. In practice, many ways can be used to educate the public and achieve mental health (Pettigrew, Donovan, Pescud, Newton, & Boldy, 2012).

In terms of specific intervention actions, compared with a single intervention, a 12-week multi-domain intervention can effectively alleviate the depressive symptoms of elderly people with severe depression (Roh et al., 2020). The results of a 23-year study of elderly people in the community can help identify high-risk groups of long-term illnesses based on the severity of the baseline, help select coping skills and stressor management based on the severity of depression, and take appropriate intervention measures (Cronkite et al., 2013). Joining a friendship club can reduce the social isolation of the elderly, improve happiness, social relations and physical and mental health (Hemingway & Jack, 2013). The Peer Support Program is an Internet intervention for the elderly with depression. It is a more cost-effective and feasible option, which facilitates spreading online treatment of geriatric depression (Tomasino et al., 2017). Another study shows that a family depression care management model PEARLS provided by a supplier is effective. Four to six months of participation by serving adults with low social levels significantly increases social interaction, improves satisfaction with social support, and reduces social isolation and depression (Steinman et al., 2020).

In summary, the factors that affect geriatric depression include both biogenic factors and social factors, as well as psychological factors. Targeted measures for Management intervention can be taken based on research which test the degree and

ways of influence of these factors on the geriatric depression, even though there are still some problems in the specific research.

Research on geriatric depression in Western countries mainly focuses on the prevalence of depression, risk factors and treatment methods, and intervention plans and measures to reduce the incidence of depression in the management of the elderly (Y. Chen et al., 2011). While most of the research on geriatric depression in China has focused on investigating the inequality of health utilization, few studies have focused on the inequality of health status and depression in the elderly (Y. Xu et al., 2016). There is few comprehensive research for psychosocial model of geriatric depression in China. A more reasonable model that includes individual social capital, personal skills, and other psychosocial factors is developed based on combining Chinese and western research results to fill this research gap.

## **2.3 Social Capital and Non-cognitive Skills**

### **2.3.1 Social Capital**

The social capital theory argues that the characteristics of social organizations such as trust, norms, and networks play an important role in promoting people's coordinated actions and improving social efficiency (Putnam, 1993). Social capital refers to the resources and benefits obtained in the form of individuals or groups through connections with others (Rodgers et al., 2019), including civic participation, social cohesion, and reciprocity (Saito et al., 2017). Social capital may positively affect successful aging of the elderly and are also closely related to geriatric depression.

Civic participation in social capital refers to participating in various activities based on common interests to achieve the purpose of helping oneself and others grow or solving community problems. It includes both individual activities and collective activities involving volunteer services, communities or charitable organizations (Torres & Serrat, 2019).

Durkheim's theory of social solidarity and anomie believes that the close connection between social members and the whole is very important for maintaining the normal order of society, and the lack of norms will lead to disorder in human activities and suffering from it (Marks, 1974; Merton, 1934). Suicide is closely related



to the degree of social integration of the group (Berkman et al., 2000). This theory emphasizes the impact of social solidarity and maintaining social roles on individual development, and the importance of active social integration and social cohesion of the elderly in maintaining physical and mental health.

Social cohesion is manifested in various interactions among members of society, characterized by trust, norms, sense of belonging, and willingness to participate and help, as so forth (Chan, To, & Chan, 2006). Reciprocity refers to people's response to perceived good and evil behaviors. People usually reward good behaviors and punish unfriendly behaviors. Studies have shown that reciprocity is an important determinant of human behavior (Falk & Fischbacher, 2006).

Regarding the classification of social capital, some researchers believe that social capital includes two important aspects: structural social capital and cognitive social capital (Harpham, Grant, & Thomas, 2002; Krishna & Shrader, 1999). Structural social capital means participation in various forms of social activities. Cognitive social capital is an individual's subjective evaluation of own social relationship, including the perception of trust, solidarity and reciprocity between people. Current research on cognitive social capital in China focuses on community trust and reciprocity (Cao et al., 2015; H. Wang, Schlesinger, Wang, & Hsiao, 2009). Research on structural social capital mainly examines personal social connections, including voluntary service, social participation, and civic activities (Fiorillo & Sabatini, 2015; Landstedt, Almquist, Eriksson, & Hammarstrom, 2016). Structural social capital and cognitive social capital are also intrinsically linked. Trust, reciprocity, and citizenship as positive community relationships in social capital is interconnected with voluntary community organizations, associations, and service facilities provided by the state (Putnam, 1993). Therefore, there is also a combination of structural social capital and cognitive social capital to carry out related research on geriatric depression (Miao, Wu, & Sun, 2019; W. Yip et al., 2007).

Cohesion and network methods are two main methods of social capital in public health research (Kawachi, 2006; Moore, Haines, Hawe, & Shiell, 2006; Moore & Kawachi, 2017; Rostila, 2011). The cohesion method emphasizes the group attribute of social capital and tends to analyze it as an important factor affecting personal health (Kawachi & Berkman, 2000). Cohesion methods often start from the cognition or

structure of social capital, and conduct research on social trust, social integration and belonging, and civic participation (Moore & Kawachi, 2017; Rostila, 2011). The network method of social capital emphasizes the aspect that social capital is a resource embedded in a personal social network (Kawachi, 2006). It usually focuses on relying on formal social network analysis (SNA) to measure social capital, and emphasizes the inequality in access to social resources (Moore & Kawachi, 2017; Rostila, 2011).

At present, in the research on social capital and public health, the social cohesion method represented by Putnam has been inherited and developed. However, the network methods represented by Coleman and Bourdieu are less adopted and tend to be decentralized (Moore, Shiell, Hawe, & Haines, 2005). Therefore, in the field of population health research, the cohesion method is the most commonly used method for social capital research (Murayama, Fujiwara, & Kawachi, 2012), and plays a role in public health policy and management.

In the study of social cohesion with social capital as the background concept, the study found that social capital has a certain level. Macinko and Starfield (2001) argued that social capital included the micro-level measurement standards of community cohesion and intracommunity ties, as well as the macro-level measurement standards of the extent of embeddedness of state-society relations and organizational integrity. Researchers can conduct research according to specific level needs.

Studies indicate that social capital can impacts on people's health. High levels of social capital play a significant role in reducing the negative impact of income inequality on public health (Kawachi, Kennedy, Lochner, & Prothrow-Stith, 1997). The research into social capital and mortality (including suicide), and self-rated health and depression has shown that social capital has a positive effect on adverse health outcomes (Murayama et al., 2012).

There are many factors that affect geriatric depression in social capital. A study of elderly people in Korean communities shows that the elderly with low cognitive social capital of interpersonal trust and reciprocity have a significantly higher rate of depression (Han et al., 2018). A study on the depression of Chinese elderly rural migrant workers shows that compared with the urban elderly, the prevalence of depression among elderly rural migrant workers was significantly higher, which was mainly due to the lower level of cognitive social capital in terms of trust and reciprocity

(Q. Li, Zhou, Ma, Jiang, & Li, 2017). Social cohesion and reciprocity are associated with lower levels of depressive symptoms (Nakagomi et al., 2020). At the same time, social capital affects the symptoms of depression in the longitudinal direction in terms of both individual internal effects and interpersonal effects (Carr, 2020).

Regarding structural social capital, research has shown that increased community participation is positively correlated with a decrease in respondents' depression (R. Wang, Feng, Liu, & Lu, 2020). Social participation, ability in daily living, and disability in social activities is also closely related to depression among the elderly (Verhaak, Dekker, de Waal, van Marwijk, & Comijs, 2014). There are gender differences in the longitudinal association between low civic participation and depressive symptoms, and males have more severe depressive symptoms than females (Landstedt et al., 2016). The diversity and frequency of social participation are related to mental health, but different types of social participation have different social significance and there is a contrast between urban and rural areas. Maintaining the frequency of interaction with friends can effectively reduce the onset of depression (R. Wang et al., 2019). Longitudinal studies have shown that social participation and social activities are beneficial for the mental health of the elderly and contribute to successful aging (Chiao, Weng, & Botticello, 2011). Social participation can also positively affect health of older adults in the long term, and this effect varies with gender and type of social participation (Ang, 2018; Ma, Piao, & Oshio, 2020).

Besides structural social capital and personal factors that can affect depression, the neighborhood environment also brings the risk of depression (Amegbor, Braimah, Adjaye-Gbewonyo, Rosenberg, & Sabel, 2020). Some theories have explained the mechanism by which neighborhood characteristics affect mental health. In particular, community characteristics may act as a source of stress or relieve stress by reducing or increasing health-related behaviors (Cattell, 2001; Murayama et al., 2015).

When social capital manifests as social interaction, it mainly protects health through three modes: first, the form of mutual assistance. When difficult situations such as sickness occur, the support of family and friends is helpful. Second, promoting healthy behavior patterns. Social interaction not only facilitates the development of social norms, but these norms also support the development of healthy behaviors. Lastly, the buffer effect model. Community cohesion and social participation can

provide moral and emotional support, and also relieve illness distress and psychological burden (Fiorillo & Sabatini, 2015; Kawachi, Kennedy, & Glass, 1999).

Social capital is directly related to health and geriatric depression as well as social support. As an individual's stock of resources, social capital can also provide social support while improving self-esteem. Social capital can buffer and contribute to coping with stressful life events by means of helping people obtain better resources (C. Campbell, Wood, & Kelly, 1999). Neighborhood social cohesion can promote increased social support and can positively contribute to cope with stress (Maguire-Jack & Wang, 2016). A high level of social participation not only provides more social support, but also predicts fewer depressive symptoms in the elderly (Chunkai Li, Jiang, Li, & Zhang, 2018). Cognitive social capital also has a positive effect on the increase of social support (Rung, Gaston, Robinson, Trapido, & Peters, 2017). A higher level of community social capital can provide more social support in the family field (Q. Wu, Tsang, & Ming, 2012). Perceived social support plays a mediating role between social capital and mental health (Duren & Yalcin, 2021). Moreover, social capital can influence geriatric depression through the mediation of social support (Cao et al., 2015).

Social capital is closely related to the community. As a major source of social capital, the community has a significant impact on the lives of older adults (N. Lu, Lum, & Lou, 2016; J. Zhang & Lu, 2019). Since the mid-1990s, community-building strategies in China have reflected a growing focus on the concept of community and a reassessment of the role of the community in the governance system. The community is considered to be the basic unit with the functions of social, political and administrative organization in China, and the grass-roots administrative units set up by the government, the sub-district offices and residents committees, are closely related to the management of the community. Community construction emphasizes the content of community services, of which ensuring welfare services for the elderly is the core of community service development. However, the community as a new form of urban system is not only limited to the issues of community service and welfare, but also includes culture, morality, policing, grassroots democracy, party building, and so forth. Community building in China has become an important means at the national level to promote social development, improve living standards, expand grassroots democracy and maintain urban stability. Communities, as grassroots organizations in China, play

an important role in the government governance system (Bray, 2006). The community is the main activity space for the elderly. In recent years, the Chinese government has encouraged the construction of more elderly-friendly communities to promote active aging of the elderly. Improvements in policy-based and community-supportive resources can help enhance the quality of life of older adults (Cheng et al., 2019). Community social capital not only supports the realization of local aging of the elderly in policy, but also helps to maintain the long-term happiness of the elderly. The development of community social capital is also in line with the needs of China's aging policy and management (J. Zhang & Lu, 2019).

Different intervention measures should be taken according to matter of fact in the management of geriatric depression. With the development of public health policies, the focus on depression is more focused on prevention methods. Understanding the social mechanisms that affect depression among the elderly will help determine the specific influencing factors and pathways of social capital (Carr, 2020). Social capital is directly or indirectly implicated in the risk of geriatric depression. Therefore, a combination of these two approaches should be considered to formulate or adopt intervention measures (Cao et al., 2015). Cultivating and creating a cognitive social capital environment plays an important role in interventions to enhance the structural social capital of the elderly (N. Lu & Peng, 2019). Study also shows that trust, reciprocity, family size and participation in leisure activities in social capital have a longitudinal effect on geriatric depression. In order to prevent and reduce depression among the elderly, plans to increase cognitive social capital and structural social capital are necessary (Park, 2017). When taking specific interventions to improve the impact of social capital on health, not only the impact of urban-rural differences, as well as life course and social development on social capital should be considered (Jiang & Kang, 2019).

Social capital interventions in health promotion are not only for individuals, but also for groups and communities. It is also necessary to consider the correlation and interaction between the dynamic situational factors, multidimensionality and underlying psychological mechanisms of social capital (Ehsan, Klaas, Bastianen, & Spini, 2019). Social capital interventions are more effective at the community level than at the individual level. It can benefit a wider community resident and is more conducive

to improving the health of more people. Therefore, these community-level social capital interventions are clearly effective in terms of cost-effectiveness (Villalonga-Olives, Wind, & Kawachi, 2018). Moreover, civic participation at the community level is more related to lower prevalence of depression than reciprocity and social cohesion. Interventions that promote community activities can help improve the mental health of this vulnerable group (Nakagomi et al., 2020).

Civic participation is conducive to enhancing social cohesion and reducing the risk of depression. When promoting the aging policy of social participation to enhance intervention efficiency, the government, non-governmental organizations (NGOs) and other relevant agencies should work together and make efforts to increase volunteer work opportunities and create a safe and accessible community environment, so that the community play a better role in improving the well-being of the elderly (Miao et al., 2019). Social capital can also promote citizens participation in public affairs through social networks, which is conducive to improving the efficiency of public goods supply. Furthermore, increasing social capital and promoting civic participation can improve the accountability and performance of the public sector (Suebvises, 2018).

In social capital and health research, the development of intervention research and longitudinal research will provide more possibilities in terms of social, psychological and behavioral, and produce a comprehensive understanding for the mechanisms of social capital affecting health. The importance of social capital to the entire life course also affects people's attention to the social capital investment. In order to better understand the strategies and environment for improving the social capital of individuals and groups to promote health, future research will emphasize the use of mixed research methods (Moore & Kawachi, 2017). Due to the confusion of definitions and the multidimensional social capital, it is still difficult to formulate and evaluate effective intervention strategies for the construction of social capital. Future research also needs to clarify the most effective form and scale of social capital in intervention management (Murayama et al., 2012).

Existing research also shows that social capital may be an important protective factor for health, but more research is needed to further confirm and discover it (Rodgers et al., 2019). Social and economic factors affect the uneven distribution of social capital among the population and cause health inequality. To solve this problem,

we also need to pay attention to how to use social capital (Ziersch, Baum, Macdougall, & Putland, 2005). In the study of the relationship between social capital and depression among the elderly, it is also necessary to understand the specific impact mechanism of social capital on geriatric depression. Based on this, key steps and effective interventions is designed to reduce the occurrence of geriatric depression (Bassett & Moore, 2013).

Some current studies find that the impact of social capital on health has both positive and negative effects. A high level of neighbors trust and social participation in social capital can reduce the risk of depression due to social distance. However, strong social cohesion will increase the depressive symptoms of community residents who migrated from birthplace (Takagi, Kondo, Kondo, et al., 2013). Different types of civic participation in structural social capital will have positive and negative effects on depression in the elderly (Amegbor et al., 2020). In response to this situation, further research is needed to clarify the relationship between social capital and geriatric depression in the Chinese context.

At present, there are few studies on the association between social cohesion and geriatric depression in Asian countries, and most of the studies in this area are carried out in Western countries. Social cohesion can reduce geriatric depressive symptoms, this effect is more pronounced for long-term residents in the community. Therefore, interventions to promote social cohesion can help prevent the occurrence of depression among the elderly (Murayama et al., 2015). Besides social cohesion, the long-term effects of social participation on depression have also attracted the attention of academic circles. However, there are few studies on social capital at the community level in China, and the measurement standards are rather chaotic. Thus, this study will combine the latest results of Chinese and Western research to further clarify the issues of relationship between social capital at the community level and geriatric depression.

### **2.3.2 Non-cognitive Skills**

Non-cognitive skills refers to a range of personal characteristics and skills. Different from cognitive skills, it is usually difficult to measure. Non-cognitive skills include conscientiousness, emotional stability, persistence, optimism, control, and so forth. It is believed to increase the chance of success and promote health (Carter et al.,

2019; Gutman & Schoon, 2013; Andrew Steptoe & Jane Wardle, 2017). Non-cognitive skills is also called personality, social emotional ability, personal skills, social psychological characteristics, 21st century skills in education, policy and related disciplines (Lipnevich & Roberts, 2012). Individual non-cognitive skills can affect successful aging and are also important influencing factors of geriatric depression (A. Steptoe & J. Wardle, 2017).

Conscientiousness in non-cognitive skills refers to the tendency of individuals to delay gratification in a planned way and follow norms and rules to achieve tasks or goals (John & Srivastava, 1999). Emotional stability, also known as neuroticism, is an individual's emotional response status compared with negative emotions such as tension and anxiety (John & Srivastava, 1999). Persistence refers to the ability to maintain a kind of durability despite the frustration and fatigue of the individual. People with this quality are usually hardworking, determined and tenacious (Matsudaira & Kitamura, 2006). Optimism refers to the extent to which people generally have favorable expectations and assumptions about their own future development (C. S. Carver, Scheier, & Segerstrom, 2010). Control refers to the ability of individuals to change their reactions and make them conform to social norms in order to achieve ideals or goals (Baumeister, Vohs, & Tice, 2007). Control includes restraining emotions or impulses, premeditating how to avoid risks, and persistently pursuing the realization of goals (Partsch & Danner, 2021).

Human capital characteristics can be represented by cognitive skills and non-cognitive skills, and are quite stable in life. Cognitive skills generally refers to an individual ability to calculate, literate, and solve practical problems (Tong, Li, & Greiff, 2019), and other skills different from cognitive skills influence relevant economic outcomes such as academic performance, education level, as well as employment and health status in the adulthood. These skills are called non-cognitive skills (Mendez, 2015). Non-cognitive skills is generally referred to as personality traits (Delaney, Harmon, & Ryan, 2013). Personality is the dynamic performance of an individual body system and mental system, which is the basis of a person's thoughts, emotions and behavior patterns (C. S. Carver & Connor-Smith, 2010). Traits are stated as a distinctive characteristic or quality of a personal nature (Borghans, Duckworth, Heckman, & Ter Weel, 2008). Most of the existing studies use the names of non-cognitive skills or



personality traits for non-cognitive traits, and this research also agrees with this naming. According to research needs and circumstances, sometimes these two expressions are used to represent non-cognitive traits (Delaney et al., 2013). But this researcher is more inclined to the expression of non-cognitive skills, because it can be better distinguished from traditional cognitive skills. Non-cognitive skills play an important role in human development.

Many studies on non-cognitive skills use all or part of factors of the Five Factors Model of Personality (FFM) to measure individual non-cognitive skills (Atkins et al., 2020; Delaney et al., 2013; Lipnevich & Roberts, 2012). Harris (1940) was the first to claim that personality contributes to students' academic performance. The measurement of personality is carried out by evaluating personality traits. Meta-analysis technology effectively combines the results of previous research and changes the vague conclusions about the relationship between personality and academic performance. Among them, the Five Factors Model of Personality (FFM) is a typical representative. The five factors include: extroversion, agreeableness, conscientiousness, emotional stability (neuroticism) and openness (Goldberg, 1990). In personality description, it concentrates most of the differences in simple dimensions. These factors are the key factors that determine behavior, thus changing the confusion of the previous personality measurement (Funder, 2001). (Barrick & Mount, 1991) was the first to use the Five Factors of Personality (FFM) for evaluation and analysis, which provided findings on the correlation between personality dimensions and job performance. The Five Factors Model of Personality (FFM) is one of the most popular instruments used to assess personality traits, which can also provide some insights into non-cognitive skills (Zhou, 2017). However, there are complexities in practical operations, and different focuses in different fields.

Non-cognitive skills play a significant role in predicting social and economic outcomes (Borghans et al., 2008). Non-cognitive skills contribute to students' academic achievement, retention, life ability and personal well-being in the field of education (Lindqvist & Vestman, 2011; Poropat, 2009). Compared with socioeconomic status and cognitive ability, personality traits or non-cognitive skills have the same impact on professional achievement, divorce rate, and mortality (Roberts, Kuncel, Shiner, Caspi,

& Goldberg, 2007). Non-cognitive skills is also an important determinant of productivity (Lindqvist & Vestman, 2011; Tong et al., 2019).

There is a wide range of viewpoints on non-cognitive skills in existing research. Conscientiousness, academic discipline, emotional control, social skills, study habits and attitudes are included in non-cognitive skills assessment related to education (Lipnevich & Roberts, 2012). Measures non-cognitive skills in human capital include perseverance, learning motivation, and social trust (Tong et al., 2019). Self-efficacy and self-esteem are two commonly used measures of non-cognitive skills affecting economic success (D. Xu, 2017).

The measurement of non-cognitive skills or personality traits in economics is carried out through psychometric methods. Psychometrics refers to the field of psychology to achieve research objective by quantifying and analyzing human differences. It involves the measurement of mental structure, the connection of behavioral variability with psychological phenomena and theoretical frameworks, and the evaluation of the measurement of behavioral variability (Anuniação, 2018). This method contributes to the development of non-cognitive skills and further promotes the influence of various policies.

Research on intervention policies for the development of non-cognitive skills shows that since family income is an important factor that indirectly drives the success of education, intervention policies for non-cognitive skills should be mainly conducted in the family environment of early education. Compared with cognitive skills, non-cognitive skills have more time and a longer span to gain government influence, which provides a more powerful policy tool for individual personality development (Thiel & Thomsen, 2013). Another study on the cultivation of non-cognitive skills in the field of education shows that poor college students are relatively backward in non-cognitive skills when they first enter the school, but they can improve their ability and make progress by participating in various practical activities on campus. To a certain extent, they can overcome some social disadvantages and obtain jobs with the same income in the labor market as nonpoor students (D. Xu, 2017). Therefore, education management should pay attention to the cultivation of students' non-cognitive skills to adapt to the future career development. In addition to academic achievement and job performance, non-cognitive skills are also related to healthy behaviors (Chiteji, 2010).

Depression is the result of a combination of many factors, including biological factors, as well as behavioral and environmental factors (Hakulinen et al., 2015). Personality is one of the factors that trigger the risk of depression in the elderly (Hakulinen et al., 2015). Non-cognitive skills can predict the occurrence of depression at the univariate or multivariate level (Steunenberg, Beekman, Deeg, & Kerkhof, 2006). Non-cognitive skills are not only related to the occurrence of depressive symptoms, but temporary or continuous personality changes are also related to depressive symptoms. The five life skills or non-cognitive skills of conscientiousness, emotional stability, persistence, control and optimism. The greater the number of non-cognitive skills possessed by middle-aged and elderly people, the better their wealth, income, and subjective well-being, the less depression, and the better their interpersonal relationships and self-assessed health. Meanwhile, life skills are also associated with continued mental health, new chronic diseases and the incidence of physical disorders (Andrew Steptoe & Jane Wardle, 2017).

In terms of specific non-cognitive skills, extraversion, neuroticism, and conscientiousness are associated with depressive symptoms (Hakulinen et al., 2015; Nouri et al., 2019). Neuroticism not only positively impacts on depression (Elliot, Gallegos, Moynihan, & Chapman, 2019), but also impacts on anxiety (X. Chen et al., 2020). Compared with the influence of health and social factors on depression, neuroticism has a stronger influence on depression (Steunenberget al., 2006). Some depression is predicted by persistence, lower reward dependence and self-transcendence (Matsudaira & Kitamura, 2006). People with strong self-control ability show better psychological adaptability in anxiety and depression based on the results of symptoms reported by self-assessment (Tangney, Baumeister, & Boone, 2004). Studies have also found that the tendency of elderly cancer patients to control the course of the disease can predict the level of depressive symptoms (Mystakidou, Tsilika, Parpa, & Galanos, 2015).

Optimism as a personality traits that undergoes changes in adulthood, will directly or indirectly affect the health of the elderly (Prakitsuwan, Pattharanitcha, Moschis, & George, 2020). During the 15-year follow-up of elderly community residents, it was found that optimism and outgoing can prevent the elderly from experiencing depression symptoms (Giltay, Zitman, & Kromhout, 2006). Higher extroversion is related to higher social participation and more social support as well as low depressive symptoms (X. Chen et al., 2020).

There are three main ways that non-cognitive skills impact on health. Firstly, differences of non-cognitive skills or personality traits may promote the pathogenesis of diseases, which have been evaluated and verified (Miller, Cohen, Rabin, Skoner, & Doyle, 1999). Secondly, non-cognitive skills are related to promoting health or damaging health behaviors, and further affect the results of physical health. Finally, differences of non-cognitive skills may be related to disease response and the style of individuals cope with disease (Roberts et al., 2007).

Coping is characteristics and methods of response to any type of environmental change (Beutler, Moos, & Lane, 2003). Non-cognitive skills and coping are also very closely related. The relationship between personality traits or non-cognitive skills and specific coping styles reveals a more subtle influence mechanism. Personality traits and coping styles affect individuals physical and mental health in an independent or

interactive manner. Under normal circumstances, neurotic personality uses more to cope with disengagement, while optimistic and serious personality tends to take the opposite actions of disengagement to coping with (C. S. Carver & Connor-Smith, 2010). Optimism is also positively correlated with active coping and the complexity of coping strategies (Scheier & Carver, 1985).

Generally speaking, the specific coping style we choose will be affected and predicted by non-cognitive skills or personality traits. Adaptive personality traits or non-cognitive skills positively affect active coping styles, and unhealthy personality traits negatively affect active coping styles. For individuals with poorly adapted characteristics, adopting improved and effective coping strategies can prevent and control the stress conditions faced by individuals (Afshar et al., 2015). Non-cognitive skills is related to a wide range of coping. Experiments or multivariate analysis can be used to deep understand and evaluate the role of non-cognitive skills in the coping process and specific coping strategies (Connor-Smith & Flachsbart, 2007).

Research on non-cognitive skills is of great significance in the prevention of depression. Compared with the usual treatment control group, preventive intervention in personality can significantly reduce the incidence of depression by 22%. It shows that the role of personality prevention interventions may be more obvious in reducing the disease burden of depression (Cuijpers, van Straten, Smit, Mihalopoulos, & Beekman, 2008). However, selective intervention is more cost-effective than preventive intervention. It is necessary to understand the risk factors of disease and the causal process of disease Because of the complexity of the actual operation. To study the nature of the influencing relationship between personality traits and depression, targeted prevention strategies should be adopted according to different personality disorders, and at the same time, the further development of preventive interventions can be promoted (Klein, Kotov, & Bufferd, 2011).

Non-cognitive skills are malleable and do not stay constant in the life course (Atkins et al., 2020; Heckman & Kautz, 2012). Non-cognitive skills may play an important protective role in the entire life course, and also have value and significance for the policy goal of improving health inequality (Carter et al., 2019). Although there are policies support public health interventions that emphasize the development of non-cognitive skills to improve adult health (Atkins et al., 2020; Conti, Heckman, & Pinto,

2016), at present, research is limited by the fact that we can only find the correlation between adolescents' non-cognitive skills and adult health, and we cannot claim the causal relationship (Atkins et al., 2020). Non-cognitive skills can also affect coping styles (Afshar et al., 2015; Kardum & Hudek-Knežević, 1996), but there are few studies in this area. Furthermore, non-cognitive skills or personality traits can also affect successful aging. Non-cognitive skills, social participation and healthy behaviors are also key factors for successful aging. Preventive measures regarding these factors may help promote successful aging (Rožanova et al., 2015).

Therefore, this study attempts to explore whether there is a causal relationship between non-cognitive skills and geriatric depression, and whether non-cognitive skills affect depression in the elderly through the mediating effect of Confucian coping. It is hoped that the cultivation of non-cognitive skills is emphasized in future education management, the influence of local culture is valued, and more attention is paid to develop non-cognitive skills in human resource management to prevent the occurrence of geriatric depression. In addition, social capital and non-cognitive skills can also impact on geriatric depression through the mediating effects of family support and Confucian coping.

## **2.4 Family Support and Confucian Coping**

### **2.4.1 Family Support**

The social support theory holds that individuals feel loved and cared for when they are part of a supportive social network (Cobb, 1976). Social support can contribute to personal well-being and affect their development (Cohen, Underwood, & Gottlieb, 2000; Fan & Lu, 2020; E. N. Gallagher & Vella-Brodrick, 2008). Social support plays an important role in affecting successful aging of the elderly and geriatric depression (Sharma, 2020).

Social support is primarily derived from family, friends and important others (Grey et al., 2020; Zimet, Powell, Farley, Werkman, & Berkoff, 1990). Perceived social support refers to how one, during times of need, cognizes and subjectively assesses friends, family members or important others as sources available to provide material, spiritual and overall support (Grey et al., 2020; Zimet et al., 1990). Family support is

an important part of social support. Compared with general social support, family support is more unique than all other forms of social support in maintaining good physical and mental health (Kamen, Cosgrove, McKellar, Cronkite, & Moos, 2011).

Social support affects people's well-being mainly through two channels: one is the stress-buffering model, that is, when people face a stressful event, they can relieve part of their stress through perceived social support, thereby affecting their health. The other is the main effect model, which holds that social networks and ones' social resources have a beneficial effect on happiness whether one is under pressure or not. The two supportive channels denote different processes how people's well-being is affected, both of which provide insights into the relationship between social support and health (Cohen & Wills, 1985).

Social support positively affects people's physical and mental health. Compared with those who lack social support, those who receive material and psychological support from spouses, other family members and friends, have better health conditions (Cohen & Wills, 1985). A study of left-behind children indicated that perceived social support positively affects their mental health (Fan & Lu, 2020). Social support can also reduce the negative impact of depressive symptoms on the life satisfaction of the elderly (Adams et al., 2016). Family support and the support from important others can effectively reduce the burden of depression in the elderly (Olagunju, Olutoki, Ogunnubi, & Adeyemi, 2015).

Social support can prevent or moderate the detrimental effect of stressful events on mental health (Berkman & Glass, 2000). Social support reduces the impact of stress on depression as well as functions differently in terms of various supportive sources. Among them, family support plays a unique role in relieving the negative impact of stress on depression (Raffaelli et al., 2013). In mitigating the effect of stress on depression, the perception of available support is more important than that of support alone. In addition to the impact of negative life events, parents' depression might also affect the emotional support and depression level of their offspring (Szkody & McKinney, 2019). Research shows that more family support is associated with less depression among rural older people. While the impact of negative attitudes of old age on the depressive symptoms of the elderly in both urban and rural areas can be buffered by family support (D. Liu et al., 2020).

Social support affects depression in the elderly usually through multiple ways that different factors leverage a combined effect. Inadequate family support and lack of social activities can increase the risk of depression in the elderly (Cong, Dou, Chen, & Cai, 2015), while higher levels of social support and cognitive social capital can prevent the occurrence of depression (Rung et al., 2017). Lack of social support and poor sleep quality are closely related to the high risk of depression (Grey et al., 2020). In addition to sleep quality, social support, together with social participation, active self-care and physical activity of the elderly, can play a role in preventing depression in community residents (Worrall et al., 2020). Research also shows that social support, intergenerational relationships, and social media can predict geriatric depression (H. Y. Wu & Chiou, 2020). In terms of family relationships, the degree of geriatric depression will be directly affected by intergenerational relationships. Between intergenerational relationships and geriatric depression, family support plays an important intermediary role (C. Li, Jiang, & Zhang, 2019).

Social support positively affects depression in the elderly (Cao et al., 2015; Grav, Hellzen, Romild, & Stordal, 2012). Cross sectional studies have found that social support has a major impact on depression (Chi & Chou, 2001). In addition,, longitudinal studies also revealed the influence of social support on depression in the elderly (Chou & Chi, 2003). A 23-year longitudinal study found that higher family support is associated with fewer depressive symptoms, and can predict a faster recovery from depression (Kamen et al., 2011).

Social support also positively affects individual coping. Social support can assist individuals in seeking appropriate coping approaches when facing pressure or problems. This coping assistance can help people find suitable coping strategies so that the response and support process is effectively integrated and unified into the stress-buffering model (Thoits, 1986). Family support can effectively promote positive coping strategies and is correlated with less avoidance coping (Holahan & Moos, 1987). People with high levels of social support are associated with more positive or negative coping approaches (W. Liu, Li, Ling, & Cai, 2016). Perceived social support also affects the individual quality of life through problem-focused coping strategies (Shrestha et al., 2019). In addition, elevating the participation in coping and taking measures to improve



perceived social support are conducive to preventive intervention for low-income depressed elders (McDonald, Thompson, Perzow, Joos, & Wadsworth, 2020).

Research also shows that there are sociodemographic differences in the impact of social support on geriatric depression. Among the elderly with depression who lack social support, women tend to value emotional support, while men focus on practical support (Grav et al., 2012). Longitudinal studies have shown that family support can positively affect the faster recovery of elderly women with depression. Faced with the urban-rural differences and inequality of social support and depression in the elderly, on the one hand, we need to change our negative mindset towards aging and seek more social support. On the other hand, it entails a structured reform to solve the problem (Gyasi, Phillips, & Abass, 2018; D. Liu et al., 2020).

Social support plays an important role in preventing depression in the elderly (Worrall et al., 2020). The elderly should be encouraged and promoted to improve social relations and social support as a prevention and control strategy (Stringa et al., 2020), and social support should be included in the geriatric depression intervention management measures (Shih, Cheng, Chang, & Sun, 2020). Social support may directly or indirectly affect depression in the elderly (Russell & Cutrona, 1991), so a variety of measures should be considered for defense in the intervention. In terms of improving geriatric depression, a higher level of family support is very effective (Sehlo & Bahlas, 2014). Moreover, the depressive symptoms of Asian elderly living in the community are more affected by family support than those of Westerners (Tengku Mohd, Yunus, Hairi, Hairi, & Choo, 2019). Research also shows that elderly patients with major depression have worse family function and social support than elderly people without depression. In order to reduce depression among the elderly, it is very important to conduct active family interventions and improve social support (J. Wang & Zhao, 2012).

Currently, in terms of research on the mechanism of social support, there is no research linking family support, Confucian coping with geriatric depression in China. It's hoped that further discoveries will be made in research areas concerning the impact of social support on geriatric depression.

### 2.4.2 Confucian Coping

The coping theory argues that coping is the behavior and response of people to avoid being hurt by stressful events, and this behavior moderates the impact of society on people (Pearlin & Schooler, 1978). There are two types of coping. One is problem-oriented coping, that is, trying to change stress and solving problems through your own behavior; The other is emotion-oriented coping, that is, managing emotions to reduce stress and maintain the individual's emotional balance (Billings & Moos, 1981). Coping styles can positively affect successful aging as well as geriatric depression, and research on coping styles is inseparable from specific cultural contexts.

Traditional Confucian culture is the common foundation of the social culture of some Asian countries. It is a complex system that regulates human relations and behavior, including social, moral, political, and religious thought. It emphasizes family filial piety, advocates the priority of collective interests, the importance of self-cultivation, and the inequality of gender roles (Gao et al., 2012). Confucianism builds an ideological system of social ethics with unique cosmology, view of fate, theory of human nature and moral cultivation theory. An individual with a conscience and self-awareness, facing the fate of birth, old age, sickness and death, must actively practice moral principles that transcend utilitarianism to fulfill responsibility or mission. The Confucian view of fate requires individuals to actively conduct humanities accomplishment. As a scholar, they must have the courage to shoulder the mission of caring for the world, and be able to use what they have learned to serve the family and the community (Hwang, 2011). Under the influence of Confucian culture, controlling emotions, adhering to Confucian philosophy, fulfilling the duty of filial piety, and conforming to the concept of social compliance have jointly shaped the manifestations of mental health. Emphasizing the collective, balance and harmony are the core ideas of Chinese mental health (X.-W. Lu et al., 2015). Zhongyong thinking (the Doctrine of the Mean), which emphasizes interpersonal harmony, as an important part of Confucianism, plays an important role in regulating young people's psychological distress and depressive symptoms (Hou et al., 2020), and maintaining subjective well-being (Yang et al., 2016). When dealing with death and loss, Confucian thought emphasizes Confucian filial piety and pays attention to funeral etiquette behavior and social evaluation. This kind of thought enables people to face the hardships of life

bravely, increase their spirituality, and understand the meaning of life (B. Chen, 2012). As a kind of social ideal and cultural theory, Confucianism can be used to deeply study the specific thoughts and behaviors of Chinese people in terms of social psychology (Hwang, 2011).

Confucian coping are thoughts developed based on traditional Confucian culture. Confucian coping is the coping thinking that Chinese people exhibit when facing difficulties and setbacks, including the three dimensions of fate thinking, pro-setback thinking, and responsibility thinking. fate thinking takes failure and hardship for external factors beyond the control of individuals; pro- setback thinking believes that adversity or pressure can help individuals develop their abilities and achieve success; responsibility thinking argues that individuals should take the initiative to shoulder their own responsibilities. Confucian coping can impact on the individuals' mental health (T.-r. Li & Hou, 2012; Lihua et al., 2017). It is also regarded as a problem-oriented coping strategy when individuals face pressure (Lihua et al., 2017).

From the relationship between Confucian coping and Confucian culture, we can perceive the profound influence of culture on people's thinking and behavior. Compared with habit or habitual behavior, culture has a greater impact on thinking, and specific manner of thinking reflects the cultural uniqueness. Groups under the influence of different cultures adapt to the environment in different ways. Specific mental illnesses in given environments are influenced by culture to some extent (Konner, 2007). Culture is a social determinant of individual mental and behavioral health because it can affect the process and behavior of an individual's mental health (Murray, 2015). Research shows that Chinese college students are obviously influenced by Chinese cultural values when dealing with social psychological pressure, among which Confucian self-cultivation thought and Taoist self-transcendence styles play an important role in coping with stress and difficulties (Yue, 1993). Culturally constructed coping styles rooted in Confucian ethics of self-cultivation and Taoist ethics of self-transcendence, including self-reflection, forbearance, self-control, Ah Q spirit, and letting nature take its course. These coping styles allow individuals to gain inner harmony and effectively cope with stress (Yue, 2001). Another study shows that women who grew up in Korea and then immigrated to the United States were deeply taught by Confucian culture to suppress negative emotions and promote self-sacrificing behaviors to maintain

harmonious social relations. This unhealthy coping mechanism and sociocultural environment can increase the psychological stress of female immigrants and are one of the factors that contribute to the higher incidence of depression (Sin, 2015).

Due to the rapid development of economic growth and urbanization, the family structure and some social systems have been impacted and changed, affecting the changes in the concept of the elderly and the traditional values of the elderly. Different cultures have different understandings of geriatric depression. Coupled with the constraints of real conditions, Chinese older adults are more likely to regard themselves as family burdens than Western older adults, and this kind of psychological pressure is also more likely to cause depression symptoms (Bai, Lai, & Guo, 2016; D. Liu et al., 2020). Besides different cultures can cause certain disease tendencies, culture can also affect the interaction between mental health practitioner and patients in symptom performance, diagnosis, and treatment (R. D. Campbell & Long, 2014).

Studies have found that Confucian coping can affect the mental health of individuals. The more fate thinking of Confucian copes people have, the more obvious negative psychology and the lower life satisfaction people feel. The more you recognize that human nature is kind, the more responsibility, the lower negative psychology, and the higher life satisfaction you have. The more intrinsic optimism in the face of setbacks you have, the less depression, and the higher life satisfaction you feel, while your awareness of the role of setbacks has no significant effect on mental health (Huaibin, 2006). The high level of pro-setback thinking and responsibility thinking in Confucian coping are related to depression and anxiety. The higher fate thinking of Confucian copes is associated with higher depression and anxiety (Lihua et al., 2017). In addition to positive effects on depression and anxiety, fate thinking is also negatively related to personal resilience. Higher pro-setback thinking and responsibility thinking negatively affect depression and anxiety, as well as positively correlated with resilience (T.-r. Li & Hou, 2012). Study also found that the lower the level of Confucian responsibility thinking people have, the greater the impact of information overload as a risk factor for cyber attacks on anxiety and depression people feel (Q. Wang, Luo, Tu, Xiao, & Hu, 2022).

In terms of public health services, depression usually occur under the culture and background of a specific manifestation. Mental health care and services should

value specific cultural context factors and relevant cultural information to help both health service and patient make the best decisions about mental health care (Alang, 2018).

Confucianism also faces realistic challenges regarding academic development. In the face of Eastern and Western cultures committed to the development of a unique psychological background adapted to their history and cultural origin, it is very important to explore the nature and development of behavior patterns rooted in the historical background and cultural traditions of the nation (Hwang, 2011). Confucianism is also facing development difficulties in the context of Chinese and Western thoughts integration. Confucian ethics is based on social roles and social status. Individual rights and individualism are degraded invisibly, which is not conducive to the free development of individuals. On the other hand, considering the individual as a practitioner of moral behavior evaluated by a wide range of benevolence standards, this ambiguity creates moral inequality (Hwang, 2011).

Furthermore, the traditional Chinese Confucian culture still has an important influence on the individual's mental health, but this effect is inherently contradictory. While the authoritative thought of collectivism provides people with ideals for struggle in life, it also creates an invisible pressure. In the current Chinese cultural context, mental illness such as depression is still regarded as a frightening phenomenon and stigmatization (X.-W. Lu et al., 2015). In addition, under the impact of reality, many aspects of Confucian culture have been eroded and destroyed on different levels. Decision makers and health industry managers should make the best of using the unique influence of Confucian cultural values to exert its advantages and overcome its disadvantages or obstacles (Gao et al., 2012).

Confucian coping thoughts are complex and dynamic thinking processes formed in specific social interactions. In this process, individuals consciously integrate external information and internal requirements to achieve appropriate behavioral strategies. Whether this process can be measured scientifically will also provide thinking and help for corresponding management and policy formulation. Cultural coping affects health, but cultural factors have received less attention in research (R. D. Campbell & Long, 2014). The cultural context and unique social and political environment strongly influenced by Confucianism can increase the variables that are

not in research related to Western countries (S. S. Kim, Chung, Perry, Kawachi, & Subramanian, 2012). The regionality and diversity of research is enhanced by broadening the scope and field of research. Researcher of this study explore the relationship between Confucian coping and geriatric depression as well as pathway of influence to fill the research gap.

## **2.5 Conceptual Model and Research Hypothesis**

Based on the exploration earlier in this chapter, this section drew key arguments from the related literature and forms a theoretical framework before constructing a conceptual model.

### **2.5.1 Theoretical Framework**

Geriatric depression is a common complex and highly heterogeneous disorder in old age. Different biological, social and psychological risk factors that interact among themselves to determine individuals' depressive symptoms. A comprehensive understanding of the individual contributions of biological, psychological and social risk factors can promote the implementation of preventive measures as well as reduce the risk of geriatric depression (Aziz & Steffens, 2013; Diniz, 2020). The risk factors for geriatric depression are illustrated in Figure 2.1.

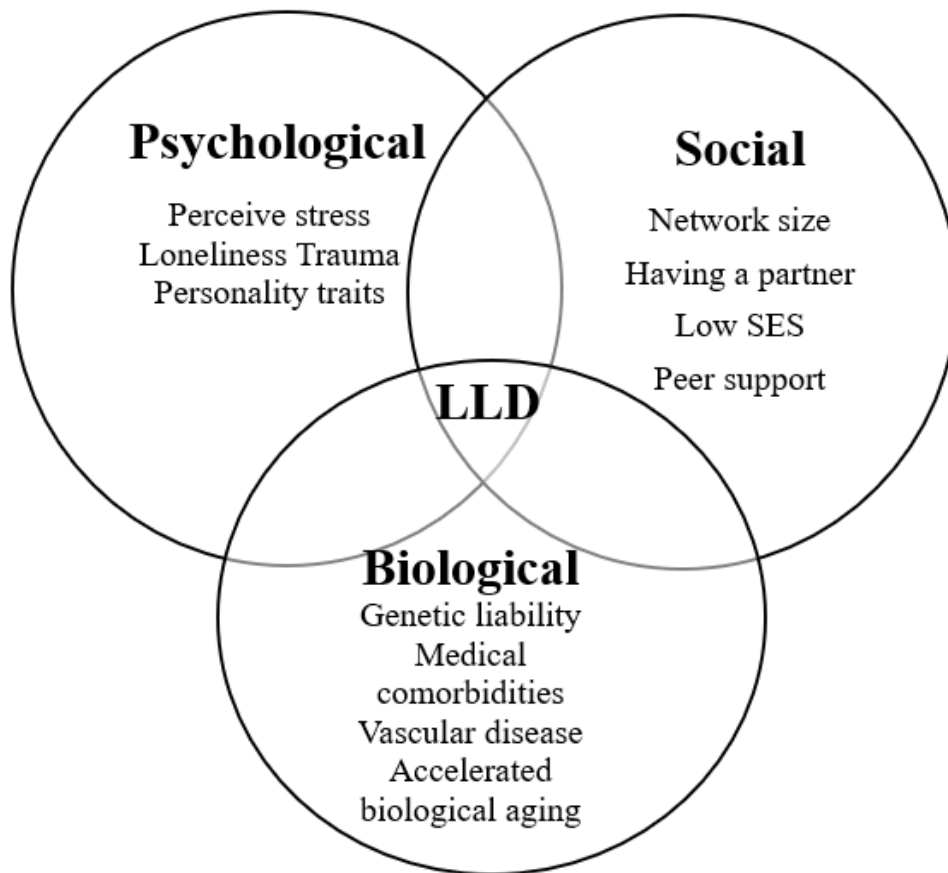


Figure 2.1 Venn Diagram Showing the Biopsychosocial Risk Factors for Late-life Depression

Source: Diniz (2020).

Note: LLD = Later Life Depression.

The pathogenesis of depression, as with most mental disorders, is caused by many factors. psychosocial factors are important factors affecting the occurrence and persistence of depression in the elderly, as well as the effect of defensive treatment (Arean & Reynolds, 2005). In particular, social and psychological factors play a more significant role in the pathogenic factors of depression. Exploring and discovering the influencing factors of symptoms is very beneficial to the prevention and control of depression and social and psychological treatment (Stansfeld, Rasul, & Steptoe, 2006).

Study of geriatric depression can draw upon the beneficial experience from successful aging research. Early successful aging theory has three dimensions including

avoiding diseases and disabilities, maintaining high physical and cognitive functions, and continuing to participate in social and productive activities (Rowe & Kahn, 1997). Successful aging original model of Rowe and Kahn is described in Figure 2.2.

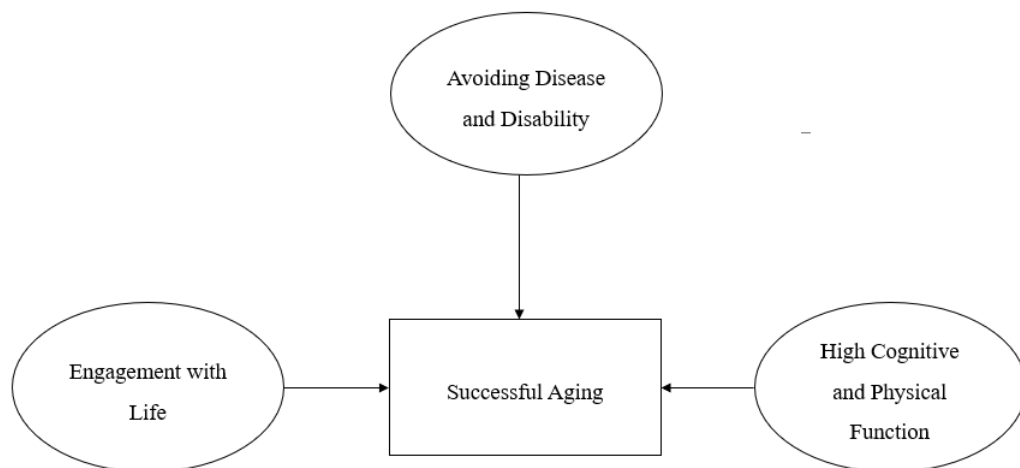


Figure 2.2 The Successful Aging Model

Source: Rowe and Kahn (1997).

With the development of the theory of successful aging, Rowe et al. (2010) argued that the social-level success criteria has changed, including labor force and volunteer service participation; cohesion; resilience or ability to effectively cope with pressure; capability to maintain high functions and other aspects.

Rowe and Kahn (2015) later improved the theoretical model of successful aging. Low disease risk and disease-related disability, maintaining high mental and physical function, and continuing to participate in life, such as maintaining relationship with others and participation in production activities are considered as three key elements of successful aging. In this modified model, a factor of higher mental function is added, and the importance of physical and mental health is more emphasized. The modified model of successful aging is described in Figure 2.3.



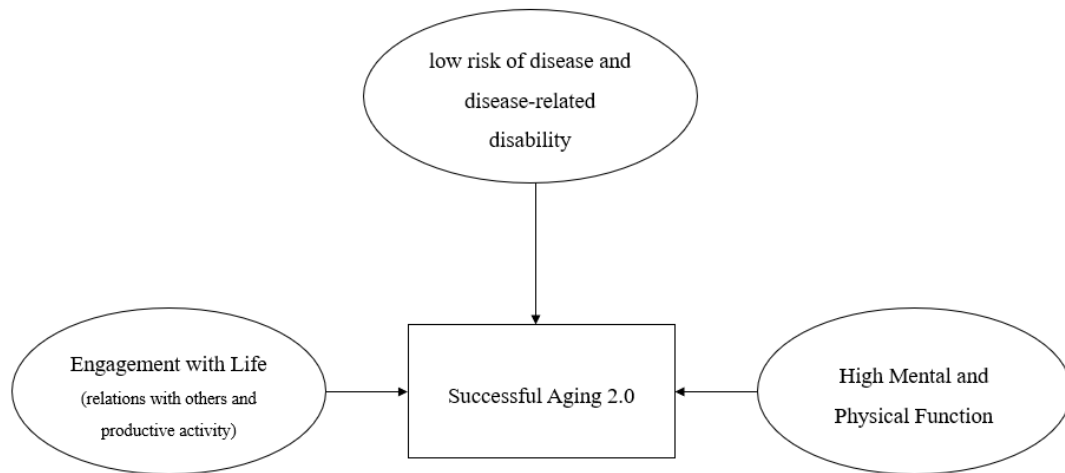


Figure 2.3 Successful Aging Model 2.0.

Source: Rowe and Kahn (2015).

Although relevant research on successful aging provides positive thinking about aging, it is also possible to start thinking about how to achieve successful aging from the unsuccessful aspects. Study shows that BioPsychoSocial health promotion is increasingly focused on successful ageing. In the aging process, aim at the social and psychological aspects of health as early as possible, establish adaptive capability, and have a good social and mental health, which can enable people to have a social and psychosocial reserves for future use when biological health inevitably declines (Aw et al., 2020). Successful aging needs to be expanded in the field of research, and the cognition, needs and perspectives of the elderly must also be considered in specific practice. It is necessary to think about how to avoid unsuccessful situations such as depression in old age from multiple perspectives and the factors affecting life course. As a serious problem, geriatric depression is also a common and heterogeneous disease determined by multiple factors (Blazer, 2003). A profound understanding of the life-long contributors, determinants, mediators and moderators of geriatric depression is very important for solving the mental health problems of the elderly (Triolo et al., 2020).

There are three major structures in the literature on the mechanism of geriatric depression, extracted from the list of previous theoretical arguments and research findings: The 1) social, 2) psychological, and 3) geriatric depression. Social structural factors mainly include social capital and sociodemographic factors. Psychological structural factors are described as cognitive skills, non-cognitive skills, family support, Confucian coping. Thus the synchronized psychosocial theoretical framework of geriatric depression was illustrated in Figure 2.4.

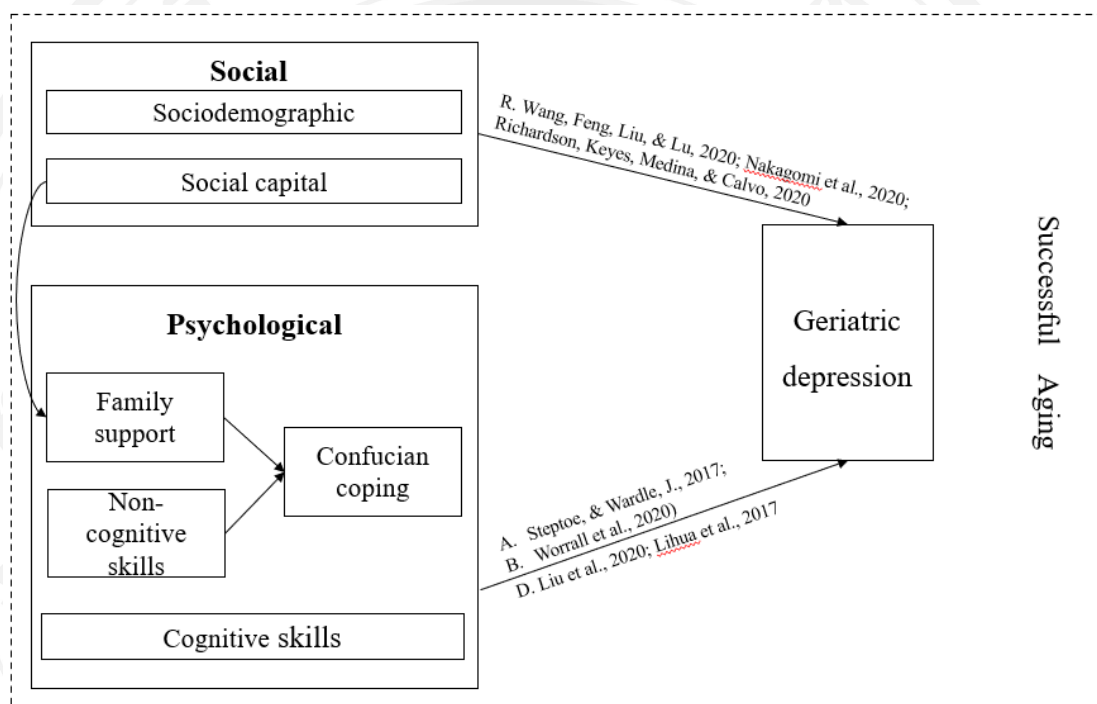


Figure 2.4 A Psychosocial Theoretical Framework of Geriatric Depression

### 2.5.2 Conceptual Model and Hypotheses

Combining the psychosocial theoretical framework of geriatric depression and practical research needs, candidates will be selected from the elderly with cognitive skills. Furthermore, Studies have shown that social factors have a protective effect on the depressive symptoms and long-term depression of the elderly (Stringa et al., 2020). Psychological and social variables are often intertwined. In understanding the elements that lead to depression in later life, they may be as important as physical factors (Aziz & Steffens, 2013). However, there is little previous research in this area. This research

focused on the effect of social and psychological factors on geriatric depression. Therefore, in the research model, the key variables include social capital (civic participation, social cohesion), non-cognitive skills, geriatric depression, as well as family support, Confucian coping (fate thinking, pro-setback thinking and responsibility thinking). The psychosocial conceptual model of geriatric depression was depicted in Figure 2.5.

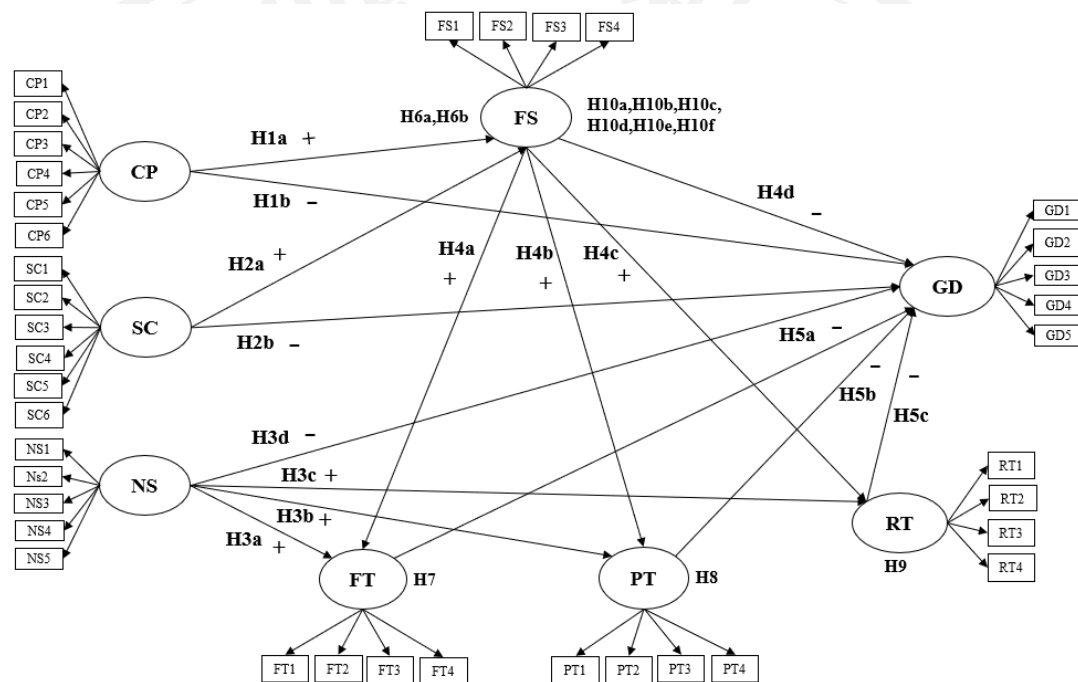


Figure 2.5 A Psychosocial Conceptual Model of Geriatric Depression

Notes: GD = Geriatric Depression, CP = Civic Participation, SC = Social Cohesion, NS = Non-cognitive Skills, FS = Family Support, FT = Fate Thinking, PT = Pro-setback Thinking, RT = Responsibility Thinking.

Research hypotheses were as follows:

H1a: Civic participation has a significant positive relationship with family support.

H1b: Civic participation has a direct negative relationship with geriatric depression.

H2a: Social cohesion has a significant positive relationship with family support.

H2b: Social cohesion has a direct negative relationship with geriatric depression.

H3a: Non-cognitive skills have a significant positive relationship with fate thinking.

H3b: Non-cognitive skills have a significant positive relationship with pro-setback thinking.

H3c: Non-cognitive skills have a significant positive relationship with responsibility thinking.

H3d: Non-cognitive skills have a direct negative relationship with geriatric depression.

H4a: Family support has a significant positive relationship with fate thinking.

H4b: Family support has a significant positive relationship with pro-setback thinking.

H4c: Family support has a significant positive relationship with responsibility thinking.

H4d: Family support has a direct negative relationship with geriatric depression.

H5a: Fate thinking has a direct negative relationship with geriatric depression.

H5b: Pro-setback thinking has a direct negative relationship with geriatric depression.

H5c: Responsibility thinking has a direct negative relationship with geriatric depression.

The following are single mediating hypotheses:

H6a: Family support plays a mediating role between civic participation and geriatric depression.

H6b: Family support plays a mediating role between social cohesion and geriatric depression.

H7: Fate thinking plays a mediating role between non-cognitive skills and geriatric depression.

H8: Pro-setback thinking plays a mediating role between non-cognitive skills and geriatric depression.

H9: Responsibility thinking plays a mediating role between non-cognitive skills and geriatric depression.

The following are chain mediating hypotheses:

H10a: Family support and fate thinking play a mediating role between civic participation and geriatric depression.

H10b: Family support and pro-setback thinking play a mediating role between civic participation and geriatric depression.

H10c: Family support and responsibility thinking play a mediating role between civic participation and geriatric depression.

H10d: Family support and fate thinking play a mediating role between social cohesion and geriatric depression.

H10e: Family support and pro-setback thinking play a mediating role between social cohesion and geriatric depression.

H10f: Family support and responsibility thinking play a mediating role between social cohesion and geriatric depression.

## CHAPTER 3

### METHODOLOGY

#### 3.1 Research Context

This chapter presented the research methodology used to examine the relationship between the influencing factors and depression among the elderly in the context of aging and geriatric depression, which including research methodologies, sample size calculations, data collection and statistical processing of data. In this study, quantitative research was used for data from population sources. The researcher studied previous research literature about geriatric depression and proposed the hypothesis set. The purpose was to check whether these hypotheses are true in reality using the results from the research sample to draw more accurate conclusions and recommendations regarding geriatric depression.

The main purpose of conducting research is to solve practical problems. Depression in the elderly is not a trouble caused by old age, but it may be caused by failure to achieve or maintain successful aging (Nari et al., 2021). Social and psychological factors which including social participation, social support, personal characteristics, and so forth, are very important for successful aging (S. H. Kim & Park, 2017), and these social and psychological factors may affect the symptoms of depression in the elderly (Nari et al., 2021). Studies to explore these factors that lead to geriatric depression is an effective way to solve this problem.

Individual social resources factors and personal skills factors were two major factors that this research focuses on. As mentioned in the previous research background, social resources factors refer to social capital, including civic participation and social cohesion. Social capital, as a social resource possessed in the interaction between individuals and society, will impact on individual development and physical and mental health. This is also an important aspect of social factors affecting depression in the elderly (Cao et al., 2015). Personal factors refer to individual non-cognitive skills, such as optimism, which affecting depression in the elderly (Andrew Steptoe & Jane Wardle, 2017), and maintaining a beneficial effect on health in the course of life (Carter et al., 2019). Furthermore, these psychosocial factors such as family support, Confucian coping, also play a direct or indirect role in affecting geriatric depression.

This study took the Chinese geriatric depression as the research context. A survey questionnaire was used as a primary data source and there was no secondary data was used. The structured questionnaire survey was used to collect data based on agreement of the respondents. The statistical analysis software SPSS 24 and AMOS 26 has been used for factor analysis, reliability test, regression analysis and structural equation modeling analysis.

### **3.2 Sample, Data Collection and Analysis**

The target population of this study was determined based on the actual situation of the elderly in China. With the rapid development of urbanization, the size of Chinese families has been shrinking, the phenomenon of multi-generational cohabitation has decreased, and a large number of people have poured into cities (United Nations, 2018). The fifth census data in 2000 showed that the urban population was 45594 ten thousand, accounting for 36.09% of the total population, and the rural population was 80739 ten thousand, accounting for 63.91% of the total population (Central People's Government

of the People's Republic of China, 2001). The sixth census data in 2010 showed that the urban population was 66558 ten thousand, accounting for 49.68% of the total population, and the rural population was 67417 ten thousand, accounting for 50.32% of the total population (National Bureau of Statistics of China, 2011). The seventh census data in 2020 shows that the urban population is 90199 ten thousand, accounting for 63.89% of the total population, and the rural population is 50979 ten thousand, accounting for 36.11% of the total population. According to the data of China's three national censuses from 2000 to 2020, it can be seen that in the past 20 years, the urban population has increased from 36.09% to 63.89% of the total population, while the rural population has dropped from 63.91% to 36.11% of the total population. Changes in China's urban and rural population can be seen in Table 3.1.

Table 3.1 Population Changes in China's Urban and Rural Areas

| <b>Year</b> | <b>Urban Population<br/>(Ten Thousand)</b> | <b>% of Total<br/>Population</b> | <b>Rural Population<br/>(Ten Thousand)</b> | <b>% of Total<br/>Population</b> |
|-------------|--|----------------------------------|--|----------------------------------|
| 2000        | 45594                                      | 36.09                            | 80739                                      | 63.91                            |
| 2010        | 66558                                      | 49.68                            | 67417                                      | 50.32                            |
| 2020        | 90199                                      | 63.89                            | 50979                                      | 36.11                            |

From Table 3.1, we can see that the gap between urban and rural populations in China has undergone tremendous changes. In 2000, the Chinese population living in urban areas was approximately 36%, and this proportion is expected to reach over 80% by 2050 (United Nations, 2018). Moreover, the difference between urban and rural areas of the aging population is also very obvious. According to data from National Bureau of Statistics of China (2021a), the population aged 60 and above is 26402 ten thousand, accounting for 18.70% of the country's total population. From a national perspective, the proportions of the elderly aged 60 and over in urban and rural areas are



15.82% and 23.81%, respectively (National Bureau of Statistics of China, 2021c). According to the statistics of urban and rural population in 2020, there are 14269 ten thousand elderly people aged 60 and above in urban areas, which is about 2100 ten thousand more than in rural areas. According to this trend, the urban elderly population will continue to grow. This urban-rural disparity of the elderly population is closely related to economic and social reasons on the one hand, and has a closer relationship with the increase of the floating population on the other hand (National Bureau of Statistics of China, 2021c). Based on the above reality and trend of China's population development, this study selected the urban elderly as the target group for the survey.

Yamane (1967) provided a simplified formula to calculate the sample size, that is

$$n = \frac{N}{1 + N \cdot E^2}$$

Where  $n$  means the size of the sample,  $N$  is the overall size, and  $E$  is the maximum margin of error we can accept (5%). This formula is widely used in research (Kasiulevičius, Šapoka, & Filipavičiūtė, 2006; Sarmah & Hazarika, 2012). According to National Bureau of Statistics of China (2021c), the total number of elderly people aged 60 and over is 14269 ten thousand in urban China in 2020, and the number of samples calculated according to Yamane (1967) formula should be  $\frac{14269}{1+14269 \cdot 0.05^2} \approx 389$ .

The sample size is usually increased by 30% to compensate for non-response (Kasiulevičius et al., 2006), and the final sample size was approximately 506. The questionnaire used in the study was based on the method developed in the previous study, and related questions were selected and modified to suit the psychosocial model of geriatric depression.

The distribution of the whole Chinese population is mainly concentrated in the eastern, central and western regions, accounting for 92.88% of the total population

(Table 3.2). The population in the eastern region accounts for 39.93% of the total population, the central region accounts for 25.83%, and the western region accounts for 25.83%. accounting for 27.12% (National Bureau of Statistics of China, 2021a). This research selected aging cities in the eastern, central and western China where the population is most concentrated, and conduct a survey based on the method of cluster sampling. The regional distribution of China's population is shown in Table 3.2.

Table 3.2 Regional Distribution of the Population in China

| <b>Regions</b> | <b>Regional Population (Ten Thousand)</b> | <b>% of Total Population</b> |
|----------------|---|------------------------------|
| Eastern region | 56372                                     | 39.93                        |
| Central region | 36466                                     | 25.83                        |
| Western region | 38287                                     | 27.12                        |
| <b>Total</b>   | <b>131125</b>                             | <b>92.88</b>                 |

There are also regional differences in China's urban elderly population. According to the census data of National Bureau of Statistics of China (2012), Beijing and cities in Henan, Sichuan provinces were already aging areas in 2010. As one of the earliest regions entered aging cities in China, Beijing's aging degree from 1992 to 2015 was much higher than the overall level of aging in mainland China. From 2000 to 2009, the central and western regions surpassed the eastern and southern regions to become the regions with the strongest aging growth. Among them, the aging rate accelerated in Sichuan and Henan. The distribution of samples should have certain regional coverage and characteristics of a broad population size (Saito et al., 2017; Shen, 2014). In order to ensure that the samples can cover the vast majority of population gathering areas in the eastern, central and western parts of China and the diversity of the samples, Zhengzhou and Chengdu, as representative aging cities in Henan and Sichuan provinces, and Beijing, the earliest and severely aging city, were the locations of this

survey. According to the latest statistics, the population aged 60 and above in Beijing is 429.86 ten thousand, accounting for 19.60% of the total population in Beijing (Beijing Municipal Bureau of Statistics Survey Office of the National Bureau of Statistics in Beijing, 2021). As can be seen from Table 3.3, among the three cities, Beijing has the highest proportion of the population aged 60 and above, followed by Chengdu, and Zhengzhou the lowest. Moreover, Beijing accounts for 38.87% of the total proportion of the population aged 60 and above in the three cities of Beijing, Zhengzhou and Chengdu. The number of Beijing samples calculated according to this ratio was 197. The population of Zhengzhou City aged 60 and above is 161.74 ten thousand, accounting for 12.84% of the total population of Zhengzhou (Zhengzhou Municipal Bureau of Statistics, 2021), and accounts for 25.47% of the total population aged 60 and above in the three cities of Beijing, Zhengzhou and Chengdu. The number of Zhengzhou samples calculated according to this ratio was 129. The population aged 60 and above in Chengdu is 376.41 ten thousand, accounting for 17.98% of the total population of Chengdu (Chengdu Bureau of Statistics, 2021), and accounts for 35.66% of the total population aged 60 and above in the three cities of Beijing, Zhengzhou and Chengdu. The number of Chengdu samples calculated according to this ratio was 180. Therefore, the number of samples obtained according to the percentage of the total proportion of the population aged 60 and over in the three cities is shown in Table 3.3.

Table 3.3 Percentage of the Total Proportion of the Population Aged 60 and Above in Three Cities and The Number of Samples

| <b>Cities</b> | <b>Population Aged 60 and Over (Ten Thousand)</b> | <b>% of the Total City Population</b> | <b>% of the Total Proportion of Population Aged 60 and Over in Three Cities</b> | <b>Number of Samples</b> |
|---------------|---|---------------------------------------|---|--------------------------|
| Beijing       | 429.86  | 19.60                                 | 38.87   | 197                      |
| Zhengzhou     | 161.74  | 12.84                                 | 25.47   | 129                      |
| Chengdu       | 376.41  | 17.98                                 | 35.66   | 180                      |
| Total         |   |                                       |   | 506                      |

At the same time, since the mid-1980s, The Chinese central government began to pay attention to the issue of community building, and has launched a social engineering project aimed at building the community into a new social sector. A community is officially defined as a common social sphere constituted by people living in a certain geographic area. As a new social sector in China, the community will prosper the community culture, develop the community environment, strengthen public security and provide services. Research shows that community organizations and community building practices, fostering community awareness and shared values, may contribute to improving the mental health of middle-aged and elderly people (Shen, 2014). In 2011, the General Office of the State Council of PRC released "The construction planning of social elderly care system (2011–2015)" in response to the issues of aging population. It is recommended that, at the level of urban and rural community elderly care, community-based elderly care facilities such as day care centers for the elderly, elderly activity centers and mutual aid service center for elderly should be the key construction targets. The quality of communities' comprehensive

services should be improved, so that the whole urban communities and more than half of rural communities basically be covered by day care services for the elderly (General Office of the State Council, 2011). In addition, older adults may spend more time in the communities as growing older. Therefore, the community environment matters for health and well-being of the elderly (Saito et al., 2017). In accordance with these trends, elderly residents in Chinese urban communities are selected as the survey respondents.

In Beijing, Zhengzhou and Chengdu, three typical aging cities in eastern, central and western China, a total of 506 questionnaires were distributed to older adults aged 60 years and older who lived in urban communities and had cognitive skills. Among the 506 questionnaires, all the questionnaires have been retrieved for the next step of statistical processing of data. The collected questionnaires were coded and recorded in SPSS 24. Data cleansing was performed by checking missing data, eliminating outliers, and converting data. After screening the questionnaires with missing data, the respondents were re-evaluated and the data collection was completed. Then AMOS was used to eliminate outliers. It took a period of about three months from collecting the questionnaire to Perform data cleansing. The structural equation modeling (SEM) path analysis was used to test the causal relationship between structures. Before hypothesis testing, exploratory factor analysis, reliability testing and confirmatory factor analysis should be performed (Ho, 2006). These statistical processes and results would be discussed and described in Chapter 4.

### **3.3 Measurement**

When structural equation models (SEM) is used in research, all variables related to a specific theory should be included to fully explore and understand the relationship (Schumacker & Lomax, 2010). Multiple variables can be measured in the structural equation model to be called quantitative research. This questionnaire designed a total

of 40 items, using Likert's five-point scale (Boone & Boone, 2012) as a measurement tool for question answering, 1 point represents strongly disagree, 2 point represents disagree, 3 point represents neutral, 4 point represents agree, and 5 point represents strongly agree. The purpose of the study was to collect data on factors related to the formation mechanism of geriatric depression. In order to better assess the thoughts and attitudes of the elderly, the study explored the use of existing scales developed and validated by other researchers. It may be appropriately modified according to actual needs.

### **3.3.1 Dependent Variable: Geriatric Depression**

The Geriatric Depression Scale (GDS) is one of the most commonly used tools to screen for depression in the elderly. The Geriatric Depression Scale (GDS-5) is a five-item scale that is as effective as the 15-item Geriatric Depression Scale for screening depression among the elderly in the community (Hoyl et al., 1999). The Geriatric Depression Scale (GDS-5) is also as effective as the Geriatric Depression Scale (GDS-15) in screening cognitively intact elderly depression (Rinaldi et al., 2003). Not only does the shorter 5-item scale have similar measurement results to the 15-item depression scale, but it can save time and energy for older adults and reduce their burden (Weeks, McGann, Michaels, & Penninx, 2003). A five-point Likert scale was used to measure the degree of agreement with a question or statement. The range was from strongly disagree to strongly agree, and the corresponding score ranged from 1 to 5, with  $\geq 2$  points being considered to demonstrate clinically relevant depressive symptoms (Ji et al., 2020). The Geriatric Depression Scale (GDS-5) is in the appendix at the end of the paper. The definition and sources of geriatric depression are shown in Table 3.4.

Table 3.4 Definition and Source of Geriatric Depression

| Construct                 | Definition                                     | Source   |
|---------------------------|--|--|
| Geriatric depression (GD) | A common type of mood disorder of the elderly. | Ji, L., Qiao, X., Jin, Y., Si, H., Liu, X., & Wang, C. (2020). |

### 3.3.2 Individual Social Resource Factors and Personal Skills Factors

Individual social resource factors and personal skills factors refer to social capital and non-cognitive skills, respectively.

#### 1) Social Capital

Social cohesion methods is mainly used in public health research on social capital (Saito et al., 2017). Community-level social capital is considered an important and changeable social determinant of depression in the elderly (N. Lu & Peng, 2019). Studies indicate that the Community-level social capital scale can appropriately measure the components of community social capital (Yamaguchi et al., 2019), and evaluate the background influence of community characteristics on personal health. It can also provide insight into public health and gerontological issues.

The community-level social capital scales were used in this study aimed to assess the social capital of the elderly. The measurement indicators of this scales were derived from the indicators of community-level social capital in the JAGES 2013 cross-sectional study. There are three dimensions of civic participation, social cohesion and reciprocity in the scale (Saito et al., 2017). However, social cohesion is generally defined as solidarity, trust, reciprocity, sense of belonging, and social inclusion in research (Carrasco & Bilal, 2016; Yu et al., 2019). Many studies support that social cohesion or cognitive social capital includes trust and reciprocity factors (Fone et al., 2007; Han et al., 2018; Park, 2017). The results of Saito et al. (2017) showed a strong correlation between social cohesion and reciprocity. The author also suggested

incorporating trust, reciprocity, and community belonging into the concept of social cohesion. Therefore, two dimensions of civic participation and social cohesion were selected to measure community-level social capital. A five-point Likert scale was used to measure the degree of agreement with these questions and statements, which ranged from strongly disagree to strongly agree, with the corresponding scores ranging from 1 to 5. The community-level social capital scales are in the appendix at the end of the paper. The definition of dimensions and source of social capital are shown in Table 3.5.

Table 3.5 Definition and Source of Social Capital's Dimensions

|                | <b>Construct</b>            | <b>Definition</b>   | <b>Source</b>   |
|----------------|-----------------------------|---|---|
| Social Capital | Civic participation<br>(CP) | participating in various activities to achieve the purpose of helping yourself and others grow or solving community problems.                   | Saito, M., Kondo, N., Aida, J., Kawachi, I., Koyama, S., Ojima, T., & Kondo, K. (2017). |
|                | Social cohesion<br>(SC)     | various interactions among members of society, characterized by trust, norms, sense of belonging, and willingness to participate and help, etc. |   |



## 2) Non-cognitive Skills

Non-cognitive skills are usually measured by the Big Five factors model, but certain traits are not included in the Big Five factors may hinder a comprehensive understanding of personality in specific applications (Howard & Crayne, 2019). Studies have found that non-cognitive skills, including optimism factors, are very important for the elderly and can affect depressive symptoms in longitudinal results. The level of non-cognitive skills is related to economic, physical and mental health, and biological outcomes, which provides a reference for research on measuring non-cognitive skills (A. Steptoe & J. Wardle, 2017). Studies have shown that optimism is related to good individual adaptation, which can improve physical and mental health and encourage individuals to actively respond to the impact of negative life events (C. S. Carver et al., 2010; M. W. Gallagher & Lopez, 2009; M. W. Gallagher, Lopez, & Pressman, 2013). A recent study during the COVID-19 pandemic showed that optimism is negatively correlated with depression and stress (L. M. W. Vos, Habibovic, Nyklicek, Smeets, & Mertens, 2021). A 15-year longitudinal study also showed that optimism can reduce the depressive symptoms of elderly residents in the community (Giltay et al., 2006). Therefore, this study used the Optimism Scale to measure individuals' non-cognitive skills.

Furthermore, because relatively short personality scales with several items that have good psychometric characteristics (Donnellan, Oswald, Baird, & Lucas, 2006), therefore, this study used relatively short scales. The researchers of this study adopted five items in optimism scale to measure the level of non-cognitive skills (Coelho et al., 2018; Pedrosa, Celis-Atenas, Suárez-Álvarez, García-Cueto, & Muñiz, 2015). A five-point Likert scale was used to measure the degree of agreement with was used to measure the degree of agreement with the question or statement with a range from strongly disagree to strongly agree, with the corresponding score ranges from 1 to

5. The non-cognitive skills scales are in the appendix at the end of the paper. The definition and sources of non-cognitive skills are shown in Table 3.6.

Table 3.6 Definition and Source of Non-cognitive Skills

| <b>Construct</b>          | <b>Definition</b>  | <b>Source</b>  |
|---------------------------|--|--|
| Non-cognitive skills (NS) | a range of personal characteristics and skills, which different from cognitive skills. | Coelho, G. L. H., Vilar, R., Hanel, P. H. P., Monteiro, R. P., Ribeiro, M. G. C., & Gouveia, V. V. (2018).<br>Pedrosa, I., Celis-Atenas, K., Suárez-Álvarez, J., García-Cueto, E., & Muñiz, J. (2015). |

### **3.3.3 Mediating Variables that Affect Geriatric Depression**

#### **1) Family Support**

Family support is evaluated by the family support dimension scale in the Perceived Social Support Multidimensional Scale (MSPSS), and Perceived Social Support Multidimensional Scale (MSPSS) is a commonly used tool to measure social support, with good internal consistency (Zimet et al., 1990). Family Support Scale is a 4-item scale that measures the degree of family support. A five-point Likert scale is used to measure the degree of agreement with a question or statement. The range was from strongly disagree to strongly agree, and the corresponding score ranged from 1 to 5. The Family support scale is in the appendix at the end of the paper. The definition and sources of family support are shown in Table 3.7.

Table 3.7 Definition and Source of Family Support

| <b>Construct</b>    | <b>Definition</b>   | <b>Source</b>  |
|---------------------|---|--|
| Family Support (FS) | People's subjectively assessment of the material, spiritual and overall support provided by family members when needed. | Grey, I., Arora, T., Thomas, J., Saneh, A., Tohme, P., & Abi-Habib, R. (2020). Zimet, G. D., Powell, S. S., Farley, G. K., Werkman, S., & Berkoff, K. A. (1990). |

## 2) Confucian Coping

The research on coping with stress has been a hot topic in psychological research in the past two decades. Due to the different focus of Chinese and Western research, the research and measurement of coping should also consider the influence of different cultures. The Confucian coping Scale is a coping scale influenced by Chinese confucian culture and developed by Chinese researchers on the basis of previous research. The Confucian coping Scale includes three dimensions of fate-thinking, pro-setback thinking, and responsibility thinking and 12 items (T.-r. Li & Hou, 2012; Lihua et al., 2017). A five-point Likert scale was used to measure the degree of agreement with a question or statement. The range was from strongly disagree to strongly agree, and the corresponding score ranged from 1 to 5. A higher score for fate thinking indicates that participants are more susceptible to destiny thinking. The higher the score of pro-setback thinking demonstrates that the individual is more able to accept frustration, while the higher the responsibility thinking shows that the individual is more willing to take responsibility. The Confucian Coping scale is in the appendix at the end of the paper. The definition and sources of Confucian coping are shown in Table 3.8.

Table 3.8 Definition and Source of Confucian Coping's Dimensions

|                  | <b>Construct</b>             | <b>Definition</b>   | <b>Source</b>                     |
|------------------|------------------------------|---|-----------------------------------|
| Confucian Coping | Fate thinking (FT)           | Fate thinking takes failure and hardship for external factors beyond the control of individuals.                            | Li, T. R., & Hou, Y. B. . (2012). |
|                  | Pro-setback thinking (PT)    | Pro- setback thinking believes that adversity or pressure can help individuals develop their abilities and achieve success. |                                   |
|                  | Responsibility thinking (RT) | Responsibility thinking argues that individuals should take the initiative to shoulder their own responsibilities.          |                                   |

### 3.3.4 Control Variables

Sociodemographic variables were used as control variables in the structural equation model (SEM) of this study. Sociodemographic characteristics usually include: gender, age, education level, living arrangements, economic income, and so forth. Besides adults aged 60 and over, the sociodemographic factors considered in this study consisted of gender (male or female); education level (below high school/ technical secondary school or above high school/ technical secondary school); living arrangements (not living alone or living alone); Monthly income (< 3365 yuan or ≥ 3365 yuan). From 2018 to 2020, the median monthly per capita disposable income of Chinese urban households was 3,034 yuan, 3,270 yuan, and 3,365 yuan, respectively. Monthly income (< 3365 yuan or ≥ 3365 yuan) is based on the median per capita disposable income of Chinese urban households in 2020 of 3365 yuan (\$498.44) per month (National Bureau of Statistics of China, 2019, 2020, 2021b). From 2018 to 2020, the median monthly per capita disposable income of urban households in China is shown in Figure 3.1.

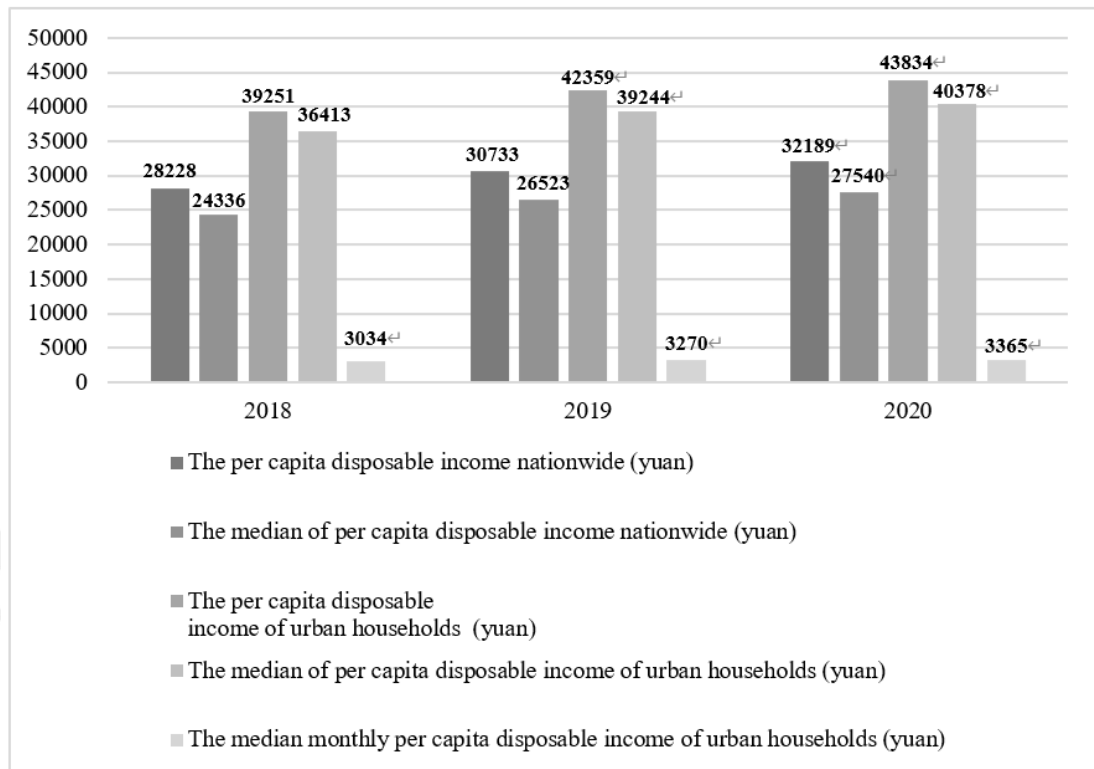


Figure 3.1 The Median Monthly Per Capita Disposable Income of Urban Households in China from 2018 to 2020

These sociodemographic variables discussed above can affect the depressive symptoms of the elderly living in the community (Ji et al., 2020). In addition, population migration not only determines the level of aging population in different regions, but is also an important factor affecting the health of elderly internal migrants (Lin, Chu, Chen, Xiao, & Wan, 2020). During the ten years from 2000 to 2010, due to a large-scale internal migration, cities in China where the population of 65 years and over accounted for more than 7% of the total population grew rapidly, and the proportion of aging cities in 287 cities increased from 50% to 90% of the total (R. Chen et al., 2018). Because of the rapid development of social urbanization and internal migration in China, it is necessary to consider the impact of population migration (non-migrating population / migrating population) on geriatric depression (Q. Li et al., 2017).

Survey items about sociodemographic characteristics in this study are shown in Table 3.9.

Table 3.9 Sociodemographic Characteristics

| Sociodemographic<br>Characteristics | Items   |
|-------------------------------------|---|
| Gender                              | ( ) Male<br>( ) Female  |
| Education level                     | ( ) Below high school/technical secondary school<br>( ) Above high school/ technical secondary school |
| Living arrangements                 | ( ) Not living along<br>( ) Living along  |
| Monthly income                      | ( ) < 3365 yuan<br>( ) ≥ 3365 yuan  |
| Population migration                | ( ) Non-migrating population<br>( ) Migrating population  |

### 3.4 Pretest Measures

The usefulness of pretest in survey research allows researchers to improve the question, simplify the scale, increase the responsiveness of the scale, and thus improve the respondent's ability to answer the question. Pretesting is very important for us to verify the quality of the questionnaire (Gomes, Romão, & Carvalho, 2016). In a questionnaire survey, if the number of items in the scale is too much, it will cause the respondents to fatigue and fail to consider the question carefully, thereby affecting the survey results (Böckenholt & Lehmann, 2015). In particular, the respondents of this

study were elderly people aged 60 years and above, who are more prone to fatigue than other age groups. Therefore, it is more appropriate to choose a scale with fewer and shorter items. Before the survey pretesting of this study, the author had revised some items that were not clearly expressed or easily cause ambiguity, and have deleted some similar items, then the original items were reduced to 40 items. A total of 100 questionnaires were distributed in the survey pretesting of this study. In order to collect the data of pretest, the questionnaire was distributed and assisted in filling out the questionnaire through relatives, friends and colleagues to the elderly at home or the elderly living in the communities they knew. 78 valid data sets were returned. To test the feasibility of the scale, the researchers tested these structures using exploratory factor analysis and reliability analysis. Data from 78 respondents of pretest were coded by the researcher of this study, and factor analysis and reliability tests were carried out by using SPSS24.

#### **3.4.1 Exploratory Factor Analysis of Pretest**

In this section, the author reported the exploratory factor analysis and results of each construct. Exploratory factor analysis is that people use factor analysis technology to explore the correlation between observed variables and factors. Each construct or factor is defined by identifying a specific subset of observed variables (Schumacker & Lomax, 2010).

Principal component analysis (PCA) is one of the most commonly used factor extraction methods in exploratory factor analysis (EFA) based on component model. Varimax rotation, which is one of the orthogonal rotation types, can provide an ideal factor loading mode and factor separation (Schmitt, 2011). Regarding a test for the appropriateness of data, Kaiser Meyer Olkin Measure (KMO) statistics and Bartlett Spherical Test were used in this study. Kaiser (1974) believed that the KMO value of 0.50 is the minimum acceptable for data, and the KMO value of more than 0.50 can be

applied to exploratory factor analysis. The KMO value above 0.6 is average, the KMO value above 0.7 is medium, the KMO value above 0.8 is very good, and the KMO value above 0.9 is excellent. Bartlett's Spherical Test is used to check whether the original correlation matrix is an identity matrix, that is, to test the adequacy of the correlation matrix and the strength of the relationship between variables, and to measure the multivariate normality of a distribution set (Hadi, Abdullah, & Sentosa, 2016). The SPSS analysis results showed that the KMO value of the overall scale was 0.805, and the value obtained by Bartlett's sphericity test was 780.000. The associated significance level was less than 0.001. The results of principal component analysis are shown in Table 3.7 and Table 3.8. In this study, the factor loading results of all latent variables' measurement items obtained by SPSS factor analysis are shown in Table 3.10.

Table 3.10 The Factor Loadings Results of the Model

|     | <b>SC</b> | <b>CP</b> | <b>NS</b> | <b>GD</b> | <b>FS</b> | <b>PT</b> | <b>FT</b> | <b>RT</b> |
|-----|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| CP1 | -         | 0.756     | -         | -         | -         | -         | -         | -         |
| CP2 | -         | 0.839     | -         | -         | -         | -         | -         | -         |
| CP3 | -         | 0.827     | -         | -         | -         | -         | -         | -         |
| CP4 | -         | 0.793     | -         | -         | -         | -         | -         | -         |
| CP5 | -         | 0.805     | -         | -         | -         | -         | -         | -         |
| CP6 | -         | 0.820     | -         | -         | -         | -         | -         | -         |
| SC1 | 0.878     | -         | -         | -         | -         | -         | -         | -         |
| SC2 | 0.802     | -         | -         | -         | -         | -         | -         | -         |
| SC3 | 0.849     | -         | -         | -         | -         | -         | -         | -         |
| SC5 | 0.789     | -         | -         | -         | -         | -         | -         | -         |
| SC6 | 0.780     | -         | -         | -         | -         | -         | -         | -         |
| SC7 | 0.797     | -         | -         | -         | -         | -         | -         | -         |
| NS1 | -         | -         | 0.826     | -         | -         | -         | -         | -         |
| NS2 | -         | -         | 0.820     | -         | -         | -         | -         | -         |



|     | SC | CP | NS    | GD    | FS    | PT    | FT    | RT    |
|-----|----|----|-------|-------|-------|-------|-------|-------|
| NS3 | -  | -  | 0.778 | -     | -     | -     | -     | -     |
| NS4 | -  | -  | 0.851 | -     | -     | -     | -     | -     |
| NS5 | -  | -  | 0.849 | -     | -     | -     | -     | -     |
| FA1 | -  | -  | -     | -     | 0.799 | -     | -     | -     |
| FA2 | -  | -  | -     | -     | 0.832 | -     | -     | -     |
| FA3 | -  | -  | -     | -     | 0.804 | -     | -     | -     |
| FA4 | -  | -  | -     | -     | 0.801 | -     | -     | -     |
| FT1 | -  | -  | -     | -     | -     | -     | 0.780 | -     |
| FT2 | -  | -  | -     | -     | -     | -     | 0.844 | -     |
| FT3 | -  | -  | -     | -     | -     | -     | 0.778 | -     |
| FT4 | -  | -  | -     | -     | -     | -     | 0.793 | -     |
| PT1 | -  | -  | -     | -     | -     | 0.817 | -     | -     |
| PT2 | -  | -  | -     | -     | -     | 0.734 | -     | -     |
| PT3 | -  | -  | -     | -     | -     | 0.804 | -     | -     |
| PT4 | -  | -  | -     | -     | -     | 0.796 | -     | -     |
| RT1 | -  | -  | -     | -     | -     | -     | -     | 0.724 |
| RT2 | -  | -  | -     | -     | -     | -     | -     | 0.776 |
| RT3 | -  | -  | -     | -     | -     | -     | -     | 0.658 |
| RT4 | -  | -  | -     | -     | -     | -     | -     | 0.679 |
| GD1 | -  | -  | -     | 0.659 | -     | -     | -     | -     |
| GD2 | -  | -  | -     | 0.730 | -     | -     | -     | -     |
| GD3 | -  | -  | -     | 0.762 | -     | -     | -     | -     |
| GD4 | -  | -  | -     | 0.686 | -     | -     | -     | -     |
| GD5 | -  | -  | -     | 0.798 | -     | -     | -     | -     |

Note: SC = Social Cohesion, CP = Civic Participation, NS = Non-cognitive Skills, GD = Geriatric Depression, FS = Family Support, PT = Pro-setback Thinking, FT = Fate Thinking, RT = Responsibility Thinking.

As can be seen from Table 3.10, the factor analysis results clustered the measurement items into eight constructs, which including social cohesion, civic participation, non-cognitive skills, geriatric depression, family support, pro-setback thinking, fate thinking, and responsibility thinking. The factor load generated by social cohesion ranged from 0.780 to 0.878. The factor loadings generated by civic participation ranged from 0.756 to 0.839. The factor loadings generated by non-cognitive skills ranged from 0.778 to 0.851. The factor loadings generated by geriatric depression ranged from 0.659 to 0.798. The factor load generated by family support ranged from 0.799 to 0.832. The factor loadings produced by pro-setback thinking ranged from 0.734 to 0.817. The factor loadings produced by fate thinking ranged from 0.778 to 0.844. The factor loadings produced by responsibility thinking ranged from 0.658 to 0.776. The result of factor analysis showed that the factor loads of observation variables CP7 and SC4 were both less than 0.4, so these two items were deleted. The explanation of the total variance of the construct is shown in Table 3.11.

Table 3.11 Total Variance Explained

| Component | Initial Eigenvalues |               |              | Extraction Sums of Squared Loadings |               |              | Rotation Sums of Squared Loadings |               |              |
|-----------|---------------------|---------------|--------------|-------------------------------------|---------------|--------------|-----------------------------------|---------------|--------------|
|           | Total               | % of Variance | Cumulative % | Total                               | % of Variance | Cumulative % | Total                             | % of Variance | Cumulative % |
| 1         | 13.651              | 34.127        | 34.127       | 13.651                              | 34.127        | 34.127       | 5.211                             | 13.028        | 13.028       |
| 2         | 4.622               | 11.556        | 45.683       | 4.622                               | 11.556        | 45.683       | 4.879                             | 12.197        | 25.225       |
| 3         | 3.636               | 9.089         | 54.773       | 3.636                               | 9.089         | 54.773       | 4.23                              | 10.574        | 35.799       |
| 4         | 2.549               | 6.372         | 61.144       | 2.549                               | 6.372         | 61.144       | 3.731                             | 9.327         | 45.126       |
| 5         | 2.2                 | 5.501         | 66.646       | 2.2                                 | 5.501         | 66.646       | 3.434                             | 8.586         | 53.712       |
| 6         | 1.682               | 4.205         | 70.851       | 1.682                               | 4.205         | 70.851       | 3.265                             | 8.163         | 61.875       |
| 7         | 1.328               | 3.32          | 74.171       | 1.328                               | 3.32          | 74.171       | 3.25                              | 8.124         | 69.999       |
| 8         | 1.232               | 3.081         | 77.252       | 1.232                               | 3.081         | 77.252       | 2.901                             | 7.253         | 77.252       |
| 9         | 0.912               | 2.279         | 79.531       | -                                   | -             | -            | -                                 | -             | -            |

It can be seen from Table 3.11 that the percentages of the total variance explained by the factors extracted by the principal component analysis were 13.028%, 12.197%, 10.574%, 9.327%, 8.586%, 8.163% and 8.1245%, 7.253%, respectively. The cumulative variance contribution rate of eight common factors was 77.252%, which was greater than 50%, indicating a good degree of interpretation.

### **3.4.2 Reliability Test of Pretest**

Reliability test refers to the test to find that each group of measurement items can measure the internal consistency of the construct. Reliability analysis results are generally expressed by Cronbach's alpha, which is between 0-1. Cronbach's alpha provides a measure of the internal consistency of the scale. Internal consistency is the relevance between items, which is used to test the degree of the same concept or the same structure of all items. Regarding the acceptable value of Cronbach's alpha (Cronbach's alpha), there are different evaluation criteria in the research, and the general value is between 0.70 and 0.95 (Tavakol & Dennick, 2011). Cronbach's alpha is used to represent the results of reliability test. Generally, it is considered that the value between 0.70 and 0.95 is an acceptable value (Tavakol & Dennick, 2011). The following sections will present the internal consistency test results of each construct in the model.

The reliability test results of eight constructs including geriatric depression, civic participation, social cohesion, non-cognitive skills, family support, fate thinking, pro-setback thinking, and responsibility thinking showed that the Cronbach's alpha of all variables was higher than 0.80. This result indicated that the reliability of all variables test items in this study was in an acceptable range. The measurement results of Cronbach's alpha of all constructs in this study are shown in Table 3.12.

Table 3.12 Cronbach's Alpha of all Constructs

| <b>Construct</b>             | <b>Measures</b>             | <b>CITC</b> | <b>Cronbach's alpha</b> |
|------------------------------|-----------------------------|-------------|-------------------------|
| Geriatric Depression<br>(GD) | GD1                         | 0.772       | 0.910                   |
|                              | GD2                         | 0.750       |                         |
|                              | GD3                         | 0.816       |                         |
|                              | GD4                         | 0.777       |                         |
|                              | GD5                         | 0.765       |                         |
| Civic Participation<br>(CP)  | CP1                         | 0.764       | 0.932                   |
|                              | CP2                         | 0.841       |                         |
|                              | CP3                         | 0.801       |                         |
|                              | CP4                         | 0.811       |                         |
|                              | CP5                         | 0.797       |                         |
|                              | CP6                         | 0.780       |                         |
| Social Cohesion<br>(SC)      | SC1                         | 0.807       | 0.936                   |
|                              | SC2                         | 0.787       |                         |
|                              | SC3                         | 0.847       |                         |
|                              | SC5                         | 0.806       |                         |
|                              | SC6                         | 0.804       |                         |
|                              | SC7                         | 0.822       |                         |
|                              | Non-cognitive Skill<br>(NS) | NS1         |                         |
| NS2                          |                             | 0.805       |                         |
| NS3                          |                             | 0.791       |                         |
| NS4                          |                             | 0.856       |                         |
| NS5                          |                             | 0.757       |                         |
| Family Support<br>(FS)       | FS1                         | 0.860       | 0.929                   |
|                              | FS2                         | 0.838       |                         |
|                              | FS3                         | 0.835       |                         |
|                              | FS4                         | 0.808       |                         |
| Fate Thinking<br>(FT)        | FT1                         | 0.789       | 0.899                   |
|                              | FT2                         | 0.718       |                         |
|                              | FT3                         | 0.817       |                         |

| Construct                          | Measures | CITC  | Cronbach's alpha |
|------------------------------------|----------|-------|------------------|
|                                    | FT4      | 0.776 |                  |
| Pro-setback Thinking<br>(PT)       | PT1      | 0.784 | 0.897            |
|                                    | PT2      | 0.736 |                  |
|                                    | PT3      | 0.758 |                  |
|                                    | PT4      | 0.809 |                  |
| Responsibility<br>Thinking<br>(RT) | RT1      | 0.798 | 0.902            |
|                                    | RT2      | 0.819 |                  |
|                                    | RT3      | 0.775 |                  |
|                                    | RT4      | 0.738 |                  |
| Cronbach's Alpha                   |          |       | 0.947            |

In the process of exploratory factor analysis, the latent factor structure was deduced, and seven independent latent constructs and one geriatric depression construct were confirmed. Reliability tests conducted on 78 pretest data sets showed that the Cronbach coefficient alpha (Cronbach's alpha) of geriatric depression, civic participation, social cohesion, non-cognitive skills, family support, fate thinking, pro-setback thinking, and responsibility thinking was 0.910, 0.932, 0.936, 0.925, 0.929, 0.899, 0.897, 0.902, respectively. Results showed that the internal consistency of these constructs in this study all met the standard. The process and results of further statistics would be discussed in next chapter.

## **CHAPTER 4**

### **RESEARCH RESULTS**

This chapter presented the data analysis of social resources and personal skills that determine geriatric depression in China. The data came from 394 completed questionnaires, and were analyzed by the researchers using IBM spss 24 and amos 26. Firstly, this chapter briefly introduced the data collection, and reported the descriptive statistics and difference analysis of respondents. The second part was the analysis of reliability and validity. Finally, the hypothesis testing of the structural equation model (SEM) was carried out and the test results were shown.

#### **4.1 Data Collection**

The data in this study were collected from 60 years and above elderly people who living in urban communities in Beijing, Zhengzhou and Chengdu. This study defined the elderly according to the age of retirees in China during the past three decades (Q. Feng et al., 2019). The standard classification of the elderly in China generally refers to those aged 60 and over. The researcher of this study collected data by distributing paper questionnaires. In order to ensure the validity of the questionnaire collection process, online training was conducted for the recruited volunteer group. With the consent of the community staff, the research team organized the elderly to participate in interviews in the community elderly activity center or agedness University. The eligible participants were community residents aged 60 years or older with cognitive skills. The research team conducted a simple physical performance

evaluation on the eligible elderly, excluded the elderly with severe cognitive impairment, and then conducted a face-to-face structured questionnaire survey.

In this study, the questionnaires were distributed according to the proportion of the population aged 60 and above in the three cities. 197 questionnaires were distributed in Beijing, and 156 valid questionnaires were collected, with a recovery rate of 79.19%. 129 questionnaires were distributed in Zhengzhou, and 102 valid questionnaires were recovered, with an effective rate of 79.07%. 180 questionnaires were distributed in Chengdu, 136 valid questionnaires were collected, and the recovery rate was 75.56%. A total of 506 questionnaires were distributed in this study, and 394 valid questionnaires were collected, with a response rate of 77.87%. See Table 4.1 for the report of questionnaire response rate in these three cities.

Table 4.1 Response Rates of the Questionnaire

| City      | Distributed | Collected | Response Rate (%) |
|-----------|-------------|-----------|-------------------|
| Beijing   | 197         | 156       | 79.19%            |
| Zhengzhou | 129         | 102       | 79.07%            |
| Chengdu   | 180         | 136       | 75.56%            |
| Total     | 506         | 394       | 77.87%            |

## 4.2 Normality Test

In order to ensure the accuracy of the data, the normality of the data distribution was first tested by the skewness and kurtosis of the measurement items, and then the characteristics of the sample were analyzed descriptively. Studies have shown that when the absolute value of the skewness and kurtosis for the measurement items is less than 2, the measurement data has a normal distribution (Westfall & Henning, 2013). The test results for the normal distribution are shown in Table 4.2.



Table 4.2 Assessment of Normality

| <b>Item</b> | <b>Min</b> | <b>Max</b> | <b>Skewness</b> | <b>Kurtosis</b> |
|-------------|------------|------------|-----------------|-----------------|
| GD1         | 1          | 5          | -0.135          | -0.435          |
| GD2         | 1          | 5          | -0.169          | -0.622          |
| GD3         | 1          | 5          | -0.143          | -0.731          |
| GD4         | 1          | 5          | -0.141          | -0.599          |
| GD5         | 1          | 5          | -0.178          | -0.629          |
| NS1         | 1          | 5          | -0.564          | -0.230          |
| NS2         | 1          | 5          | -0.394          | -0.314          |
| NS3         | 1          | 5          | -0.503          | -0.183          |
| NS4         | 1          | 5          | -0.545          | -0.149          |
| NS5         | 1          | 5          | -0.511          | -0.263          |
| CP1         | 1          | 5          | -0.495          | -0.454          |
| CP2         | 1          | 5          | -0.397          | -0.269          |
| CP3         | 1          | 5          | -0.379          | -0.522          |
| CP4         | 1          | 5          | -0.522          | -0.318          |
| CP5         | 1          | 5          | -0.585          | -0.150          |
| CP6         | 1          | 5          | -0.448          | -0.407          |
| SC1         | 1          | 5          | -0.314          | -0.389          |
| SC2         | 1          | 5          | -0.366          | -0.435          |
| SC3         | 1          | 5          | 0.044           | -0.525          |
| SC4         | 1          | 5          | -0.404          | -0.244          |
| SC5         | 1          | 5          | -0.194          | -0.392          |
| SC6         | 1          | 5          | -0.445          | -0.196          |
| FT1         | 1          | 5          | -0.141          | -0.415          |
| FT2         | 1          | 5          | -0.255          | -0.482          |
| FT3         | 1          | 5          | -0.173          | -0.424          |
| FT4         | 1          | 5          | -0.209          | -0.556          |
| PT1         | 1          | 5          | -0.297          | -0.203          |
| PT2         | 1          | 5          | -0.119          | -0.595          |

| Item | Min | Max | Skewness | Kurtosis |
|------|-----|-----|----------|----------|
| PT3  | 1   | 5   | -0.197   | -0.576   |
| PT4  | 1   | 5   | -0.078   | -0.427   |
| RT1  | 1   | 5   | -0.329   | -0.645   |
| RT2  | 1   | 5   | -0.406   | -0.497   |
| RT3  | 1   | 5   | -0.376   | -0.450   |
| RT4  | 1   | 5   | -0.427   | -0.518   |
| FS1  | 1   | 5   | -0.651   | -0.184   |
| FS2  | 2   | 5   | -0.521   | -0.591   |
| FS3  | 1   | 5   | -0.428   | -0.409   |
| FS4  | 1   | 5   | -0.685   | -0.071   |

According to the normal distribution results of the data in Table 4.2, it can be seen that the absolute values of skewness and kurtosis of all measurement items were less than 2, which indicated that the measurement data had a normal distribution.

### 4.3 Sociodemographic Characteristics of the Sample

The demographic characteristics of respondents are shown in Table 4.3. In the sample, 52.79% were males, and 47.21% were females. Regarding education level, 76.90% of the respondents had education levels of below high school or technical secondary school level, and 23.10% were at or above high school or technical secondary school levels. On monthly income, 82.74% had an average monthly income of < 3365 yuan, and 17.26% had an average monthly income of  $\geq$  3365 yuan. Regarding living arrangement, 81.22% of respondents were not living alone while 18.78% were living alone. From the population migration of respondents, 77.16% were non-migrating populations, and 22.84% were migrating populations.

Table 4.3 Respondents' Demographic Characteristics Information

| Statistic            | Qualification                            | Response | Percent (%) |
|----------------------|--|----------|-------------|
| Gender               | Male                                     | 208      | 52.79%      |
|                      | Female                                   | 186      | 47.21%      |
| Education level      | < High School/technical secondary school | 303      | 76.90%      |
|                      | ≥ High School/technical secondary school | 91       | 23.10%      |
|                      |  |          |             |
| Monthly income       | < 3365 CNY                               | 326      | 82.74%      |
|                      | ≥ 3365 CNY                               | 68       | 17.26%      |
| Living arrangement   | Not living alone                         | 320      | 81.22%      |
|                      | Living alone                             | 74       | 18.78%      |
| Population migration | Non-migrating population                 | 304      | 77.16%      |
|                      | Migrating population                     | 90       | 22.84%      |

#### 4.4 Exploratory Factor Analysis and Reliability Test

In this section, the author reported the exploratory factor analysis and results of each construct. Exploratory factor analysis refers to the researcher using factor analysis technology to define each construct by identifying the correlation between observed variables (Schumacker & Lomax, 2010). Principal component analysis is one of the most commonly used factor extraction methods in exploratory factor analysis, and Varimax, which is one of the orthogonal rotation methods, is usually used to extract factors. This study also used Kaiser-Meyer-Olkin Measure (KMO) statistics and Bartlett spherical test method to test the appropriateness of the data. Cronbach's alpha is used to express the result of measuring the internal consistency of the construct, and it is generally considered that a value greater than 0.70 is an acceptable value. The

following sections will present the factor analysis results and internal consistency test results of each construct in the model.

#### 4.4.1 Results of Exploratory Factor Analysis

##### 1) Geriatric Depression

Table 4.4 showed the factor loadings of geriatric depression including five measurement items. Factor loadings of geriatric depression ranged from 0.838 to 0.858, and were clustered in a construct representing 71.83% of variance. KMO was 0.895, which was far greater than the minimum of 0.5. Bartlett's Sphericity Test gave a value of 1135.10. The associated level of statistical significance was less than 0.001. Therefore, it was suitable for factor analysis.

Table 4.4 Factor Analysis of Geriatric Depression

|     | <b>Component</b> | <b>Eigenvalues</b>             | <b>% of Variance</b> |
|-----|------------------|--------------------------------|----------------------|
|     | <b>1</b>         |                                |                      |
| GD5 | 0.858            |                                | -                    |
| GD4 | 0.857            |                                | -                    |
| GD3 | 0.846            | 3.592                          | 71.835               |
| GD1 | 0.839            |                                | -                    |
| GD2 | 0.838            |                                | -                    |
| KMO | 0.895            | chi-square ( $x^2$ ) = 1135.10 | Sig. < 0.001         |

Notes: GD = Geriatric depression.

## 2) Social Capital

The factor loadings of social capital was shown in Table 4.5. The table used twelve measurement items. The KMO value was 0.916, the Bartlett Sphericity Test value was 2807.42, and the associated level of statistical significance was less than 0.001. Therefore, it was suitable for factor analysis. Factor analysis clustered the measurement items into two components: civic participation and social cohesion. The factor loadings generated by civic participation ranges from 0.791 to 0.844. The factor loadings generated by social cohesion ranges from 0.785 to 0.826. The cumulative variance contribution rate of the two common factors was 68.55%, indicating a good degree of interpretation.

Table 4.5 Factor Analysis of Social Capital

|     | Component |                                | Eigenvalues | % of Variance |
|-----|-----------|--------------------------------|-------------|---------------|
|     | 1         | 2                              |             |               |
| CP5 | 0.844     |                                | 5.313       | 34.785        |
| CP3 | 0.838     |                                |             |               |
| CP6 | 0.837     |                                |             |               |
| CP4 | 0.821     |                                |             |               |
| CP1 | 0.814     |                                |             |               |
| CP2 | 0.791     |                                |             |               |
| SC4 | -         | 0.826                          | 2.913       | 33.761        |
| SC5 | -         | 0.824                          |             |               |
| SC6 | -         | 0.82                           |             |               |
| SC1 | -         | 0.81                           |             |               |
| SC3 | -         | 0.803                          |             |               |
| SC2 | -         | 0.785                          |             |               |
| KMO | 0.916     | chi-square ( $x^2$ ) = 2807.42 |             | Sig. < 0.001  |

Notes: CP = Civic participation, SC = Social cohesion.

### 3) Non-cognitive Skills

For non-cognitive skills, the results of factor loadings were shown in Table 4.6. The table used five measurement items. Factor loadings of non-cognitive skills ranged from 0.660 to 0.870, and were clustered in a construct representing 66.80% of variance. KMO was 0.872, which was far greater than the minimum of 0.5. Bartlett's Sphericity Test gave a value of 1112.31. The associated level of statistical significance was less than 0.001. Therefore, it was suitable for factor analysis.

Table 4.6 Factor Analysis of Non-cognitive Skills

|     | <b>Component</b> | <b>Eigenvalues</b>                | <b>% of Variance</b> |
|-----|------------------|-----------------------------------|----------------------|
|     | <b>1</b>         |                                   |                      |
| NS4 | 0.849            | 3.544                             | 70.88                |
| NS5 | 0.847            |                                   |                      |
| NS3 | 0.844            |                                   |                      |
| NS1 | 0.842            |                                   |                      |
| NS2 | 0.827            |                                   |                      |
| KMO | 0.872            | chi-square ( $\chi^2$ ) = 1112.31 | Sig. < 0.001         |

Notes: NS = Non-cognitive skills.

### 4) Family Support

For family support, the results of factor loadings were shown in Table 4.7. The table used four measurement items. Factor loadings of family support ranged from 0.816 to 0.861, and were clustered in a construct representing 70.98% of variance. KMO was 0.816, far greater than the minimum of 0.5. Bartlett's Sphericity Test gave a value of 720.84. The associated level of statistical significance was less than 0.001. Therefore, it was suitable for factor analysis.

Table 4.7 Factor Analysis of Family Support

|     | <b>Component</b> | <b>Eigenvalues</b>               | <b>% of Variance</b> |
|-----|------------------|----------------------------------|----------------------|
|     | <b>1</b>         |                                  |                      |
| FS3 | 0.861            |                                  |                      |
| FS1 | 0.848            |                                  |                      |
| FS4 | 0.844            | 2.839                            | 70.983               |
| FS2 | 0.816            |                                  |                      |
| KMO | 0.816            | chi-square ( $\chi^2$ ) = 720.84 | Sig. < 0.001         |

Notes: FS = Family Support.

#### 5) Confucian Coping

The factor loadings of Confucian coping could be seen in Table 4.8, which used twelve measurement items. The KMO value was 0.823, the Bartlett Sphericity Test value was 2295.72, and the associated level of statistical significance the related significance level was less than 0.001. Therefore, it was suitable for factor analysis. Factor analysis clustered the measurement items into three parts: fate thinking, pro-setback thinking, and responsibility thinking. The factor loadings generated by fate thinking ranges from 0.831 to 0.858. The factor loadings generated by pro-setback thinking ranges from 0.811 to 0.874. The factor loadings generated by responsibility thinking ranges from 0.834 to 0.864. The cumulative variance contribution rate of the three common factors was 72.10%, indicating a good degree of interpretation.

Table 4.8 Factor Analysis of Confucian Coping

|     | Component |       |       | Eigenvalues                       | % of Variance |
|-----|-----------|-------|-------|-----------------------------------|---------------|
|     | 1         | 2     | 3     |                                   |               |
| RT4 | 0.864     | -     | -     |                                   |               |
| RT2 | 0.856     | -     | -     |                                   |               |
| RT3 | 0.856     | -     | -     | 3.497                             | 24.44         |
| RT1 | 0.834     | -     | -     |                                   |               |
| FT3 | -         | 0.858 | -     |                                   |               |
| FT4 | -         | 0.854 | -     |                                   |               |
| FT1 | -         | 0.836 | -     | 2.66                              | 24.04         |
| FT2 | -         | 0.831 | -     |                                   |               |
| PT3 | -         | -     | 0.874 |                                   |               |
| PT4 | -         | -     | 0.848 |                                   |               |
| PT1 | -         | -     | 0.825 | 2.495                             | 23.622        |
| PT2 | -         | -     | 0.811 |                                   |               |
| KMO | 0.823     | -     |       | chi-square ( $\chi^2$ ) = 2295.72 | Sig. < 0.001  |

Notes: FT = Fate Thinking, PT = Pro-setback Thinking, RT = Responsibility Thinking.

#### 4.4.2 Results of Reliability Test

The reliability test results of eight constructs (geriatric depression, civic participation, social cohesion, non-cognitive skills, family support, fate thinking, pro-setback thinking, and responsibility thinking) showed that the Cronbach's alpha of all variables was higher than 0.80. The Cronbach's alpha of the eight constructs is 0.902, 0.912, 0.903, 0.897, 0.863, 0.869, 0.862, 0.878, respectively. This showed that the reliability of all variables test items in this study was in an acceptable range. The



measurement results of Cronbach's alpha of all constructs in this study were shown in Table 4.9.

Table 4.9 Cronbach's Alpha Reliability Coefficients

| <b>Construct</b>        | <b>Cronbach's alpha</b> |
|-------------------------|-------------------------|
| Geriatric Depression    | 0.902                   |
| Civic Participation     | 0.912                   |
| Social Cohesion         | 0.903                   |
| Non-cognitive Skills    | 0.897                   |
| Family Support          | 0.863                   |
| Fate Thinking           | 0.869                   |
| Pro-setback Thinking    | 0.862                   |
| Responsibility Thinking | 0.878                   |

#### **4.5 Convergent Validity and Discriminant Validity**

Structural equation model (SEM) describes the relationship between observed variables on the basis of using various types of models, and quantitative test can be provided by the theoretical model assumed by researchers. Determining the extent to which the sample data support the theoretical model is the goal of SEM analysis. Hypothesis testing is a scientific method to test theoretical models by SEM. We can have a deeper understanding of the complex relationship between constructs, through model construction and analysis (Schumacker & Lomax, 2010).

Convergent validity and discriminant validity analysis are used to confirm whether the reliability and validity of the measured data, are within a reasonable range before the verification analysis of the structural equation model.

#### 4.5.1 Convergent Validity

Convergent validity is used to indicate the degree to which the measurement items of the evaluation variable can measure the variable. It is based on checking whether and how similar structures are related (Kopcha, Ottenbreit-Leftwich, Jung, & Baser, 2014). Convergent validity uses factor loadings to evaluate its quality. In other words, measuring the contribution of variables to construct depends on the value of factor loadings. The higher the load factor value, the better the convergence quality. A load factor greater than 0.70 for each measurement of the variable is conducive to establishing convergent validity (Farrell & Rudd, 2009). The convergence validity of this study is comprehensively measured by factor loadings, average variance extraction (AVE) and combined reliability (CR). The test results of convergence validity are shown in Table 4.10:

Table 4.10 Convergence Validity Test Results

| Path |   |     | Factor loadings | AVE   | CR    |
|------|---|-----|-----------------|-------|-------|
| CP   | → | CP6 | 0.803           |       |       |
| CP   | → | CP5 | 0.828           |       |       |
| CP   | → | CP4 | 0.803           |       |       |
| CP   | → | CP3 | 0.796           | 0.634 | 0.912 |
| CP   | → | CP2 | 0.764           |       |       |
| CP   | → | CP1 | 0.783           |       |       |
| SC   | → | SC6 | 0.782           |       |       |
| SC   | → | SC5 | 0.789           |       |       |
| SC   | → | SC4 | 0.810           |       |       |
| SC   | → | SC3 | 0.772           | 0.609 | 0.903 |
| SC   | → | SC2 | 0.729           |       |       |
| SC   | → | SC1 | 0.797           |       |       |
| FS   | → | FS1 | 0.789           | 0.615 | 0.864 |

| Path |   |     | Factor loadings | AVE   | CR    |
|------|---|-----|-----------------|-------|-------|
| FS   | → | FS2 | 0.750           |       |       |
| FS   | → | FS3 | 0.811           |       |       |
| FS   | → | FS4 | 0.785           |       |       |
| NS   | → | NS4 | 0.806           |       |       |
| NS   | → | NS3 | 0.799           |       |       |
| NS   | → | NS2 | 0.776           | 0.636 | 0.897 |
| NS   | → | NS1 | 0.798           |       |       |
| NS   | → | NS5 | 0.808           |       |       |
| FT   | → | FT4 | 0.803           |       |       |
| FT   | → | FT3 | 0.814           |       |       |
| FT   | → | FT2 | 0.779           | 0.626 | 0.870 |
| FT   | → | FT1 | 0.768           |       |       |
| PT   | → | PT4 | 0.778           |       |       |
| PT   | → | PT3 | 0.838           |       |       |
| PT   | → | PT2 | 0.736           | 0.612 | 0.863 |
| PT   | → | PT1 | 0.775           |       |       |
| RT   | → | RT1 | 0.785           |       |       |
| RT   | → | RT2 | 0.800           |       |       |
| RT   | → | RT3 | 0.798           | 0.643 | 0.878 |
| RT   | → | RT4 | 0.824           |       |       |
| GD   | → | GD2 | 0.789           |       |       |
| GD   | → | GD3 | 0.802           |       |       |
| GD   | → | GD4 | 0.82            | 0.648 | 0.902 |
| GD   | → | GD5 | 0.821           |       |       |
| GD   | → | GD1 | 0.792           |       |       |

Notes: CP = Civic Participation, SC = Social Cohesion, FS = Family Support, NS = Non-cognitive Skills, FT = Fate Thinking, PT = Pro-setback Thinking, RT = Responsibility Thinking, GD = Geriatric Depression.

It can be seen from Table 4.10 that the factor loadings of civic participation, social cohesion, non-cognitive skills, family support, fate thinking, pro-setback thinking, responsibility thinking, and geriatric depression were greater than 0.7. It showed that each latent variable was highly representative of the corresponding items. In addition, the average variance extraction (AVE) value of each latent variable was greater than 0.5, and the combined reliability (CR) value was greater than 0.7, indicating that the model had convergent validity.

#### **4.5.2 Discriminant Validity**

Discriminant validity is used to detect the difference between latent variables and other latent variables (Fornell & Larcker, 1981). It is tested by comparing the square roots of the average variance extraction (AVE) of each potential structure and its correlation with other potential structures (Zaiğ & Berteau, 2011). The AVE value of each construct should be at least 0.50 (Fornell & Larcker, 1981). If the square roots of the average variance extraction (AVE) value of a variable is greater than the correlation coefficient between it and other variables, its discriminant validity is established. The internal validity of all latent variables in this study was tested by discriminant validity. According to the analysis results of exploratory factor analysis (EFA), each item has the highest load on the variable to be measured, which means that the variable is not cross loaded with other variables. The correlation between each latent variable and other latent variables can be seen through the matrix model. The Square Roots of AVE values inserted diagonally can be compared with other correlation coefficients. From comparing of the square roots of AVE values and the correlation coefficient of all the constructs, we can see that the correlation coefficients between civic participation, social cohesion, non-cognitive skills, family support, fate thinking, pro-setback thinking, responsibility thinking and geriatric depression were all smaller than the Square Roots of AVE values (Table 4.11). This results showed that there was a certain

correlation between the latent variables and a certain degree of discrimination between them. In other words, it showed that the discriminant validity of the scale data was in an acceptable range. The test results of discriminant validity of this study were shown in Table 4.11.

Table 4.11 Correlations Coefficients and Square Roots of AVE Values for All

| Constructs |              |              |              |              |              |              |              |              |
|------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
|            | <b>CP</b>    | <b>FS</b>    | <b>SC</b>    | <b>NS</b>    | <b>FT</b>    | <b>PT</b>    | <b>RT</b>    | <b>GD</b>    |
| CP         | <b>0.796</b> | -            | -            | -            | -            | -            | -            | -            |
| FS         | 0.416        | <b>0.784</b> | -            | -            | -            | -            | -            | -            |
| SC         | 0.324        | 0.053        | <b>0.780</b> | -            | -            | -            | -            | -            |
| NS         | 0.267        | 0.412        | 0.176        | <b>0.797</b> | -            | -            | -            | -            |
| FT         | -0.406       | 0.098        | -0.484       | -0.017       | <b>0.791</b> | -            | -            | -            |
| PT         | 0.453        | 0.379        | 0.463        | 0.422        | -0.094       | <b>0.783</b> | -            | -            |
| RT         | 0.466        | 0.503        | 0.36         | 0.453        | -0.165       | 0.087        | <b>0.802</b> | -            |
| GD         | -0.614       | -0.641       | -0.322       | -0.531       | 0.163        | -0.526       | -0.592       | <b>0.805</b> |

Notes: AVE and Square Roots of AVE is displays with bold style.

#### 4.6 Confirmatory Factor Analysis

Structural equation model (SEM) can test the hypothetical variable sets of various theoretical models. These hypothetical variable sets are mainly used to define the correlation of constructs. Before analyzing the path model, confirmatory factor analysis should be carried out to assess overall model fit. In confirmatory factor analysis, we statistically test the significance of the hypothetical model to verify whether the sample data is suitable for the model, and further confirm the validity of the hypothetical model (Schumacker & Lomax, 2010).

The fitting degree of the detection model can not be completed by a single index. Because the chi-square test is very sensitive to sample size, the larger the sample size (more than 200), the easier it is for  $\chi^2$  Statistics to show a significant level. Therefore, the analysis results of the chi-square test of model fitting may not be accurate (Schumacker & Lomax, 2010). However, researchers can also use the baseline comparison fitting indexes of NFI, RFI, IFI, TLI and CFI to evaluate the model and data fitting (Ho, 2006).

There are many indicators to measure the degree of fit between data and hypothetical models. It is suggested to select various model fitting indicators for evaluating model fitting, model comparison or model simplification as needed for global fitting measurement (Schumacker & Lomax, 2010). Amos analysis provides indicators to evaluate the goodness of fit of the model, which includes relative chi-square (CMIN/DF), standardized root mean square residual (SRMR), root mean square error of approximation (RMSEA), Goodness of fit index (GFI), adjusted goodness of fit index (AGFI), and Incremental fit indices such as normed fit index (NFI), non-normed fit index (TLI), incremental fit index (IFI) and comparative fit index (CFI), and so forth. A relative chi-square value (CMIN/DF) greater than 1 and less than 3 between the hypothetical model and the sample data indicates a reasonable range of fit. Other studies have suggested that a relative chi-square value (CMIN/DF) below 5 represents an acceptable fit range. The root mean square error of approximation (RMSEA) generally less than 0.08 indicates a reasonable fit, and less than 0.1 is an acceptable value (Arbuckle, 2013). Schumacker and Lomax (2010) also list some indicators of model fit. According to the above research, model fitting indicators are shown in Table 4.12.

Table 4.12 Model Fit Indices

| <b>Model-Fit Criterion</b>                      | <b>A Good Model Fit</b>                           |
|---|---|
| Relative Chi-square (CMIN/DF)                   | 1 to 5  |
| Goodness-of-fit index (GFI)                     | Value close to 0.90 or 0.95                       |
| Adjusted GFI (AGFI)                             | 0.90 or 0.95                                      |
| Root-mean square residual (RMR)                 | Indicates the closeness of $\Sigma$ to S matrices |
| Standardized RMR (SRMR)                         | < 0.05  |
| Root-mean-square error of approximation (RMSEA) | 0.05 to 0.10                                      |
| Tucker–Lewis Index (TLI)                        | Value close to 0.90 or 0.95                       |
| Normed fit index (NFI)                          | Value close to 0.90 or 0.95                       |
| Comparative fit index (CFI)                     | Value close to 0.90 or 0.95                       |

#### **4.6.1 Measurement Model Fit**

Each measurement model fit was tested firstly before assessing the overall model fit. It can be seen from the output of the structural equation model data set in this study, for the measurement model, 38 measurement variables represent eight potential constructs (geriatric depression, civic participation, social cohesion, non-cognitive skills, family support, fate thinking, pro-setback thinking, and responsibility thinking). The fitness of the eight measurement models were tested. The measurement model of geriatric depression was shown in Figure 4.1:

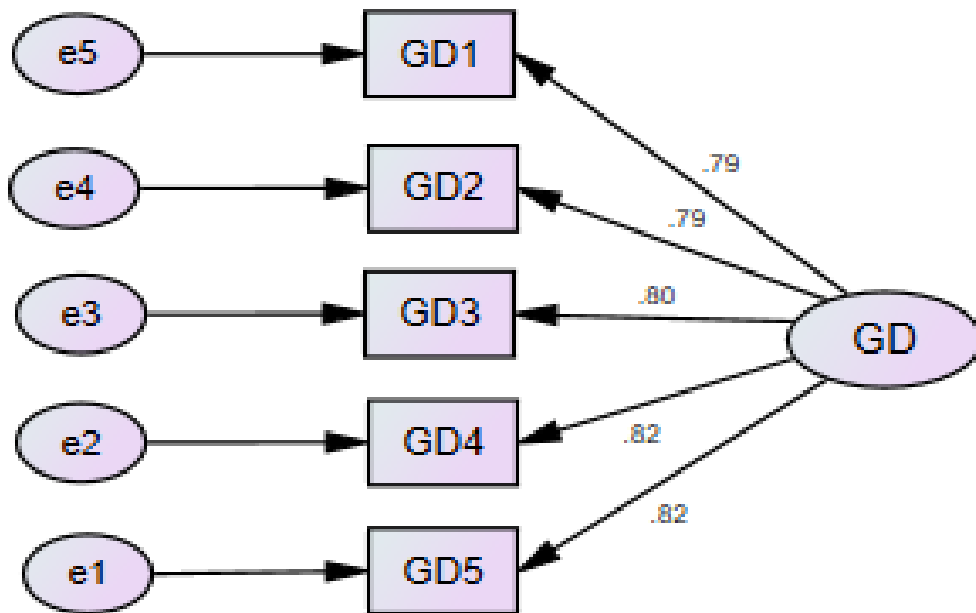


Figure 4.1 Measurement Model for GD

Table 4.13 Model Fit Result of GD

| Fit index | CMIN/DF | p     | RMSEA | GFI   | NFI   | RFI   | TLI   | CFI   |
|-----------|---------|-------|-------|-------|-------|-------|-------|-------|
| Value     | 2.890   | 0.913 | 0.062 | 0.999 | 0.999 | 0.997 | 0.961 | 0.972 |

From the model fit results in Table 4.13, we can see that the relative chi-square (CMIN/DF) of the model for geriatric depression was 2.890, which was less than 3,  $p > 0.05$ , and the RMSEA was 0.062, which was less than 0.08. At the same time, GFI, NFI, RFI, and TLI were all greater than 0.9. It could be seen that the structural validity of geriatric depression was relatively better. The measurement model of civic participation was shown in Figure 4.2:



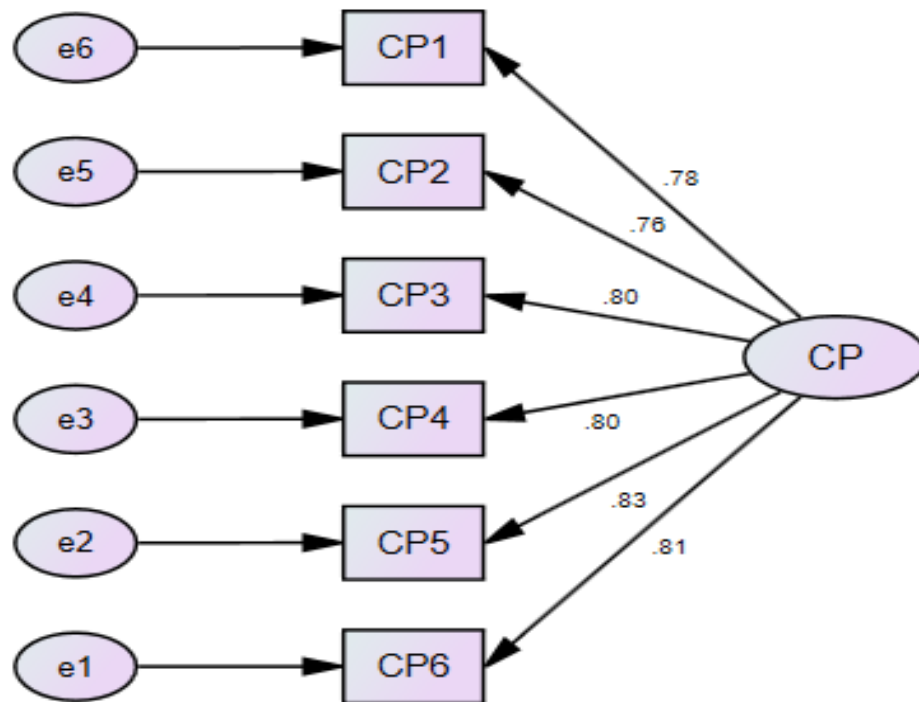


Figure 4.2 Measurement Model for CP

Table 4.14 Model Fit Result of CP

| Fit index | CMIN/DF | p     | RMSEA | GFI   | NFI   | RFI   | IFI   | TLI   | CFI   |
|-----------|---------|-------|-------|-------|-------|-------|-------|-------|-------|
| Value     | 2.584   | 0.006 | 0.063 | 0.981 | 0.984 | 0.973 | 0.990 | 0.983 | 0.990 |

As shown in Table 4.14, the relative chi-square (CMIN/DF) of the model for civic participation was 2.890, which was less than 3, the RMSEA was 0.063, which was less than 0.08, and GFI, NFI, RFI, IFI, TLI, and CFI were all greater than 0.9. It could be seen that the structural validity of civic participation was relatively better. The measurement model of social cohesion was shown in Figure 4.3:

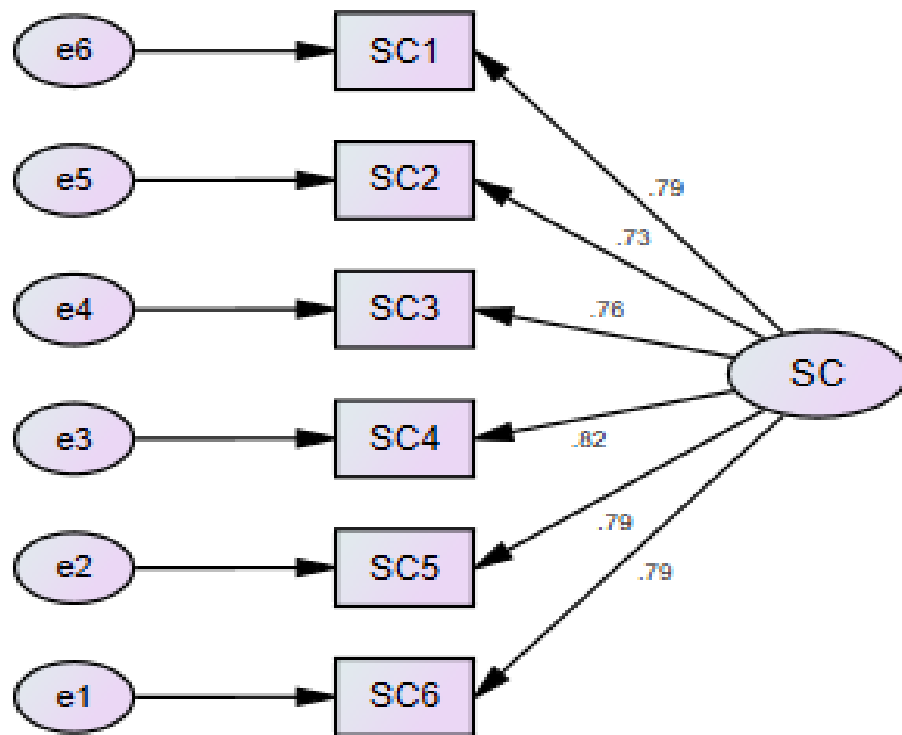


Figure 4.3 Measurement Model for SC

Table 4.15 Model Fit Result of SC

| Fit index | CMIN/DF | p    | RMSEA | GFI   | NFI   | RFI   | IFI   | TLI   | CFI   |
|-----------|---------|------|-------|-------|-------|-------|-------|-------|-------|
| Value     | 2.416   | 0.01 | 0.060 | 0.981 | 0.984 | 0.973 | 0.990 | 0.984 | 0.990 |

In Table 4.15, we can see that the relative chi-square (CMIN/DF) of the model for social cohesion was 2.416, which was less than 3, and the RMSEA was 0.060, which was less than 0.08. At the same time, GFI, NFI, RFI, IFI, TLI, and CFI were all greater than 0.9. It can be seen that the structural validity of social cohesion was relatively ideal. The measurement model of non-cognitive skills was shown in Figure 4.4:

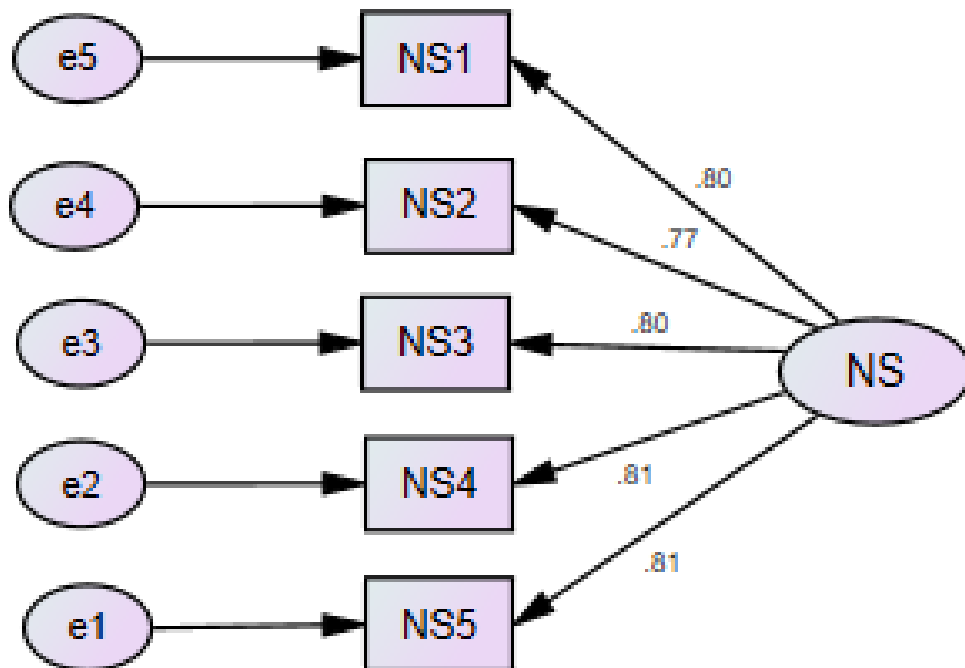


Figure 4.4 Measurement Model for NS

Table 4.16 Model Fit Result of NS

| Fit index | CMIN/DF | p     | RMSEA | GFI   | NFI   | RFI   | IFI   | TLI   | CFI   |
|-----------|---------|-------|-------|-------|-------|-------|-------|-------|-------|
| Value     | 1.840   | 0.000 | 0.046 | 0.993 | 0.993 | 0.984 | 0.997 | 0.992 | 0.997 |

As shown in Table 4.16, the relative chi-square (CMIN/DF) of the model for non-cognitive skills was 1.840, which was less than 3, the RMSEA was 0.046, which was less than 0.08, and GFI, NFI, RFI, IFI, TLI, and CFI were all greater than 0.9. It can be seen that the structural validity of non-cognitive skills was relatively ideal. The measurement model of family support was shown in Figure 4.5:

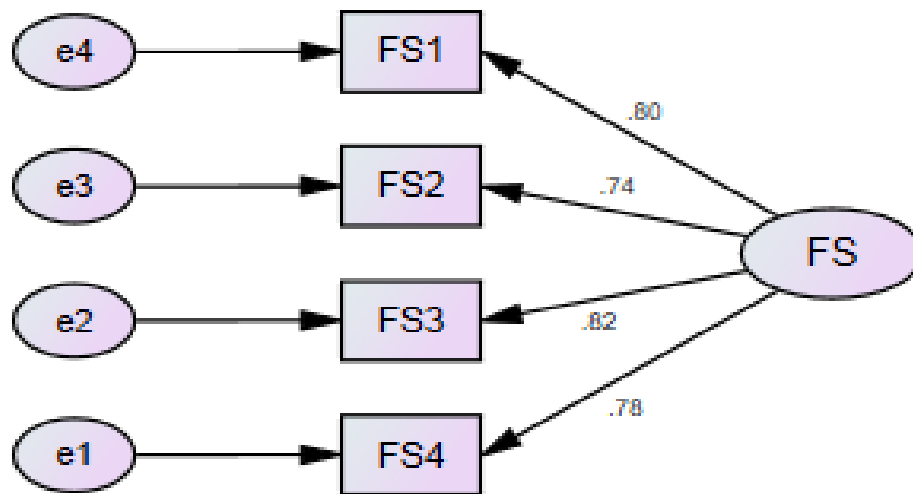


Figure 4.5 Measurement Model for FS

Table 4.17 Model Fit Result of FS

| Fit index | CMIN/DF | p     | RMSEA | GFI   | NFI   | RFI  | IFI   | TLI   | CFI   |
|-----------|---------|-------|-------|-------|-------|------|-------|-------|-------|
| Value     | 4.858   | 0.008 | 0.099 | 0.989 | 0.987 | 0.96 | 0.989 | 0.968 | 0.989 |

From the model fit results in Table 4.17, we can see that the relative chi-square (CMIN/DF) of the model for family support was 4.858, which was less than 5, and the RMSEA was 0.099, which was less than 0.1 and within an acceptable range. At the same time, GFI, NFI, RFI, IFI, TLI, and CFI were all greater than 0.9. It can be seen that the structural validity of family support was reasonable. The measurement model of fate thinking was shown in Figure 4.6:

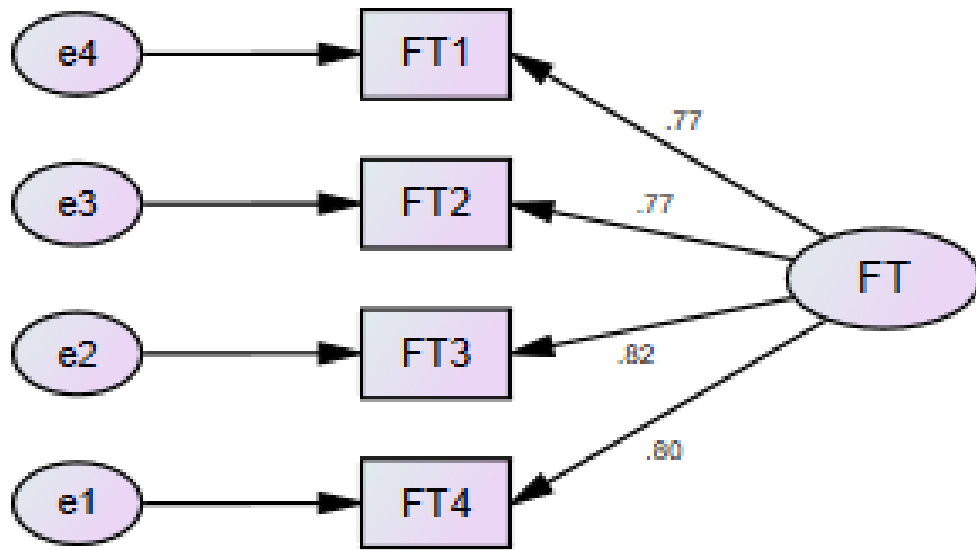


Figure 4.6 Measurement Model for FT

Table 4.18 Model Fit Result of FT

| Fit index | CMIN/DF | p     | RMSEA | GFI   | NFI   | RFI   | IFI   | TLI   | CFI   |
|-----------|---------|-------|-------|-------|-------|-------|-------|-------|-------|
| Value     | 2.234   | 0.107 | 0.056 | 0.994 | 0.994 | 0.982 | 0.997 | 0.990 | 0.997 |

As shown in Table 4.18, the relative chi-square (CMIN/DF) of the model for fate thinking was 2.234, which was less than 3,  $p > 0.05$ , the RMSEA was 0.056, which was less than 0.08, and GFI, NFI, RFI, IFI, TLI, and CFI were all greater than 0.9. It can be seen that the structural validity of fate thinking was good. The measurement model of pro-setback thinking was shown in Figure 4.7:

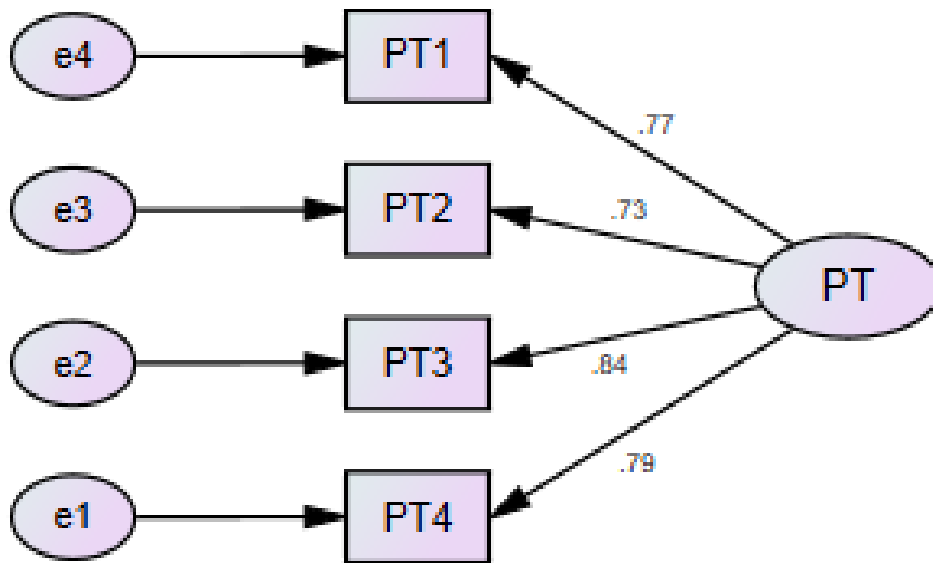


Figure 4.7 Measurement Model for PT

Table 4.19 Model Fit Result of PT

| Fit index | CMIN/DF | p     | RMSEA | GFI   | NFI   | RFI   | IFI   | TLI   | CFI   |
|-----------|---------|-------|-------|-------|-------|-------|-------|-------|-------|
| Value     | 3.667   | 0.026 | 0.082 | 0.991 | 0.991 | 0.969 | 0.993 | 0.978 | 0.993 |

In Table 4.19, we can see that the relative chi-square (CMIN/DF) of the model for pro-setback thinking was 3.667, which was less than 5, and the RMSEA was 0.082, which was less than 0.1 and within an acceptable range. At the same time, GFI, NFI, RFI, IFI, TLI, and CFI were all greater than 0.9. It can be seen that the structural validity of pro-setback thinking was reasonable. The measurement model of responsibility thinking was shown in Figure 4.8:

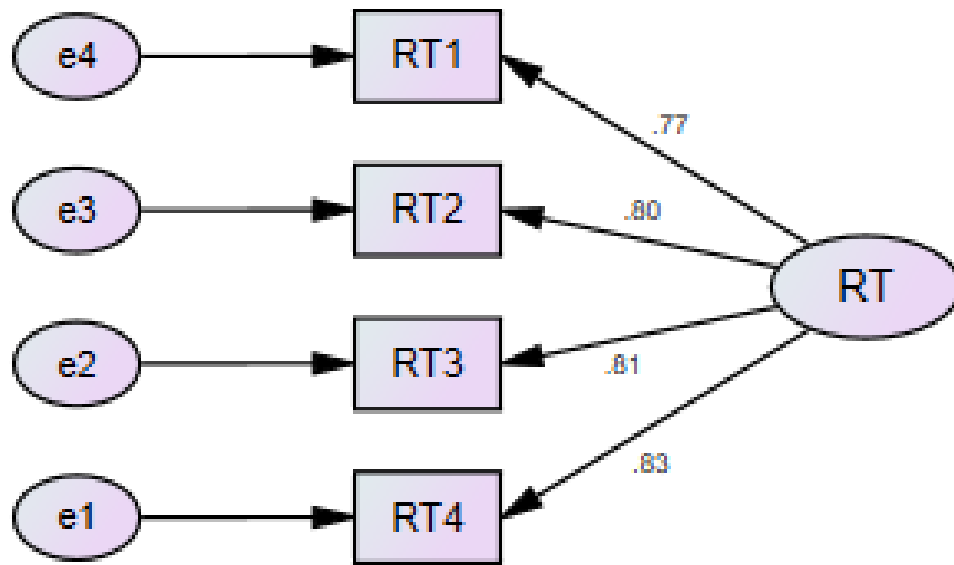


Figure 4.8 Measurement Model for RT

Table 4.20 Model Fit Result of RT

| Fit index | CMIN/DF | p     | RMSEA | GFI   | NFI   | RFI   | IFI   | TLI   | CFI   |
|-----------|---------|-------|-------|-------|-------|-------|-------|-------|-------|
| Value     | 4.374   | 0.013 | 0.093 | 0.990 | 0.989 | 0.967 | 0.992 | 0.975 | 0.992 |

From the model fit results in Table 4.20, we can see that the relative chi-square (CMIN/DF) of the model for responsibility thinking was 4.374, which was less than 5, and the RMSEA was 0.093, which was less than 0.1 and within an acceptable range. At the same time, GFI, NFI, RFI, IFI, TLI, and CFI were all greater than 0.9. It can be seen that the structural validity of responsibility thinking was reasonable.

#### 4.6.2 Overall Model Fit

Confirmatory factor analysis (CFA) is shown in Figure 4.9.

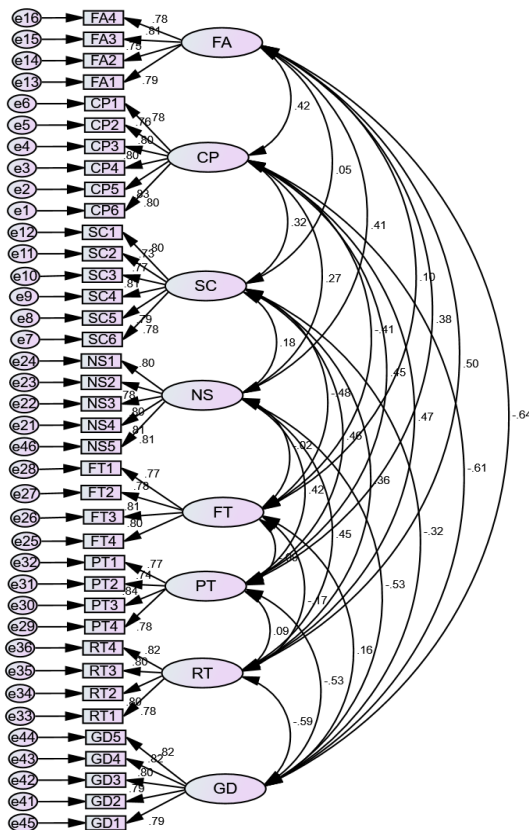


Figure 4.9 Confirmatory Factor Analysis Result

According to the results of confirmatory factor analysis, the input covariance matrix containing 394 samples was generated from 38 measurement variables of the proposed model. For the overall model, there were 104 parameters to be estimated. The model had 637 degrees of freedom (741 - 104). The chi-square goodness-of-fit test showed that the model does not fit the data well,  $\chi^2(N = 394) = 743.289, p < 0.05$ .

The chi-square test analysis revealed that the hypothetical model could not fit well with the observed variance-covariance matrix. Since the chi-square test is easily significant when the sample size is greater than 200, other indicators can be used to



measure the fit of the model. In this study, the relative chi-square (CMIN/DF) of the model was 1.750, which was less than 3, and the baseline comparison fit index of NFI, RFI, IFI, TLI and CFI was close to or more than 0.9 (ranging from 0.874 to 0.947). According to the the range of measured baseline comparison fit index, the remaining possible improvement of the hypothetical model fit may be small (0.053 to 0.126). Moreover, the absolute fitting index of RMSEA was less than 0.06 (RMSEA = 0.044), and the value of RMSEA, which was close to or less than 0.06, was considered to be good model fitting for data (West, Taylor, & Wei, 2012). These index results can reflect the good fit between the model and the data. The models suitable for confirmatory factor analysis were shown in table 4.21.

Table 4.21 Model Fit Result for CFA

| <b>Fit index</b> | <b>CMIN/DF</b> | <b>RMSEA</b> | <b>GFI</b> | <b>NFI</b> | <b>RFI</b> | <b>IFI</b> | <b>TLI</b> | <b>CFI</b> |
|------------------|----------------|--------------|------------|------------|------------|------------|------------|------------|
| Value            | 1.750          | 0.044        | 0.878      | 0.884      | 0.874      | 0.947      | 0.942      | 0.946      |

#### **4.7 Model Specification and Evaluation**

Model specification means that in the structural equation model, the variables contained in the theoretical model and the relationship between these variables can be determined according to the available information. Determining the best model to generate the sample covariance matrix fit theoretical model is the focus of researchers (Schumacker & Lomax, 2010).

In the structural equation model (see Figure 4.10), civic participation (CP), social cohesion (SC) and non-cognitive skills (NS) are exogenous variables. The six structures are partly exogenous and partly endogenous variables, including family support (FS), fate thinking (FT), pro-setback thinking (PT) and responsibility thinking (RT). The remaining variable, geriatric depression (GD), is an endogenous variable. The structural equation model is shown in Figure 4.10.

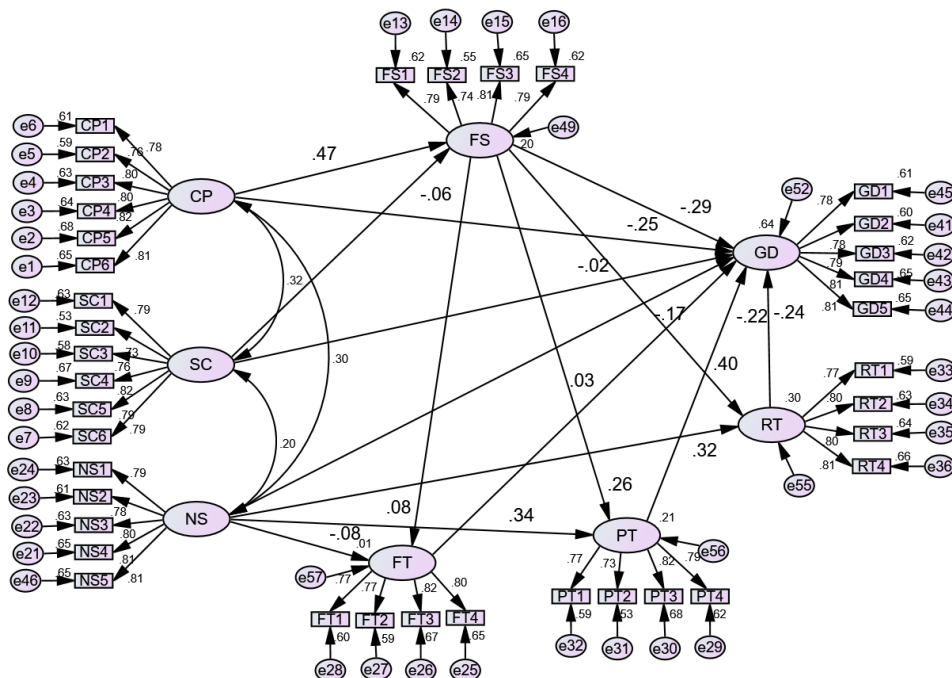


Figure 4.10 Structural Equation Model

The better fitting between the model and the data is reflected in that the covariance matrix of the model is equal to or close to the sample covariance matrix. The model results showed that due to the large sample size, The chi-square goodness-of-fit test reflected that the model did not fit the data well,  $\chi^2 (N = 394) = 743.289$ ,  $p < 0.05$ . Although the model did not fit well by chi-square test, the baseline comparison

index showed that the values of NFI, RFI, IFI, TLI and CFI were close to or more than 0.9 (ranging from 0.874 to 0.947). The remaining possible improvement (0.053 to 0.126) of the hypothetical model was so small that it was almost meaningless. Moreover, the relative chi-square (CMIN/DF) of the model was less than 3 (CMIN/D = 1.750), the value of RMSEA was less than 0.06 (RMSEA = 0.044), which can also reflect the good fit between the model and the data. In short, the model fitting index indicated that the covariance matrix of the model was equal to or close to the sample covariance matrix, and the fitting relationship between the model and the data was acceptable.

#### **4.8 Hypothesis Test**

To judge the statistical significance of the theoretical model and the fitting standard of the model, it is necessary to evaluate not only the value of the chi-square test and the approximate root mean square error (RMSEA) of the model, as well as other fitting indices such as GFI, INFI, IFI, TLI, CFI, and so forth, but also to test the statistical significance of single parameter estimation of the model path (Schumacker & Lomax, 2010). Path analysis focuses on measuring the direct and indirect effect of one variable on another (Freedman, 1987).

##### **4.8.1 Analyses of Direct Effects**

The hypothesis test of direct effect is an evaluation of the 15 hypotheses around the relationship between variables proposed in Chapter 3. The path analysis model will be used to verify whether these assumptions are true. According to the results of the fitting degree of the previous model, the model can fit the data and can be used to further test the hypothesis.

Previous studies have shown that multiple measurement indicators can be used to explain the results of path analysis. It includes P value and critical ratio (C.R.), standardized regression weight ( $\beta$ ) And multivariate correlation square (R<sup>2</sup>). For the P value and critical ratio (C.R.), if the P value is lower than 0.05 and the critical ratio is higher than  $\pm 1.96$ , it means that the null hypothesis is rejected and the hypothesis is true. The hypothesis is statistically significant, otherwise it is not statistically significant. Standardized regression weight ( $\beta$ ) or standardized coefficient estimates are used to indicate the relationship and strength between the two variables. The coefficient includes positive and negative values, which respectively represent the positive and negative correlation between variables. Multivariate correlation square (R<sup>2</sup>) is mainly used to express the percentage of explained variance, in other words, the degree to which the dependent variable is explained by its related independent variables. The path analysis results of this study are shown in Table 4.22 and Figure 4.11.

Table 4.22 Summary Results of the Path Analysis

| Hypothesis | Path   | Standardized     |       |        |       |               | Result |
|------------|--|------------------|-------|--------|-------|---------------|--------|
|            |  | Path Coefficient | S.E.  | C.R.   | P     |               |        |
| H1a        | Civic participation → Family support           | 0.465            | 0.06  | 7.67   | ***   | Supported     |        |
| H1b        | Civic participation → Geriatric depression     | -0.251           | 0.051 | -5.031 | ***   | Supported     |        |
| H2a        | Social cohesion → Family support               | -0.064           | 0.055 | -1.138 | 0.255 | Not supported |        |
| H2b        | Social cohesion → Geriatric depression         | -0.017           | 0.041 | -0.416 | 0.678 | Not supported |        |
| H3a        | Non-cognitive skills → Fate thinking           | -0.078           | 0.062 | -1.349 | 0.177 | Not supported |        |
| H3b        | Non-cognitive skills → Pro-setback thinking    | 0.344            | 0.056 | 6.128  | ***   | Supported     |        |
| H3c        | Non-cognitive skills → Responsibility thinking | 0.324            | 0.05  | 6.052  | ***   | Supported     |        |
| H3d        | Non-cognitive skills → Geriatric depression    | -0.166           | 0.047 | -3.399 | ***   | Supported     |        |
| H4a        | Family support → Fate thinking                 | 0.08             | 0.066 | 1.371  | 0.17  | Not supported |        |
| H4b        | Family support → Pro-setback thinking          | 0.257            | 0.058 | 4.622  | ***   | Supported     |        |
| H4c        | Family support → Responsibility thinking       | 0.399            | 0.055 | 7.105  | ***   | Supported     |        |
| H4d        | Family support → Geriatric depression          | -0.292           | 0.056 | -5.343 | ***   | Supported     |        |
| H5a        | Fate thinking → Geriatric depression           | 0.026            | 0.035 | 0.665  | 0.506 | Not supported |        |

| Hypothesis | Path   | Standardized |       |        | P   | Result    |
|------------|--|--------------|-------|--------|-----|-----------|
|            |  | Path         | S.E.  | C.R.   |     |           |
| H5b        | Pro-setback thinking → Geriatric depression    | -0.222       | 0.046 | -4.722 | *** | Supported |
| H5c        | Responsibility thinking → Geriatric depression | -0.244       | 0.052 | -4.813 | *** | Supported |

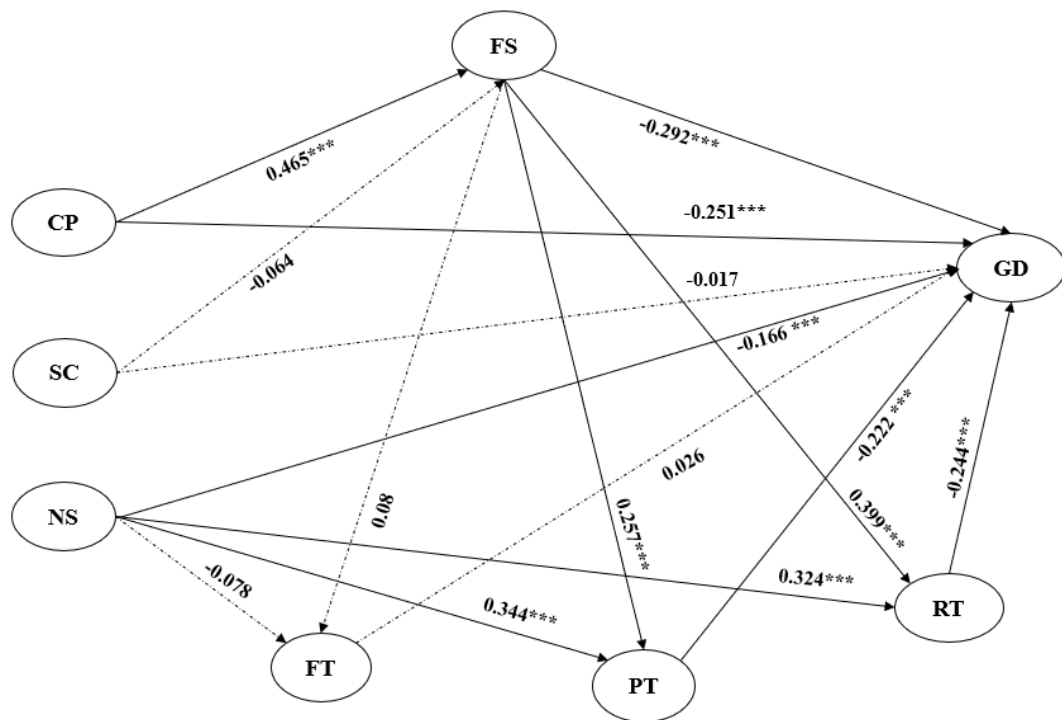


Figure 4.11 Path Coefficients for the Conceptual Framework

Note: 1. \*\*\* =  $p < 0.001$ .

2. Solid lines refer to significant paths and dashed lines refer to non-significant paths.

The test results of hypothesis H1a in Table 4.22 of path analysis results showed that civic participation was positively correlated with family support ( $\beta = 0.465$ ,  $p < 0.001$ , C.R. = 7.67). Therefore, the higher level of civic participation, the better is the degree of family support.

The test results of hypothesis H1b showed that civic participation and geriatric depression was negatively correlated and had statistically significant ( $\beta = -0.251$ ,  $p < 0.001$ , C.R. = -5.031). Therefore, the higher degree of civic participation people have, the lower level of geriatric depression they get.

From the hypothesis H2a testing result we can see that the impact of social cohesion on family support was not significant ( $P = 0.255$ , C. R. = -1.138). Therefore, it was assumed that H2a was not support.

The test results of hypothesis H2b show that social cohesion was negatively correlated with geriatric depression, and the impact of social cohesion on the level of geriatric depression was not significant ( $P = 0.678$ , C. R. = -0.416). Therefore, it was assumed that H2b was rejected.

The test results of hypothesis H3a showed that the influence of non-cognitive skills on fate thinking was not significant ( $P = 0.177$ , C. R. = -1.349). Therefore, it was assumed that H6a was not tenable.

The test results of hypothesis H3b showed that non-cognitive skills were positively correlated with pro-setback thinking ( $\beta = 0.344$ ,  $p < 0.001$ , C.R. = 6.128). Therefore, the higher the level of non-cognitive skills, the more is pro-setback thinking.

The test results of hypothesis H3c showed that non-cognitive skills was positively correlated with responsibility thinking ( $\beta = 0.324$ ,  $p < 0.001$ , C.R. = 6.052). Therefore, the higher the level of non-cognitive skills, the more responsibility thinking.

From the hypothesis H3d testing result we can see that non-cognitive skills was negatively correlated with geriatric depression, which was statistically significant ( $\beta = -0.166$ ,  $P < 0.001$ , C.R. = -3.399). Therefore, the hypothesis H3d was true, indicating that the higher the level of non-cognitive skills, the lower is the level of depression in the elderly.

The test results of hypothesis H4a showed that family support had no significant effect on fate thinking ( $P = 0.17$ , C. R. = 1.371). Therefore, it was assumed that H4a was not tenable.

The test results of hypothesis H4b showed that family support was positively correlated with pro-setback thinking ( $\beta = 0.257$ ,  $p < 0.001$ , C.R. = 4.622). Therefore, the higher the degree of family support, the more pro-setback thinking.



The test results of hypothesis H4c showed that family support was positively correlated with responsibility thinking ( $\beta = 0.399$ ,  $p < 0.001$ , C.R. = 7.105). Therefore, the higher the degree of family support, the more is responsibility thinking.

The test results of hypothesis H4d showed that family support was significantly negatively correlated with geriatric depression ( $\beta = -0.292$ ,  $p < 0.001$ , C.R. = -5.343). Therefore, the higher the degree of family support, the lower is the level of depression in the elderly.

The test results of hypothesis H5a showed that fate thinking had no significant effect on geriatric depression ( $P = 0.506$ , C. R. = 0.665). Therefore, it was assumed that H5a was not tenable.

The test results of hypothesis H5b showed that pro-setback thinking is significantly negatively correlated with geriatric depression ( $\beta = -0.222$ ,  $p < 0.001$ , C.R. = -4.722). Therefore, the more pro-setback thinking, the lower is the level of depression in the elderly.

The test results of hypothesis H5c showed that responsibility thinking was significantly negatively correlated with geriatric depression ( $\beta = -0.244$ ,  $p < 0.001$ , C.R. = -4.813). Therefore, the more responsibility thinking, the lower is the level of depression in the elderly.

#### **4.8.2 Analyses of Mediating Effects**

In addition to the direct effects between variables, the conceptual framework of this study also includes some potential mediating effects of geriatric depression. This study uses the bias-corrected bootstrap sampling procedure to test these mediating effects. Research shows that the previous Baron-Kenny test and Sobel test have some defects and can not fully test the mediating effects (Bollen & Stine, 1990; Montoya & Hayes, 2017). The bootstrapping procedure provides a more reasonable method to obtain specific indirect effects and can be adapted to most conditions (Bollen & Stine,

1990; Preacher & Hayes, 2008). At the 95% confidence level, if the bias- corrected confidence interval (CI) does not contain zero and  $|Z| \geq 1.96$ , it means that the mediating effects are statistically significant, otherwise it means that the mediating effects are not statistically significant.

The analyses of mediating effects results using Amos 26 bootstrapping procedure method are shown in Table 4.23.

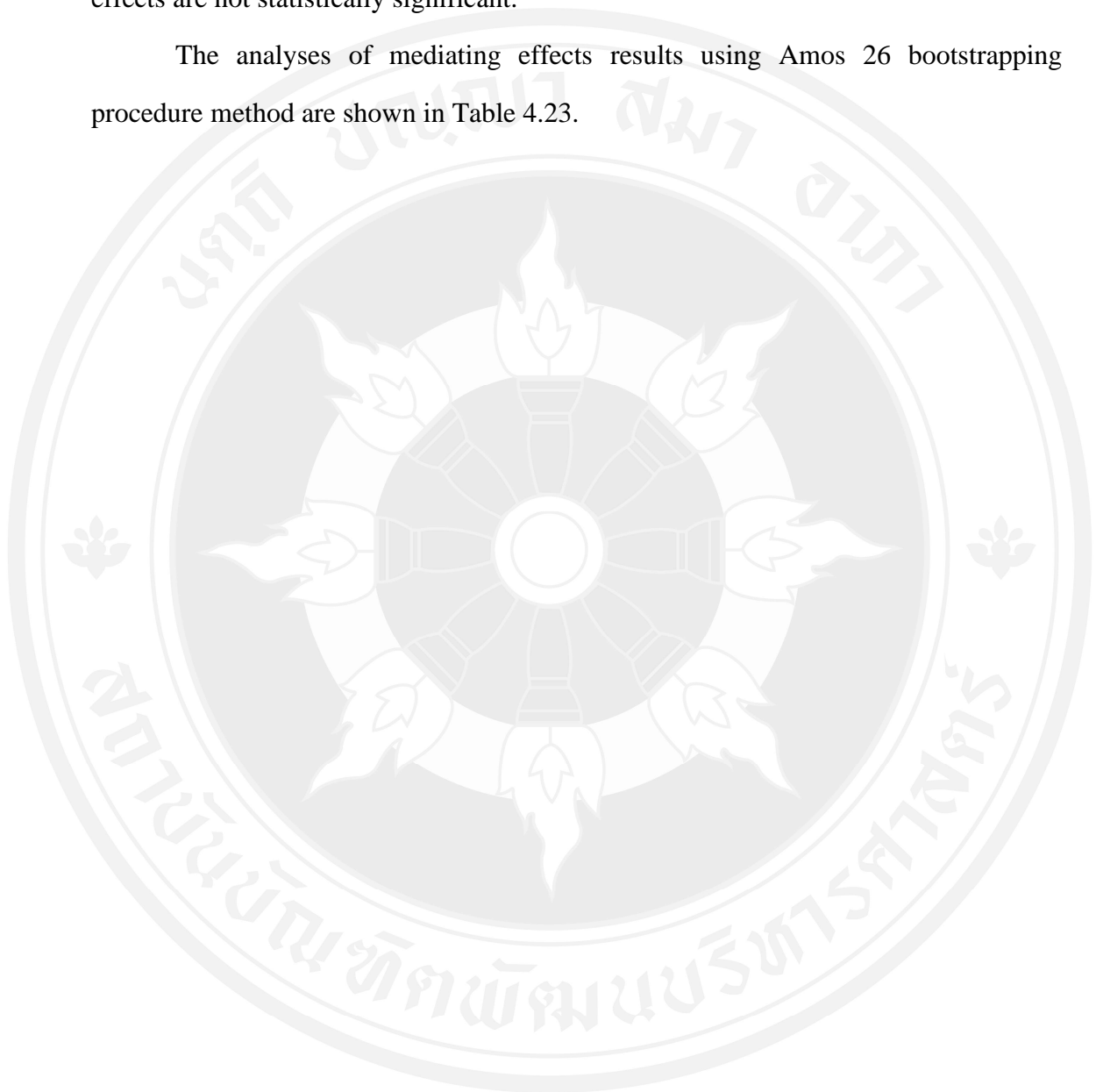


Table 4.23 Mediating Effects by Bootstrapping Procedure

| Path   | Point Estimation |       | Product of Coefficients |        | Bias-corrected CI |               | Result |
|--|------------------|-------|-------------------------|--------|-------------------|---------------|--------|
|  | Estimation       | SE    | Z                       | Lower  | Upper             |               |        |
| Civic participation → Family support → Geriatric depression                        | -0.136           | 0.029 | -4.690                  | -0.200 | -0.083            | Supported     |        |
| Social cohesion → Family support → Geriatric depression                            | 0.019            | 0.019 | 1.000                   | -0.015 | 0.059             | Not supported |        |
| Non-cognitive skills → Fate thinking → Geriatric depression                        | -0.002           | 0.006 | -0.333                  | -0.022 | 0.005             | Not supported |        |
| Non-cognitive skills → Pro-setback thinking → Geriatric depression                 | -0.076           | 0.026 | -2.923                  | -0.137 | -0.035            | Supported     |        |
| Non-cognitive skills → Responsibility thinking → Geriatric depression              | -0.079           | 0.024 | -3.292                  | -0.133 | -0.037            | Supported     |        |
| <b>The following is the chain mediation effects</b>                                |                  |       |                         |        |                   |               |        |
| Civic participation → Family support → Fate thinking → Geriatric depression        | 0.001            | 0.003 | 0.333                   | -0.002 | 0.010             | Not supported |        |
| Civic participation → Family support → Pro-setback thinking → Geriatric depression | -0.027           | 0.010 | -2.700                  | -0.053 | -0.011            | Supported     |        |

| Path  | Product of Coefficients |       | Bias-corrected CI |        | Result |               |
|---|-------------------------|-------|-------------------|--------|--------|---------------|
|   | Point Estimation        | SE    | Z                 | Lower  |        | Upper         |
| Civic participation → Family support → Responsibility thinking → Geriatric depression | -0.045                  | 0.014 | -3.214            | -0.077 | -0.022 | Supported     |
| Social cohesion → Family support → Fate thinking → Geriatric depression               | 0.000                   | 0.001 | 0.000             | -0.004 | 0.000  | Not supported |
| Social cohesion → Family support → Pro-setback thinking → Geriatric depression        | 0.004                   | 0.004 | 1.000             | -0.002 | 0.013  | Not supported |
| Social cohesion → Family support → Responsibility thinking → Geriatric depression     | 0.006                   | 0.006 | 1.000             | -0.005 | 0.021  | Not supported |

According to results shown in Table 4.23, the indirect effect of civic participation mediated by family support on geriatric depression (indirect effect = -0.136,  $z = -4.690$ , 95% bias corrected CI [-0.200, -0.083]), showed that the interval did not include 0, and  $|Z| \geq 1.96$ . The mediating effect was statistically significant. The indirect effect of social cohesion on geriatric depression mediated by family support (indirect effect = 0.019,  $z = 1.000$ , 95% bias corrected CI [-0.015, 0.059]), and the indirect effect of non-cognitive skills mediated by fate thinking on geriatric depression (indirect effect = -0.002,  $z = -0.333$ , 95% bias corrected CI [-0.022, 0.005]), showed that the interval includes 0,  $|Z| \leq 1.96$ , so they were not statistically significant. The indirect effect of non-cognitive skills mediated by pro-setback thinking on geriatric depression (indirect effect = -0.076,  $z = -2.923$ , 95% bias corrected CI [-0.137, -0.035]), and the indirect effect of non-cognitive skills mediated by responsibility thinking on geriatric depression (indirect effect = -0.079,  $z = -3.292$ , 95% bias corrected CI [-0.133, -0.037]), all met the significant criteria that the interval does not contain 0 and  $|Z| \geq 1.96$ . These mediating effects were statistically significant.

The following were the chain mediation effects. The indirect effect of civic participation mediated by family support and pro-setback thinking on geriatric depression (indirect effect = -0.027,  $z = -2.700$ , 95% bias corrected CI [-0.053, -0.011]), the indirect effect of civic participation mediated by family support and responsibility thinking on geriatric depression (indirect effect = -0.045,  $z = -3.214$ , 95% bias corrected CI [-0.077, -0.022]), showed that the interval did not include 0, and  $|Z| \geq 1.96$ . The mediating effect was statistically significant. The indirect effect of civic participation mediated by family support and fate thinking on geriatric depression (indirect effect = 0.001,  $z = 0.333$ , 95% bias corrected CI [-0.002, 0.010]), showed that  $|z| \leq 1.96$ , The mediating effect was not statistically significant. Similarly, the indirect effect of social cohesion mediated by family support and fate thinking on geriatric depression (indirect effect = 0.000,  $z = 0.000$ , 95% bias corrected CI [-0.004, 0.000]), the indirect effect of social cohesion mediated by family support and pro-setback thinking on geriatric depression (indirect effect = 0.004,  $z = 1.000$ , 95% bias corrected CI [-0.002, 0.013]), and the indirect effect of civic participation mediated by family support and responsibility thinking on geriatric depression (indirect effect = 0.006,  $z = 1.000$ , 95% bias corrected CI [-0.005, 0.021]), cannot meet the significant criteria that

the interval contains 0 and  $|Z| \leq 1.96$ . These mediating effects were also not statistically significant.

#### 4.9 Summary of Research Results

The results of this study on the above hypotheses tests are summarized in Table 4.24. The result of hypothesis H1a test showed that civic participation had a positive impact on family support. The result of hypothesis H1b test showed that civic participation could significantly negatively affect the level of geriatric depression. While The result of hypothesis H2a test indicated that the impact of social cohesion on family support was not significant. The result of hypothesis H2b test indicated that social cohesion had little effect on geriatric depression.

The hypotheses H3b and H3c tests results revealed that non-cognitive skills had a significant positive impact on pro-setback thinking and responsibility thinking. While the hypothesis H3a test result revealed that non-cognitive skills had no significant impact on the increase of fate thinking. The result of hypothesis H3d test showed that non-cognitive skills had a significant negative impact on geriatric depression.

The hypothesis H4b and H4c tests results showed that pro-setback thinking and responsibility thinking were positively affected by family support, while the hypothesis H4a test result showed that fate thinking is not significantly affected by family support. The result of hypothesis H4d test showed that family support has a significant negative impact on geriatric depression.

The result of hypothesis H5a test indicated that fate thinking had no significant effect on geriatric depression, while The result of hypotheses H5b and H5c tests indicated that pro-setback thinking and responsibility thinking could significantly and negatively affect geriatric depression.

The results of hypotheses H6a and H6b tests showed that family support had a significant mediating effect between civic participation and geriatric depression, while family support had no significant mediating effect between social cohesion and geriatric depression, respectively.

The results of hypotheses H7, H8 and H9 tests indicated that pro-setback thinking had a significant mediating effect between non-cognitive skills and geriatric

depression, responsibility thinking had a significant mediating effect between non-cognitive skills and geriatric depression, while fate thinking had no significant mediating effect between non-cognitive skills and geriatric depression.

The results of hypotheses H10b, H10c and H10a tests showed that family support and pro-setback thinking played a significant mediating role between civic participation and geriatric depression, family support and responsibility thinking played a significant mediating role between civic participation and geriatric depression, but family support and fate thinking had no significant mediating effect between civic participation and geriatric depression.

The results of hypotheses H10d, H10e and H10f tests indicated that family support and fate thinking, family support and pro-setback thinking, and family support and responsibility thinking had no significant mediating effect between social cohesion and geriatric depression, respectively. See Table 4.24 for specific results.

Table 4.24 Summary of Hypotheses Testing Results

|     | <b>Hypothesis</b>   | <b>Beta</b> | <b>P</b>      | <b>Result</b> |
|-----|---|-------------|---------------|---------------|
| H1a | Civic participation positively affects family support.                          | 0.465       | Significant   | Supported     |
| H1b | Civic participation has a direct negative relationship to geriatric depression. | -0.251      | Significant   | Supported     |
| H2a | Social cohesion is positively associated with family support.                   | -0.064      | Insignificant | Not supported |
| H2b | Social cohesion has a direct negative relationship to geriatric depression.     | -0.017      | Insignificant | Not supported |
| H3a | Non-cognitive skills are positively associated with fate thinking.              | -0.078      | Insignificant | Not supported |
| H3b | Non-cognitive skills are positively associated with pro-setback thinking.       | 0.344       | Significant   | Supported     |

|     | <b>Hypothesis</b>   | <b>Beta</b> | <b>P</b>      | <b>Result</b> |
|-----|---|-------------|---------------|---------------|
| H3c | Non-cognitive skills are positively associated with responsibility thinking.        | 0.324       | Significant   | Supported     |
| H3d | Non-cognitive skills have a direct negative relationship to geriatric depression.   | -0.166      | Significant   | Supported     |
| H4a | Family support is positively associated with fate thinking.                         | 0.080       | Insignificant | Not supported |
| H4b | Family support is positively associated with pro-setback thinking.                  | 0.257       | Significant   | Supported     |
| H4c | Family support is positively associated with responsibility thinking.               | 0.399       | Significant   | Supported     |
| H4d | Family support has a direct negative relationship to geriatric depression.          | -0.292      | Significant   | Supported     |
| H5a | Fate thinking has a direct negative relationship to geriatric depression.           | 0.026       | Insignificant | Not supported |
| H5b | Pro-setback thinking has a direct negative relationship to geriatric depression.    | -0.222      | Significant   | Supported     |
| H5c | Responsibility thinking has a direct negative relationship to geriatric depression. | -0.244      | Significant   | Supported     |



Table 4.25 Summary of Mediating Hypothese Test Results

|     | <b>Hypothesis</b>   | <b>Z</b> | <b>Confidence Intervals do not Contain Zero</b> | <b>Result</b> |
|-----|---|----------|---|---------------|
| H6a | Family support plays a mediating role between civic participation and geriatric depression.           | -4.690   | Not contain zero                                | Supported     |
| H6b | Family support plays a mediating role between social cohesion and geriatric depression.               | 1.000    | Not contain zero                                | Not supported |
| H7  | Fate thinking plays a mediating role between non-cognitive skills and geriatric depression.           | 0.000    | contain zeros                                   | Not supported |
| H8  | Pro-setback thinking plays a mediating role between non-cognitive skills and geriatric depression.    | 1.000    | Not contain zero                                | Not supported |
| H9  | Responsibility thinking plays a mediating role between non-cognitive skills and geriatric depression. | 1.000    | Not contain zero                                | Not supported |

**The following is the chain mediation effects**

|      |   |        |                  |               |
|------|---|--------|------------------|---------------|
| H10a | Family support plays a mediating role between civic participation and fate thinking and geriatric depression. | 0.333  | Not contain zero | Not supported |
| H10b | Family support plays a mediating role between civic   | -2.700 | Not contain zero | Supported     |

|      | <b>Hypothesis</b>   | <b>Z</b> | <b>Confidence<br/>Intervals do<br/>not Contain<br/>Zero</b> | <b>Result</b> |
|------|---|----------|---|---------------|
|      | participation, pro-setback<br>thinking, and geriatric<br>depression.  |          |   |               |
| H10c | Family support plays an<br>mediating role between civic<br>participation and responsibility<br>thinking, and geriatric<br>depression. | -3.214   | Not contain zero  | Supported     |
| H10d | Family support plays a<br>mediating role between social<br>cohesion, fate thinking, and<br>geriatric depression.                      | -0.333   | Not contain zero  | Not supported |
| H10e | Family support plays a<br>mediating role between social<br>cohesion, pro-setback thinking,<br>and geriatric depression.               | -2.923   | Not contain zero  | Supported     |
| H10f | Family support plays a<br>mediating role between social<br>cohesion, responsibility<br>thinking, and geriatric<br>depression.         | -3.292   | Not contain zero  | Supported     |

## CHAPTER 5

### DISCUSSION AND CONCLUSION

The main findings and discussion of this study was presented in this chapter. Recommendations on academic thinking and management practice, limitations of research and suggestions for future research will be put forward in this chapter.

#### 5.1 Discussion

This study attempted to investigate the psychosocial factors affecting depression among the elderly in urban communities in China. The structural model included not only social resources and personal skills, but also social psychological factors, such as social support and coping styles. These latent variables jointly affected the symptoms of geriatric depression. The analytical results of the structural equation model revealed the following key findings. Geriatric depression was significantly negatively affected by civic participation and non-cognitive skills, suggesting the importance of civic participation and non-cognitive skills in maintaining mental health and reducing depression. Geriatric depression is also significantly negatively affected by family support, pro-setback thinking and responsibility thinking, which showed the importance of family support and Confucian positive setback coping and responsibility coping for mental health and depression in the elderly. In addition, active civic participation is associated with more family support. More family support or non-cognitive skills both predicted more pro-setback thinking and responsibility thinking. The relationship between the factors and the results revealed by the above findings also validate the effectiveness of the psychosocial model of geriatric depression in identifying risk factors and protective factors for geriatric depression and the complexity of the pathway. The influencing relationship between each factor was discussed in detail as followings.

### **5.1.1 Discussion on the Relationship between Social Capital and Family Support**

In the process of human growth, the acquisition of family social support is closely related to the important influence of community social capital (Q. Wu et al., 2012). The researcher of this study hypothesized that civic participation significantly positively affects family support, and social cohesion significantly positively affects family support. The results of this study found that family support was significantly affected by civic participation. This was consistent with the results of Chunkai Li et al. (2018) who found that a high level of social participation can provide more family support, while this was inconsistent with the findings of Cao et al. (2015) who reported that social participation were not significantly associated with social support. The findings of the current study did not reveal a positive impact of social cohesion on family support. This finding was different from Maguire-Jack and Wang (2016) who stated that community social cohesion has a protective effect and promoting community social cohesion contributes to increasing social support. The findings of the current study also supported the hypothesis that there is a close relationship between civic participation and family support. The improvement of community social participation of the elderly will also encourage their adult children to care more about their parents' health in order to maintain their neighborhood image and social status. With the improvement of community social participation, the elderly were more likely to obtain more family support (R. Wang et al., 2020).

### **5.1.2 Discussion on the Relationship between Social Capital and Geriatric Depression**

As a result of the poor social adaptation of the elderly, the influencing factors of geriatric depression are multifaceted. Social capital is the resources and benefits obtained by individuals through communication and contact with others in reality. Low or lack of social capital usually affects the mental health of the elderly. The researcher of this study hypothesized that civic participation and geriatric depression are directly negatively related. Social cohesion is directly and negatively associated with geriatric depression. The results of this study showed that the level of civic participation significantly affected geriatric depression. The higher the degree of civic participation,

the lower is the level of geriatric depression. This conforms to past research findings where improvement in the level of community participation was seen to reduce depressive symptoms among the elderly (Landstedt et al., 2016; Chunkai Li et al., 2018; R. Wang et al., 2020). This result indicated that communities with high levels of civic participation were more conducive to the prevention of geriatric depression. However, this finding was inconsistent with T. L. Wu, Hall, Canham, and Lam (2016) reporting that social participation had an insignificant effect on depression in older adults. At the same time, the findings of this study did not reveal a significant correlation between social cohesion and depression in the elderly. This research result were different from those of some studies, which showed that there was a strong relationship between social cohesion and geriatric depression (Murayama et al., 2015; Nakagomi et al., 2020). However, the results of this study on the two components of social capital were basically consistent with the results of a Japanese study, which showed that civic participation at the community level had a negative impact on the depressive symptoms of the elderly. While, social cohesion had no significant effect on geriatric depression (Haseda, Kondo, Takagi, & Kondo, 2018).

### **5.1.3 Discussion on the Relationship between Non-cognitive Skills and Confucian Coping**

If a person has non-cognitive skills such as emotional stability, persistence, and optimism, he or she will mostly choose to respond positively when faced with difficulties and life pressures. Moreover, Chinese people's choice of coping styles under the influence of Confucian culture will also be influenced by this culture. The researcher of this study hypothesized that an individual's non-cognitive skills would significantly and positively influence fate thinking, pro-setback thinking and responsibility thinking of Confucian coping. The research found that non-cognitive skills can significantly and positively affect pro-setback thinking and responsibility thinking of Confucian coping, but the relationship between non-cognitive skills and fate thinking is not significant. This conclusion is related to pro-setback thinking and responsibility thinking of Confucian coping, which reflect the attitude of actively coping with difficulties and setbacks, and the fate thinking that expresses the passive thinking that human destiny is dominated by heaven and resigned to fate. The findings

of this study were similar to the results of Afshar et al. (2015) who found that good personality traits or non-cognitive skills can positively influence positive coping styles.

#### **5.1.4 Discussion on the Relationship between Non-cognitive Skills and Geriatric Depression**

As a kind of potential personality traits and skills relative to cognitive skills, non-cognitive skills have a long-term impact on people's health and development. Moreover, non-cognitive skills have certain plasticity in the course of human life (Atkins et al., 2020; Heckman & Kautz, 2012). As personality traits, non-cognitive skills may reflect the impact of potential disease pathogenesis on health (Eaton et al., 2012), but previous studies had paid little attention to the impact of non-cognitive skills on geriatric depression. The researcher of this study hypothesized that non-cognitive skills are directly and negatively related to geriatric depression. From the results of this study, we can see that the non-cognitive skills of the elderly significantly affected the level of depression in the elderly. The finding showed that the higher the level of non-cognitive skills of the elderly, the lower the level of depression. This finding was consistent with the previous findings of Giltay et al. (2006), which revealed that non-cognitive skills were one of the characteristics that may lead to geriatric depression. This finding was also similar to the study results of Andrew Steptoe and Jane Wardle (2017) who stated that the better the non-cognitive skills of the middle-aged and elderly, the less the depression.

#### **5.1.5 Discussion on the Relationship between Family Support and Confucian Coping**

Because the elderly face more pressure of birth, old age, sickness and death than people at other stages. Family support can positively affect the elderly's coping with stress and difficulties, and can effectively promote the elderly's choice and action of coping strategies. The researcher of this study hypothesized that family support is significantly positively correlated with fate thinking, pro-setback thinking and responsibility thinking of Confucian coping. The results of this study found that family support was partially related to Confucian coping. When the elderly face problems or

pressure, family support can actively promote more pro-setback thinking and responsibility thinking. However, family support was not related to fate thinking. This finding was similar to the finding of an earlier study (Holahan & Moos, 1987), that is, family support can effectively promote positive coping. This result was also similar to the research findings regarding social support and coping style reported by W. Liu et al. (2016). These studies are very useful for the study of the buffering effect of social support in stress coping.

#### **5.1.6 Discussion on the Relationship between Family Support and Geriatric Depression**

As many people enter the stage of old age and their bodies gradually weaken, social support can provide more care, especially close family support, which is greatly beneficial to the physical and mental health of the elderly. The researcher of this study hypothesized that family support is directly and negatively related to geriatric depression. The results of this study found that family support can effectively reduce the symptoms of depression in the elderly. This finding conforms to that of D. Liu et al. (2020) who reported that family support can positively affect the depression level of urban and rural elderly. The results of this study were also similar to (Olagunju et al., 2015) who stated that the support of family and important others can reduce the burden of depression in the elderly. The present study's finding was also similar to the outcome of the longitudinal study conducted by Kamen et al. (2011), that is, higher family support was associated with fewer depressive symptoms in the long term. These results may contribute to the development of research on the impact of family support on depression or mental health.

#### **5.1.7 Discussion on the Relationship between Confucian Coping and Geriatric Depression**

People's positive coping with problems and difficulties in life can reduce the negative impact of stress events. Different cultural backgrounds will affect people to make different coping choices. Confucian coping, as a coping thinking adopted by Chinese people when facing difficulties and setbacks, will have an important impact on Chinese people's behavior. The researcher of this study hypothesized that fate thinking,

pro-setback thinking and responsibility thinking of Confucian coping are directly and negatively related to geriatric depression. The results of this study found that the pro-setback thinking and responsibility thinking of Confucian coping had a significant impact on geriatric depression. This finding was consistent with the research results of T.-r. Li and Hou (2012), who found that higher pro-setback thinking and responsibility thinking had a negative impact on depression. This result was also similar to the results of Lihua et al. (2017). The results of this study showed that the fate thinking of Confucian coping had no significant effect on geriatric depression. Regarding fate thinking of Confucian coping, T.-r. Li and Hou (2012) also argued that more fate thinking will not positively affect the reduction of depression. This result was also similar to Lihua et al. (2017) who found that more fate thinking in Confucian coping was associated with higher depression.

#### **5.1.8 Discussion of the Influence of Social Capital on Geriatric Depression through Family Support**

As a social resource owned by an individual, social capital has a complicated impact on people's mental health due to the constraints of various realistic conditions. Social capital can not only directly affect geriatric depression, but also indirectly affect geriatric depression through other factors. The researcher of this study hypothesized that family support associates with civic participation and social cohesion, two dimensions of social capital, and plays an important role in the relationship between this two factors and geriatric depression. That is, family support mediates the relationship between civic participation and geriatric depression. Family support mediates the association between social cohesion and geriatric depression. The results of this study found that family support mediates between civic participation and geriatric depression, whereas family support insignificantly mediates between social cohesion and geriatric depression. This finding was similar to Chunkai Li et al. (2018) who reported that good social participation can promote more social support from friends and reduce depressive symptoms in the elderly. Trust and reciprocity are often included in social cohesion in research. The finding of the study is different from the the results of Cao et al. (2015) who stated that social support can indirectly influence geriatric depression through trusting, reciprocal of cognitive social capital. This result



also showed the complexity of the pathways that social capital factors influence on depression in the elderly.

#### **5.1.9 Discussion of the Influence of Non-cognitive Skills on Geriatric Depression through Confucian Coping**

Non-cognitive skills, as unique psychological resources of individuals, can have an impact on people's mental health and depression. The researcher of this study hypothesized that fate thinking, pro-setback thinking and responsibility thinking of Confucian coping play a mediating role between non-cognitive skills and geriatric depression. The results of this study showed that pro-setback thinking and responsibility thinking of Confucian coping played a mediating role between non-cognitive skills and geriatric depression, while fate thinking had no significant mediating effect between non-cognitive skills and geriatric depression. The pro-setback thinking and responsibility thinking of Confucian coping are manifested in the Chinese people's positive coping style deeply influenced by Confucian culture in reality, and this positive coping style generally has a positive impact on people's thoughts and behaviors. The findings of this study were similar to C. S. Carver and Connor-Smith (2010) who reported that non-cognitive skills or personality traits and coping styles can interact to influence an individual's physical and mental health. More research is needed to complement this finding.

#### **5.1.10 Discussion of the Influence of Social Capital on Geriatric Depression through Family Support and Confucian Coping**

Civic participation and social cohesion as factors of social capital have a variety of mechanisms and pathways to influence depression in the elderly. The researcher of this study hypothesized that family support and fate thinking, pro-setback thinking and responsibility thinking of Confucian coping play a chain mediating role between civic participation and geriatric depression, respectively. This study also hypothesized that family support and fate thinking, pro-setback thinking and responsibility thinking of Confucian coping act as chain mediators between social cohesion and geriatric depression, respectively. The results of the study found that family support and pro-setback thinking of Confucian coping had a significant chain mediating effect between

civic participation and geriatric depression, and family support and responsibility thinking of Confucian coping had a significant chain mediating effect between civic participation and geriatric depression, while family support and fate thinking of Confucian coping had no significant chain mediating effect between civic participation and geriatric depression. This study also found that family support and fate thinking, pro-setback thinking and responsibility thinking of Confucian coping had no significant chain mediating effect between social cohesion and geriatric depression, respectively. This study was similar to the study by SoleimanvandiAzar et al. (2021) that social capital and social support affect people's positive mental state through coping, but are not identical in the results. Both studies explored the effects of social capital, social support, and coping on mental health, while the latter argued that social capital and social support improve people's mental health by improving coping abilities. The findings of this study were inconsistent with the results of Wind, Fordham, and Komproe (2011) who found that cognitive social capital (trust, mutual aid, and reciprocity) can influence mental health problems such as depression through social support and coping behaviors. More research may be needed to explore this more complex impact mechanism, so as to discover the risk prevention factors that affect the mental health of the elderly, and also contribute to the successful aging of more people.

## **5.2 Theoretical Contributions**

Geriatric depression is a common emotional disorder determined by multiple factors. Understanding the biopsychosocial factors of geriatric depression is very important to solve the problem of geriatric depression. However, previous studies have focused more on biomedical or social factors leading to geriatric depression. Studies have shown that older adults with unsuccessful aging are at the greatest risk of depression (Nari et al., 2021), which indicates that successful aging is closely related to depression in the elderly. The researcher of this study focused on social and psychological factors to explore related factors that affect geriatric depression, especially from the perspective of unsuccessful aging, and had considered and verified the important factors affecting depression in the elderly.

Within the framework of the theory of successful aging, social participation and mental health as the important factors of successful aging, have been linked to form an effective mechanism of social participation affecting mental health. At the same time, the influence of non-cognitive skills on mental health and depression was considered. It made up for the lack of research on the internal impact mechanism and process of successful aging, and provided a different perspective of successful aging research and novel perspective on the research of geriatric depression. On the basis of this research, it was also very important to expand the research of successful aging on the social capital, personal skills, social support and cultural background of the elderly.

The theoretical contributions of this research were mainly reflected in the following four aspects.

Firstly, within the theoretical framework of successful aging, social participation and mental health were closely linked. Successful aging is embodied in the good social adaptability of the elderly in their later years, and is closely linked to the community social capital of the elderly including community participation and interaction (L. F. Carver, Beamish, Phillips, & Villeneuve, 2018). This study had conducted a more specific and in-depth study of social participation by placing social participation within the scope of community social capital, making it possible to establish a connection between the social resources owned by the elderly and the mental health of the elderly. Research has shown that depression can predict successful aging (Nari et al., 2021). Some studies use depression scales or depression and anxiety scales to measure mental health (Jacob et al., 2020; Smith et al., 2020; Takagi, Kondo, & Kawachi, 2013), and mental health is a key element in measuring successful aging. This study used geriatric depression to measure the mental health of the elderly, and established a connection between the specific mental health of the elderly and successful aging. In addition, the social participation and mental health of the elderly were closely linked through the influence of social capital on depression in the elderly. The results of this study also supported the significant impact of civic participation on geriatric depression.

Secondly, the specific mechanisms linking social participation to mental health had been expanded by this study within the theoretical framework of successful aging. Active social participation can improve the mental health of the elderly, but few studies have focused on the social participation of the elderly to influence mental health through other factors (Takagi, Kondo, & Kawachi, 2013). At the same time, the relationship between social capital affecting health provides the feasibility of establishing health-promoting social capital interventions (Murayama et al., 2012). Mental health is not only affected by biological and psychological factors, but also related to social culture, politics, economy, and so forth. Cultural factors are considered to be the main determinants of mental disorders and mental health in the field of mental health (Marsella & Yamada, 2000). But cultural factors are rarely involved in mental health research. Confucian coping is a coping method that Chinese people have deeply influenced by Confucian culture, and Confucian coping has not been involved in the research field of geriatric depression and successful aging in China. When exploring the relationship between social capital and geriatric depression, this study took family support and Confucian coping as important mediating factors. In the theoretical framework of successful aging, the study had added the pathway of social capital through social support and Confucian coping to affect mental health and depression.

The results in the study not only supported the direct influence of civic participation, family support and Confucian coping on geriatric depression, but also supported that civic participation indirectly affects the degree of depression in the elderly through the mediating effects of family support and pro-setback thinking, responsibility thinking of Confucian coping. This research made the mechanism by which social capital affected mental health and geriatric depression more specific, provided a reference for the research on how social capital affected geriatric depression through social support and unique cultural coping styles, and was also conducive to the research in management of geriatric depression and successful aging. In addition, more research is needed to expand the specific pathways and intervention research of social capital affecting mental health.

Thirdly, the influence of individual non-cognitive skills factors on mental health and depression was incorporated into the theoretical framework of successful aging. Successful aging is reflected in a good social adaptability as well as good physical and mental adaptability, and maladjustment will affect physical and mental health. Non-cognitive skills or personality traits may affect the individual physical and mental adaptability. Non-cognitive skills or personality traits are closely associated with depression and mental health in the elderly. The impact of non-cognitive skills or personality traits on a person is long-term, and has both variability and relative stability in the life course. Non-cognitive skills or personality traits are also closely related to successful aging (Eaton et al., 2012; Pocnet et al., 2021; Srivastava & Das, 2013). However, there are more studies on physical health, cognitive skills, and participation in successful aging research, while there are fewer studies on non-cognitive skills or personality traits, especially quantitative research. Previous studies on non-cognitive skills have mostly focused on the fields of education and human resource management.

This research broke through the previous research fields and conducted research on specific groups of elderly people and depression. At the same time, the effect of Confucian culture in the influence of non-cognitive skills on geriatric depression was also considered. Within the theoretical framework of successful aging, the pathway were added by non-cognitive skills affecting geriatric depression through Confucian coping. The results of this study verified that non-cognitive skills directly or through the mediating effect of pro-setback thinking, responsibility thinking of Confucian coping indirectly affected the degree of geriatric depression. This research established a connection between non-cognitive skills and mental health as well as between non-cognitive skills and Confucian coping. This research expanded the dimensions of successful aging research, which was beneficial for researchers to conduct more in-depth research on non-cognitive skills in the field of geriatric depression and successful aging, and it also provided a basis for personality intervention of successful aging research.

Finally, a psychosocial multidimensional model of geriatric depression was constructed within the theoretical framework of successful aging. A connection was established between the social resources and psychological resources possessed by the elderly and geriatric depression. According to the theory of successful aging, the

researchers of this study established a relationship between social resources, personal skills, coping styles and geriatric depression, and carried out empirical research. Social capital (civic participation and social cohesion), non-cognitive skills, family support and Confucian coping (fate thinking, pro-setback thinking and responsibility thinking) were included in the conceptual model. The research added dimensions of successful aging, constructed the mechanism of social and psychological factors affecting geriatric depression, which have contributed to the literature and models. At the same time, it also made up for the lack of non-cognitive skills, cultural influence variables and specific influence mechanisms in this research field in China. Not only the influence of the social and psychological resources of the elderly on the mental health and depression was considered, but also the influence of the family and the Confucian cultural background of the Chinese elderly was considered by this study, which can help people to have a deeper understanding of the internal influencing relationships and mechanisms of the factors of successful aging. This research work was conducive to the research on mental health and depression of successful aging, and also further expanded the research field of geriatric depression and successful aging.

The findings supported the researcher's hypotheses that important factors that affect geriatric depression included civic participation, non-cognitive skills, family support, pro-setback thinking, and responsibility thinking. The results of the study also showed that the factors and mechanisms affecting depression in the elderly can be explained by the psychosocial multidimensional model of geriatric depression. In addition, due to this special stage of life in one's later years, older adults may face more frailty and stressful events. The percentage of older people who can fully achieve successful aging is very low. In the research, it is also necessary to consider the unsuccessful aging situation, such as the frailty and depression of the elderly. This study added some findings to the unsuccessful aging regarding depression, but more research and exploration are needed to think about and solve the problem of geriatric depression, and to prepare for successful aging.

### **5.3 Management and Policy Impact**

This study not only provided empirical research support for aging management and geriatric depression on prevention and control policy-making, but also had reference value at the practical level. The results may be benefit to government managers, decision makers and practitioners working with the older adults. The structural equation model provided useful information for managers to reduce the level of geriatric depression through social resources, personal skills and Confucian coping styles.

According to the findings of this study, attention needs to be paid to the development and effective utilization of social resources and personal skills in the management of aging and the prevention and control of geriatric depression. Relevant government departments should help promote community capacity building and increase the ways for social participation of the elderly, pay attention to the important influence of non-cognitive skills on geriatric depression, and strengthen the cultivation of non-cognitive skills. In terms of public health policies and services, improve the level of public medical services and decision-making should be considered. At the same time, Relevant government departments and communities should improve the level of family support intervention to help the elderly better cope with difficulties and setbacks, so as to reduce the incidence of geriatric depression.

#### **5.3.1 Strengthening Community Capacity Building**

Due to the important influence of community social capital on geriatric depression, the Chinese government should focus on the development of community capacity, which will help to improve the level of community social capital and influence the health of the elderly. Community capacity refers to the ability to manage change and actively lead the development of the community by establishing community networks and community organizations, to cultivate community awareness, community leadership and skills. Governments can effectively influence community capacity-building through the development of community partnerships. Communities with high social capital can usually make the operation of public institutions more efficient and collaborative. The good cooperative relationship between these communities and the

government can promote the increase of community organizations and enhance the quality of civic participation. Government agencies can play an active role in supporting community capacity building. On the one hand, government agencies can help communities establish and make full use of networks and skills, promote contacts between community members and government staff, and form a benign interaction between communities and public institutions. On the other hand, we should also introduce accountability for the interaction process and community capacity results of both sides (Cavaye, 2000).

As a part of long-term health promotion plan, community capacity building (CCB) has been widely used in developed societies. China can also learn from the useful experience of the West to promote the community action plan for health promotion. Improving the environment and service quality of the community and creating more practical participation opportunities for the elderly will help to reduce the impact of geriatric depression (Haseda et al., 2018). In Japan, which is coping with rapidly aging population, the central and local governments attach great importance to the impact of civic forms of community participation on geriatric depression. In 2017, 86.5% of municipalities opened salons (social gatherings) to promote the social participation of the elderly (Nakagomi et al., 2020). In China, according to the survey, the activities that most benefit the mental health of the elderly mainly include playing mahjong, playing chess, playing cards, and participating in community clubs (Ma et al., 2020). In the development of community capacity, more venues related to this activity can be added for the elderly to participate. Community capacity can also be developed by establishing community grassroots organizations and semi-public places, which is conducive to the mental health of the elderly (Shen, 2014). In addition, CCB can also contribute to the development of industries related to community services.

### **5.3.2 Developing Non-cognitive Skills**

Since non-cognitive skills are an important influencing factor of geriatric depression. Non-cognitive skills is malleable and shapeable in the course of human life. In other words, the cultivation of acquired non-cognitive skills in early education will also affect the later health of adults. In the long run, policies to boost adolescents' non-cognitive skills can bring long-term benefits to people in poor health. Therefore,



relevant government agencies need to formulate policies to enhance non-cognitive skills to promote the improvement of adult health (Atkins et al., 2020).

Non-cognitive skills are personal thinking, emotion and behavior patterns for lifelong development. Adolescent interventions implemented through education and training can promote its development. Therefore, public education should take the development of non-cognitive skills as a clear goal. Through the collaborative work of education policy makers, schools and parents, the development of non-cognitive skills should be included in the policy agenda. At the same time, the accountability system matching the curriculum, teacher training and school evaluation also needs to be considered (Garcia, 2016). The development of non-cognitive skills has also promoted the development of emerging technologies. Classdojo has become a popular application of education management in the world. It can provide rapid policy model services for remote governments. The government can use this platform to measure and manage students' non-cognitive skills and social emotional learning goals, and achieve fair results. It also reinforces the government's emerging education policy agenda on developing students' non-cognitive skills (Williamson, 2017). The development of this technology also provides a reference for the industrial development related to the cultivation of non-cognitive skills.

### **5.3.3 Improving Family Support and Coping Capacity**

Chinese people attach great importance to the concept of family. Family usually has a great influence on one's life growth. Family support also has a significant impact on the depressive symptoms of the elderly in China. Family intervention and improving social support play important roles in the prevention and control of geriatric depression. In the process of family intervention, it is necessary to adopt multi-dimensional social assistance strategies to coordinate and mobilize social support from friends, other family members, communities, and social groups (J. Wang & Zhao, 2012). The use of family support can alleviate the depressive symptoms of the elderly and provide the possibility of intervention for clinicians. The study of the impact mechanism of family support can provide a basis for expanding interventions for family support (Kamen et al., 2011). For the elderly who lack social support, in order to avoid social isolation, social workers need to work to rebuild meaningful social relations and increase their

social support network. In addition, it is also necessary to help the elderly through community education so that the elderly, their families, social organizations, and primary health care departments can detect depressive symptoms in time to ameliorate their impacts (Shibusawa & Mui, 2002).

At the same time, the elderly who lack family support are more inclined to negative coping styles. In this case, active environmental interventions should be encouraged and coping resources should be increased to reduce stress. Family oriented interventions and the development of more effective coping strategies are very beneficial to reduce geriatric depression. Improving and strengthening effective coping strategies for individuals with maladaptive characteristics should be regarded as an important part of the stress prevention and control plan. Moreover, these findings can be used to identify specific training programs to manage psychological distress (Afshar et al., 2015). However, a positive and effective coping style requires systematic work. The mental health counseling services provided by community or social institutions also play a certain role in alleviating the depressive symptoms of the elderly. Confucian coping can provide the Chinese elderly with a traditional way of thinking to deal with stress and frustration. But fate thinking does not improve the symptoms of depression. Therefore, in community education and management, it is also necessary to enable more elderly people to draw positive energy to face difficulties from Pro-setback thinking and responsibility thinking. Reduce some fate thinking and negative emotions, and also reduce the blocking effect of some negative culture. Managers should guide and promote the role of Confucian cultural in shaping the good aspects of Chinese people's mental health, and eliminate the negative influence.

#### **5.3.4 Public Health Policy and Management**

In dealing with the depression of the elderly, the government should improve the corresponding level of public medical services. With the growth of the elderly population and the increase of elderly patients, it is necessary to adjust people-centered comprehensive medical services, focus on the needs and preferences of the elderly, and ensure access to multi-age friendly services closely connected with families and communities. Public health policies should address the diversity of health and functional states experienced by the elderly, and provide comprehensive medical

services. The integration plan requires to take action at the macro level (legislation, capital), meso level (friendly environment) and micro clinical level (Rudnicka et al., 2020). At the government level, it is necessary to formulate a long-term strategic plan to deal with the pressure of an aging society, especially to establish a nationwide and affordable annual health examination system, to promote the early diagnosis of various diseases and provide affordable treatment (Fang et al., 2020).

At the same time, in order to comprehensively deal with the problem of aging, it is not enough to only pay attention to the adjustment of population policies or pay attention to some aspects of aging policies and measures. It is also necessary to reconstruct the current public policy system from the perspective of social integration and long-term development strategy, and formulate an industrial plan suitable for the development of aging society (Zhan & Xizhe, 2011).

Due to the development of urbanization and the increase of population mobility, there are a large number of migrant elderly in China. Migration will lead to the loss of original social networks and social interaction. This leads to health inequality and makes the prevalence of depression in the migrant elderly higher than that in the non-migrant elderly. The government should provide more social services for these migrant elderly, improve the community environment, reduce the adaptation barriers of the migrant elderly, so as to help them rebuild social capital and reduce the symptoms of depression (Q. Li et al., 2017). At the same time, feasible policies and interventions encouraging the elderly to actively participate in various social activities, narrowing the gap between rich and poor, and reducing income-related health inequalities should be considered by relevant government agencies (Y. Xu et al., 2016).

#### **5.4 Conclusion**

This study developed a psychosocial model of geriatric depression from a holistic perspective, including social capital, non-cognitive skills, family support and Confucian coping factors. This study has applied the successful aging theory to the proposed model and further expanded it. The results of this study confirmed the effectiveness of the psychosocial model of geriatric depression in identifying the risk factors and protection factors of geriatric depression. Promoting community-level civic

participation, improving non-cognitive skills, family support and Confucian coping are deemed to be beneficial in alleviating the social impact of geriatric depression. The development of community capacity and the improvement in management of geriatric depression may increase the actual participation, family support and coping skills of the elderly, thereby improving health.

### **5.5 Limitations of the Study**

This study has some limitations. First, due to time constraints, the data collected was cross-sectional in nature, whereas longitudinal research can better understand the research concept and verify the direction of causality.

Secondly, this study aimed at investigating the depressive symptoms of the elderly in urban communities, while there was a lack of investigation on the depression of the elderly in rural areas or in elderly care institutions. In this survey, it may be difficult for patients with serious diseases or severe depression to complete the questionnaire. The respondents in this study were generally healthy. In addition, due to the stigmatization of mental illness in China, some respondents may not have answered all the questions honestly. Therefore, they may not fully represent China's elderly population.

Finally, this study also had some deficiencies in measurement. This study only involved family and social support, but lacked the measurement and research of friend support and important others support. In addition, the evaluation of non-cognitive skills was also lack of multi-dimensional measurement, therefore, improvement in the measurement and impact of non-cognitive skills, should be studied by future researchers.

### **5.6 Future Research**

In view of some limitations in this study, future research will provide opportunities for other studies to explore from different perspectives. Firstly, for the investigation of geriatric depression, it can also be carried out for other groups, such as the depression of the elderly living in pension institutions or rural areas. The study can

also investigate the elderly of different ages, such as the depression symptoms of the younger elderly (60-70 years old), the older elderly (70-80 years old) and the elderly (80 years old and above). Second, regarding the survey of community social capital, the types of activities participated by citizens are not completely consistent with the reality of Chinese elderly. In order to improve the accuracy of the survey, we can improve this aspect. Third, in view of the insufficiency of a single dimension impact of non-cognitive skills, future research can carry out a multi-dimension impact of non-cognitive skills. In particular, we should select the non-cognitive skills that can most affect geriatric depression, so as to expand the research on the impact of non-cognitive skills on geriatric depression. Fourth, in terms of social support, besides family support, we can also carry out research on the impact of friend support, important others' support or government support on geriatric depression, so as to form a comprehensive impact research on the social support system. Fifth, in terms of Confucian coping, because the influence of fate thinking on geriatric depression is not significant, it may be necessary to redefine the dimension of Confucian coping. For example, people in collective culture emphasize social obedience. The traditional Confucian mental health concept also emphasizes individual submissiveness of Chinese people in order to achieve mental health and collective harmony (K.-S. Yip, 2003). There is also research suggests that the representations of mental health are related to the shaping of adherence to Confucianism and social obedience (X.-W. Lu et al., 2015). Therefore, in future studies researchers can try to replace fate thinking with social obedience. Future research can also carry out a comparative study on the Confucian coping level of people with different levels of education, occupation and economic income. Finally, in terms of the influencing factors of geriatric depression, this study adopts quantitative research methods, and qualitative interviews can also be used to understand the real needs and thoughts of the elderly, so as to obtain more comprehensive views on the problem of geriatric depression. In view of the above aspects, researchers can try to explore and expand the research in this field in the future.

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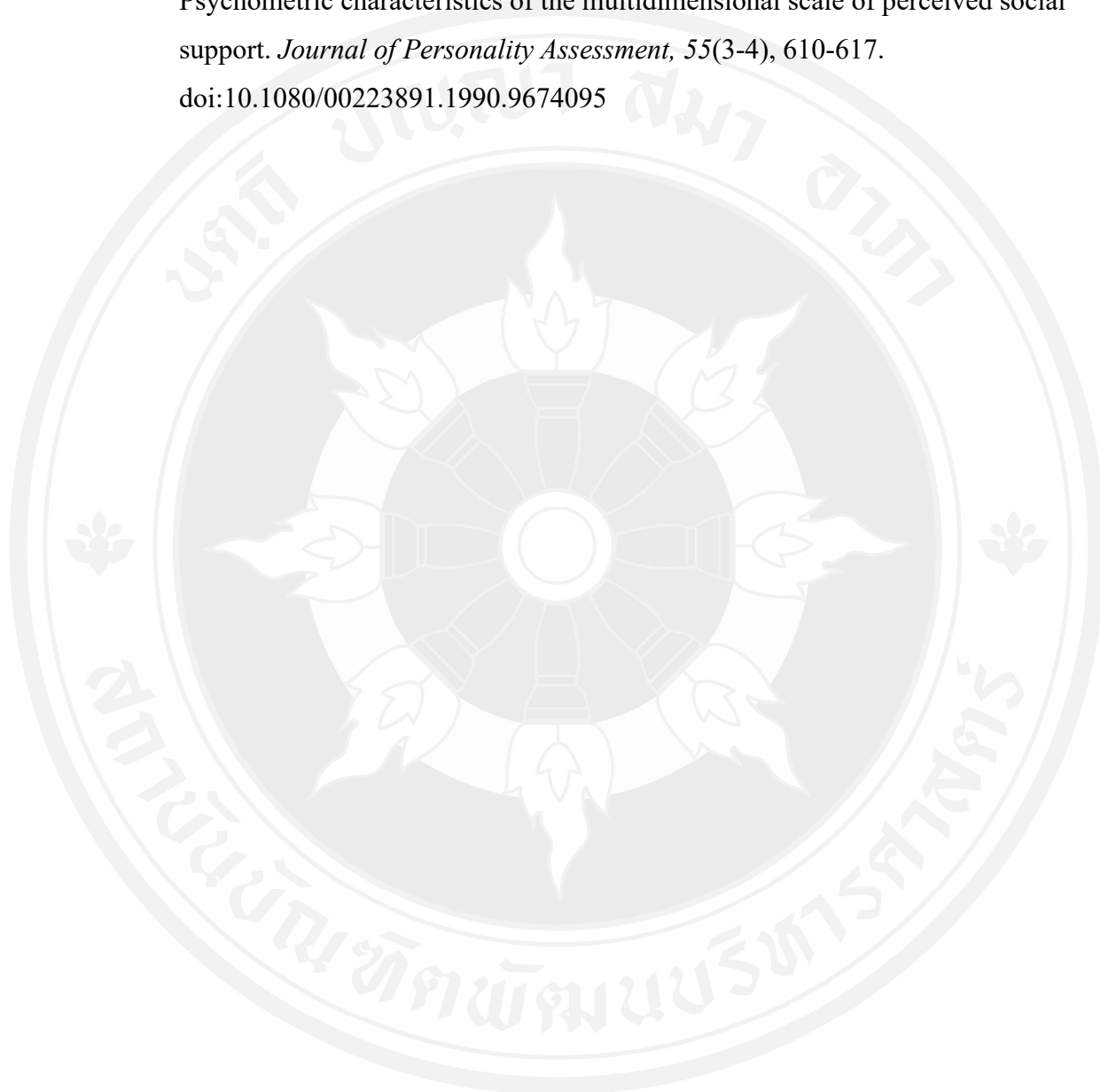


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**APPENDICES**



Appendix A

Measurement of Constructs

Table 1 The Geriatric Depression Scale (GDS-5)

| Measure Construct    | Item   |
|----------------------|--|
| Geriatric depression | <p>I'm basically not satisfied with my life.</p> <p>I often get bored.</p> <p>I often feel helpless.</p> <p>I feel pretty worthless.</p> <p>I prefer to stay at home rather than going out and doing new things.</p> |

Table 2 Community-level Social Capital Scales

| Measure Construct                       | Item   |
|---|--|
| Civic participation<br>(≥ once a month) | <p>I often attend activities for volunteer groups.</p> <p>I often attend activities for sports groups or clubs.</p> <p>I often attend activities for hobby activity group.</p> <p>I often attend activities for study or cultural group.</p> <p>I often attend activities to teach skills or pass on experiences to others.</p> <p>I often attend activities to support parents raising children.</p> <p>I often attend activities to support the elderly who need nursing care.</p> |
| Social cohesion                         | <p>Generally speaking, I say that most people can be trusted.</p> <p>I think most people in my community offer assistance to others.</p> <p>I have higher levels of residential place attachment.</p> <p>There are many facilities I feel free to drop in near my home.</p>  |
| Reciprocity                             | <p>I have someone who listens to my concerns and complaints.</p> <p>I listen to someone's concerns and complaints.</p>   |

| <b>Measure Construct</b> | <b>Item</b>  |
|--------------------------|--|
|                          | I have mutual consultation in daily life with people in my neighborhood. |

Table 3 Non-cognitive Skill Scale

| <b>Measure Construct</b> | <b>Item</b>   |
|--------------------------|---|
| Non-cognitive Skill      | <p>I think I will achieve the main goal of my life.</p> <p>I am always optimistic about my future.</p> <p>I expect good things to happen to me more than bad things.</p> <p>I see every challenge as an opportunity for success.</p> <p>I have the confidence to overcome difficulties.</p> |

Table 4 Family Support Scale

| <b>Measure Construct</b> | <b>Item</b>  |
|--------------------------|--|
| Family                   | <p>My family really tries to help me.</p> <p>I get the emotional help and support from my family.</p> <p>I can talk about my problems with my family.</p> <p>My family is willing to help me make decisions.</p> |

Table 5 Confucian Coping Scale

| <b>Measure Construct</b> | <b>Item</b>   |
|--------------------------|---|
| Fate thinking            | <p>The outcome of events is determined by fate, and people should accept and comply with it.</p> <p>I often think that my success is destined by heaven.</p> <p>I often think that life and death are determined by fate, and riches and honors come from heaven.</p> <p>The outcome of events is determined by fate, but it is already destined.</p> |

| Measure Construct       | Item  |
|-------------------------|---|
| Pro-setback thinking    | <p>Frustration is a bad thing, but I will not avoid it.</p> <p>I am not afraid of failure or frustration.</p> <p>Although frustration is a bad thing, I don't hate it.</p> <p>I often think that only people who have suffered a lot of setbacks can accomplish great things.</p>   |
| Responsibility thinking | <p>Regardless of success or failure, I will not forget my social responsibility.</p> <p>Regardless of success or failure, I will not forget my personal responsibility.</p> <p>Regardless of success or failure, I will never forget my family responsibilities.</p> <p>When I am frustrated, I will do what I should do.</p> |





Appendix B

Questionnaire in English

## A Survey on Psychosocial Influencing Factors of Geriatric Depression

This is a questionnaire on the psychosocial factors that affect depression of Chinese elderly (60 years and above) in urban communities. This questionnaire is answered anonymously. The information in the questionnaire is only used for academic research, and all your information will be kept confidential. Thank you for your support!

Note: The scales used in this questionnaire are 5-points scale. Strongly disagree is coded as 1, disagree is coded as 2, neutral is coded as 3, agree is coded as 4, strongly agree is coded as 5.

Table 6 Questionnaire in English

| <b>To what extent do you feel about geriatric depression</b>                                   | 1 | 2 | 3 | 4 | 5 |
|--|---|---|---|---|---|
| 1. I'm basically not satisfied with my life.   |   |   |   |   |   |
| 2. I often get bored.  |   |   |   |   |   |
| 3. I often feel helpless.  |   |   |   |   |   |
| 4. I feel pretty worthless.  |   |   |   |   |   |
| 5. I prefer to stay at home rather than going out and doing new things.                        |   |   |   |   |   |
| <b>To what extent do you feel about your social capital</b>                                    | 1 | 2 | 3 | 4 | 5 |
| 6. I often attend activities for volunteer groups.   |   |   |   |   |   |
| 7. I often attend activities for sports groups or clubs.                                       |   |   |   |   |   |
| 8. I often attend activities for hobby activity group.   |   |   |   |   |   |
| 9. I often attend activities for study or cultural group.                                      |   |   |   |   |   |
| 10. I often attend activities for activities to teach skills or pass on experiences to others. |   |   |   |   |   |

|  |   |   |   |   |   |
|--|---|---|---|---|---|
| 11.I often attend activities for activities to support parents raising children. |   |   |   |   |   |
| 12.I often attend activities to support the elderly who need nursing care.       |   |   |   |   |   |
| 13.Generally speaking, I say that most people can be trusted.                    |   |   |   |   |   |
| 14.I think most people in my community offer assistance to others.               |   |   |   |   |   |
| 15.I have higher levels of attachment to the community where I live.             |   |   |   |   |   |
| 16.There are many facilities I feel free to drop in near my home.                |   |   |   |   |   |
| 17.My neighbors listen to my concerns and complaints.                            |   |   |   |   |   |
| 18.I listen to my neighbors' concerns and complaints.                            |   |   |   |   |   |
| 19.I have mutual consultation in daily life with people nearby.                  |   |   |   |   |   |
| <b>To what extent do you feel about your non-cognitive skills</b>                | 1 | 2 | 3 | 4 | 5 |
| 20. I think I will achieve the main goal of my life.                             |   |   |   |   |   |
| 21. I am always optimistic about my future.                                      |   |   |   |   |   |
| 22. I expect good things to happen to me more than bad things.                   |   |   |   |   |   |
| 23. I see every challenge as an opportunity for success.                         |   |   |   |   |   |
| 24. I have the confidence to overcome difficulties.                              |   |   |   |   |   |
| <b>To what extent do you feel about your perceived social support</b>            | 1 | 2 | 3 | 4 | 5 |
| 25.My family really tries to help me.  |   |   |   |   |   |
| 26.I get the emotional help and support from my family.                          |   |   |   |   |   |
| 27.I can talk about my problems with my family.                                  |   |   |   |   |   |
| 28.My family is willing to help me make decisions.                               |   |   |   |   |   |

| <b>To what extent do you feel about your Confucian coping</b>  | 1 | 2 | 3 | 4 | 5 |
|--|---|---|---|---|---|
| 29.The outcome of events is determined by fate, and people should accept and comply with it.         |   |   |   |   |   |
| 30.I often think that my success is destined by heaven.  |   |   |   |   |   |
| 31.I often think that life and death are determined by fate, and riches and honors come from heaven. |   |   |   |   |   |
| 32.The outcome of events is determined by fate, but it is already destined.                          |   |   |   |   |   |
| 33.Frustration is a bad thing, but I will not avoid it.  |   |   |   |   |   |
| 34.I am not afraid of failure or frustration.  |   |   |   |   |   |
| 35.Although frustration is a bad thing, I don't hate it.   |   |   |   |   |   |
| 36.I often think that only people who have suffered a lot of setbacks can accomplish great things.   |   |   |   |   |   |
| 37.Regardless of success or failure, I will not forget my social responsibility.                     |   |   |   |   |   |
| 38.Regardless of success or failure, I will not forget my personal responsibility.                   |   |   |   |   |   |
| 39.Regardless of success or failure, I will never forget my family responsibilities.                 |   |   |   |   |   |
| 40.When I am frustrated, I will do what I should do.   |   |   |   |   |   |

Table 7 Sociodemographic Characteristics in English

| <b>Sociodemographic Characteristics</b> | <b>Items</b>  |
|---|---|
| Gender                                  | ( ) Male<br>( ) Female  |
| Education level                         | ( ) Below high school/technical secondary school<br>( ) Above high school/ technical secondary school |
| Living arrangements                     | ( ) Not living along<br>( ) Living along  |
| Monthly income                          | ( ) < 3365 yuan<br>( ) ≥ 3365 yuan  |
| population migration                    | ( ) Non-immigrant population<br>( ) Immigrant population  |



Appendix C

Questionnaire in Chinese

## 城市社区老年人抑郁影响因素调查问卷

您好！这是一项针对城市社区老年人（≥ 60 岁）抑郁影响因素调查问卷。本问卷采用匿名方式，问卷信息仅作为学术研究使用，您的所有信息将会保密。感谢您的支持！

(注：第一至第五部分回答采用五级评分法，从非常不同意、不同意、一般、同意、非常同意五个选项中，根据您的实际情况选择其中的一项。)

Table 8 Questionnaire in Chinese

| 一、您的抑郁程度如何                  | 1 | 2 | 3 | 4 | 5 |
|-----------------------------|---|---|---|---|---|
| 1. 我对生活基本不太满意。              |   |   |   |   |   |
| 2. 我经常无聊。                   |   |   |   |   |   |
| 3. 我经常感到无助。                 |   |   |   |   |   |
| 4. 我觉得自己一文不值。               |   |   |   |   |   |
| 5. 我喜欢呆在家里而不是外出去做新事情。       |   |   |   |   |   |
| 二、您的社会资本程度如何                | 1 | 2 | 3 | 4 | 5 |
| 6. 我经常参加志愿者团体的活动。           |   |   |   |   |   |
| 7. 我经常参加体育团体或俱乐部的活动。        |   |   |   |   |   |
| 8. 我经常参加兴趣活动小组的活动。          |   |   |   |   |   |
| 9. 我经常参加学习活动或文化团体活动。        |   |   |   |   |   |
| 10. 我经常参加进行技能传授或向他人传授经验的活动。 |   |   |   |   |   |
| 11. 我经常参加支持父母抚养孩子的活动。       |   |   |   |   |   |
| 12. 我经常参加支援需要护理老年人的活动。      |   |   |   |   |   |
| 13. 一般来说，我认为大多数人都可以信任。      |   |   |   |   |   |

|                            |          |          |          |          |          |
|----------------------------|----------|----------|----------|----------|----------|
| <b>一、您的抑郁程度如何</b>          | <b>1</b> | <b>2</b> | <b>3</b> | <b>4</b> | <b>5</b> |
| 14.我认为社区中的大多数人都向他人提供帮助。    |          |          |          |          |          |
| 15.我对居住社区依恋程度高。            |          |          |          |          |          |
| 16.在我家附近可以随意使用的设施多。        |          |          |          |          |          |
| 17.邻居倾听我的担忧和抱怨。            |          |          |          |          |          |
| 18.我听取邻居的担忧和抱怨。            |          |          |          |          |          |
| 19.我在日常生活中与附近的人进行协商。       |          |          |          |          |          |
| <b>三、您的非认知技能如何</b>         | <b>1</b> | <b>2</b> | <b>3</b> | <b>4</b> | <b>5</b> |
| 20.我认为我会实现人生的主要目标。         |          |          |          |          |          |
| 21.我始终对自己的未来感到乐观。          |          |          |          |          |          |
| 22.我期望发生在我身上的好事多于坏事。       |          |          |          |          |          |
| 23.我将每一次挑战视为成功的机会。         |          |          |          |          |          |
| 24.我有信心克服困难。               |          |          |          |          |          |
| <b>四、您的家人支持程度如何</b>        | <b>1</b> | <b>2</b> | <b>3</b> | <b>4</b> | <b>5</b> |
| 25.我的家人真的尽力帮助我。            |          |          |          |          |          |
| 26.我从家人那里得到了情感上的帮助和支持。     |          |          |          |          |          |
| 27.我可以和家人谈论我的问题。           |          |          |          |          |          |
| 28.我的家人愿意帮助我做决定。           |          |          |          |          |          |
| <b>五、您的儒家应对程度如何</b>        | <b>1</b> | <b>2</b> | <b>3</b> | <b>4</b> | <b>5</b> |
| 29.事情结果的好坏是“命”决定的，应该接受与顺应。 |          |          |          |          |          |
| 30.我常想我能不能成功是上天注定的。        |          |          |          |          |          |
| 31.我常认为“生死有命，富贵在天”。        |          |          |          |          |          |
| 32.事情结果的好坏是“命”决定的，其实早已注定。  |          |          |          |          |          |
| 33.挫折虽然是坏事，但我不会逃避。         |          |          |          |          |          |
| 34.我不害怕失败或挫折。              |          |          |          |          |          |
| 35.尽管挫折是坏事情，但我并不讨厌挫折。      |          |          |          |          |          |
| 36.受过很多挫折而不放弃的人，才能成就大事。    |          |          |          |          |          |



| 一、您的抑郁程度如何               | 1 | 2 | 3 | 4 | 5 |
|--------------------------|---|---|---|---|---|
| 37.无论成功或失败，我都不忘我承担的社会责任。 |   |   |   |   |   |
| 38.无论成功或失败，我都不忘我承担的个人责任。 |   |   |   |   |   |
| 39.无论成功或失败，我都不忘我承担的家庭责任。 |   |   |   |   |   |
| 40.失意的时候我也会把该做的事情做好。     |   |   |   |   |   |

Table 9 Sociodemographic Characteristics in Chinese

| 社会人口学特征 | 选项                           |
|---------|------------------------------|
| 性别      | ( ) 男<br>( ) 女               |
| 教育程度    | ( ) 高中/中专以下<br>( ) 高中/中专以上   |
| 居住安排    | ( ) 非独居<br>( ) 独居            |
| 月收入     | ( ) < 3365 元<br>( ) ≥ 3365 元 |
| 人口流动    | ( ) 非迁入人口<br>( ) 迁入人口        |

## BIOGRAPHY

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