



**RESEARCH ON THE RELATIONSHIPS AMONG LEARNING
NEEDS, SOCIAL SUPPORT, COPING ANE LIFE
SATISFACTION OF SENIOR CITIZENS
IN SHANDONG CHINA**

**By
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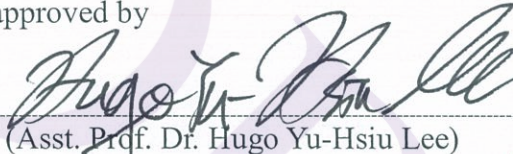
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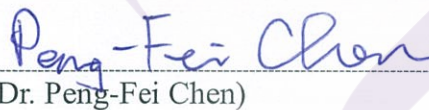
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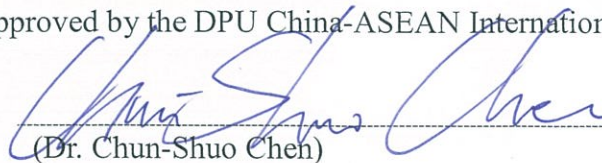
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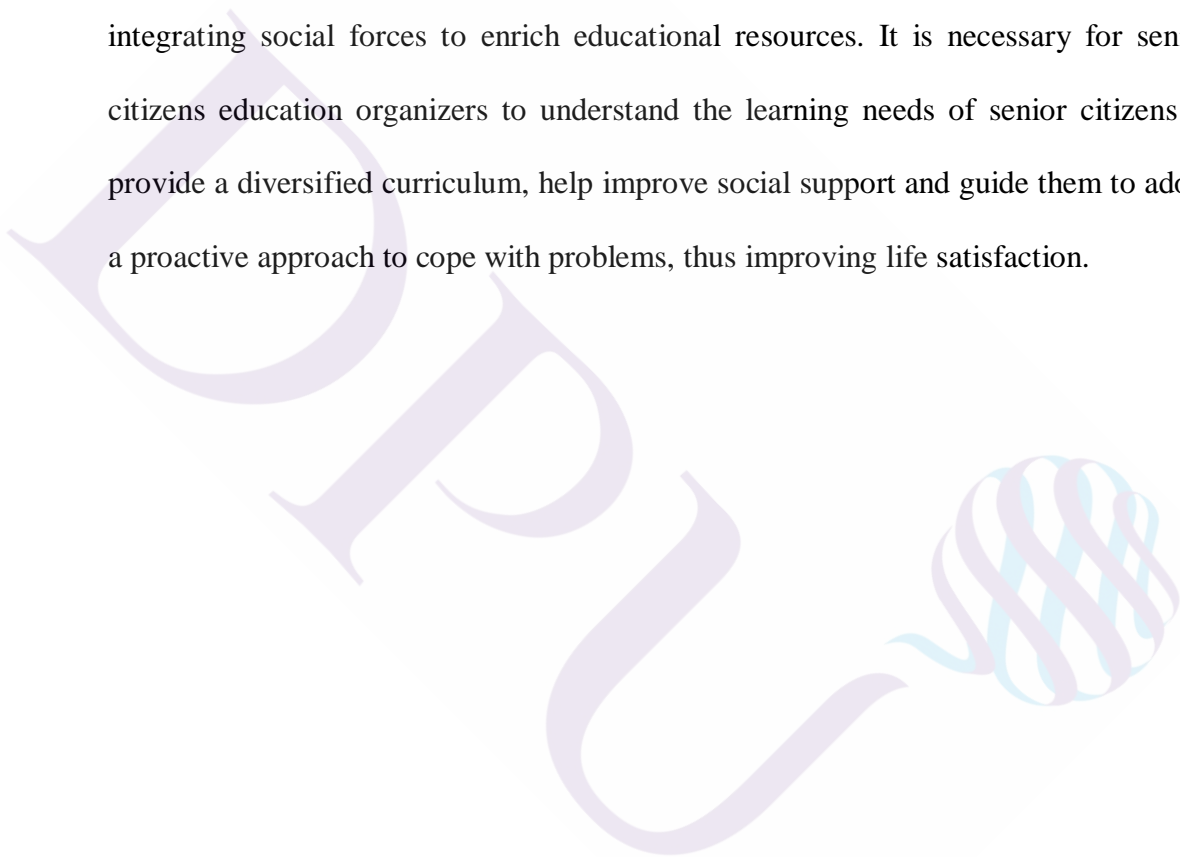
ABSTRACT

This paper takes senior citizens aged over 60 from Jinan, Shandong as research objects, probing into the relations between learning needs, social support, coping and life satisfaction. It uses questionnaire and qualitative method to capture relevant theories and documents as theoretical basis to build up research structure; it makes use of questionnaire and focus group interview as the research tool to test, count and analyze the functioning mechanism of learning needs, social support, coping and life satisfaction in senior citizens' learning process, aiming to find the disciplines to help senior citizens promote active aging by engaged learning, and improve their life satisfaction as well as provide suggestions for the development of the education.

This research assumes that the learning needs, social support and coping of senior citizens in Jinan, Shandong Province have a positive and significant impact on life satisfaction. At the same time, it verified the partial mediating effect of the social support and coping in the relationship between learning needs and life satisfaction,

The learning needs, social support and coping of senior citizens have overall predictive power for life satisfaction. There are significant differences in life satisfaction, learning needs and social support between the senior citizens who take part in study and those who do not.

Based upon all above, it is suggested that government attaches importance to education for senior citizens, promote educational welfare policies, as well as integrating social forces to enrich educational resources. It is necessary for senior citizens education organizers to understand the learning needs of senior citizens to provide a diversified curriculum, help improve social support and guide them to adopt a proactive approach to cope with problems, thus improving life satisfaction.



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CHAPTER 1

INTRODUCTION

This study takes the senior citizens in Jinan, Shandong, P.R.C. as participants, aiming to study the relationships among their learning needs, social support, coping and life satisfaction. In the past, most of the research focused on one or two of the above variables to analyze the predictive power of the elderly's life satisfaction. Given that, this dissertation comprehensively discusses the relevance, predictive power and effects on life satisfaction by learning needs, coping and social support for life satisfaction, in order to help older people to identify learning needs better. Using the social support provided by the individuals themselves and the external resources, the difficulties brought about by various types of ageing can be tackled roundly. As a result, the elderly can be helped to participate in social activities properly through learning and then their life satisfaction can be improved.

This research focuses the following core issues: 1. the relevance and influence of learning needs, social support, coping and life satisfaction of the elderly; 2. exploring the mediating effect on the elderly's social support and coping in the relationship between learning needs and life satisfaction; 3. discussing the integrated power of prediction of the elderly's life satisfaction in the aspects of learning needs, social support and coping; 4. studying the differences between the elderly who have taken part in the study and those who have not in terms of learning needs, social support, coping and life satisfaction. This chapter is divided into three sections. The

first section is the research background and significance; the second section is the research motivation; the third section is the study purposes and problems.

1.1 Research background and significance

This section intends to illustrate the background and significance of this study from four perspectives: the status and particularity of China's ageing population in the global ageing trend; the research value of life satisfaction; the impact of education on the life satisfaction of the elderly; the impact of old people's coping and social support on life satisfaction.

1.1.1 The status quo and particularity of China's ageing population in the global ageing trend

This study focuses on the elderly based on the trend of an increasing global ageing population, which has become one of the most concerned spots in the world. In 1956, B. Pichat's classification in *The Ageing of Population and Its Economic and Social Implications* was: when the elderly population aged 65 and over accounted for over 7% of the total in a country or a region, it meant that the country or region had stepped into the stage of population ageing (Zhou, 2005); In 1983, *Vienna International Plan of Action on Ageing* (United Nations, 1983) determined in the United Nations World Conference on Ageing in Vienna that when the proportion of the elderly population aged 60 and over accounted for more than 10% of the total population, the country or region had entered the population ageing phase; when the population over 60 years old accounted for between 30% and less than 40%, it meant that the country was becoming a highly ageing society; when the population over 60 years old took up more than 40%, it meant that the country had become a severely ageing society. Referring to the above criteria, more and more countries have joined

the ranks of an ageing society. In 1950, only 49 countries or regions in the world became ageing societies, which was less than 1/4 of the total number of countries. The country with the highest ageing population only saw a percentage of the elderly at 17.2%. In 2015, the number of ageing countries reached 94. Among them, 43 countries or regions had transformed into the ageing societies with the ageing population at over 20%; there was one more ageing country which had reached 33.1% and entered a highly ageing era; it is expected that by the middle of this century, the number of ageing countries or regions will increase to 158, accounting for 3/4 of the total number of countries, of which 9 will have more than 40% of ageing population. Consequently, these countries will turn into highly ageing societies, and 48 countries or regions will be highly ageing societies. The population ageing now is not just a unique phenomenon in some countries, but a universal status globally. This phenomenon and the social pressure along with it have become a typical problem around the world.

As far as China is concerned, in recent years, the population ageing has increasingly aroused widespread public concern. In 2000, the proportion of people aged 60 and over in China accounted for 10.2%. By the end of 2018, the number of elderly people in the same age group reached 249 million, accounting for 17.9% (China Research Center on Ageing, 2018). According to the data from the *National Assessment Report on Ageing and Health in China* (World Health Organization, 2016), China's population ageing process was much faster than many low- and middle-income countries as well as many high-income countries. When the developed countries entered the age of ageing, the GDP per capita had exceeded 20,000 US dollars, which could be seen as a mode of "getting rich before getting old." On the

contrary, China's per capita GDP in 2018 was about 9,566 US dollars (China Statistical Yearbook, 2018), which could be seen as a mode of "getting old while not getting rich." Taking into account China's special historical period at present, the features of China's population ageing, such as large population, rapid growth, uneven development, the problem of "getting old before getting rich," ageing, and the imbalance of economic development, it is more difficult to solve the issues of the population ageing, so the government and the whole society should pay close attention to the solutions in advance.

1.1.2 Research value of the elderly people's life satisfaction

The trend of global ageing has made people pay close attention to the group of old people. It is hoped that the elderly will not only live longer, but also live better. How to make old people better adapt to the ageing process and achieve active ageing is a vital task for all social sectors. Ageing is not only a common problem faced by the elderly, but has impact on politics, economy, societies, cultures and institutions. The problems associated with ageing, such as heavy social burden, the contradiction between social welfare development and ageing, far inadequate family support and the elderly's needs for health care, life services, etc., are possible to undermine the mechanism of social benign development (Yuan & Gao, 2018). Since the 1980s, the international community has taken proactive measures, and successively proposed a series of policies, such as the *Vienna International Plan of Action on Ageing* (United Nations, 1983) and the *United Nations Principles for Older Persons* (United Nations, 1991), to strengthen the countries' ability to effectively address specific issues of population ageing. Following the concept of healthy ageing, the concept of active ageing has been put forward. In the *Active Ageing --- A Policy Framework* (World

Health Organization, 2002), it's defined as: a process of gaining best opportunities to keep fit and get living security in order to improve the quality of life.

The evaluation and realization of active ageing have always been an important issue of concern. Scholars found through research that life satisfaction was one of the key criteria for evaluating active ageing (Henry, 1989; Meeks & Murrell, 2001; Racio, Zamarron & Ruiz, 2001; Diener, Oishi, masetti & lopez, 2002; Huang, 2011; Becker, Chaney, Kindal & Glascoff, 2015; Diener, Inglehart & Tay, 2013; Katja & Feldt, 2018). Kuypers and Bengtson (1973) pointed out in the last century that life satisfaction was a major life goal in old age. When the elderly were in a situation full of physical, psychological and social crisis, their main goal in life was to continue to maintain or recovered a sense of satisfaction psychologically. There are many factors that affect the life satisfaction of older persons. Researchers hope that through the study of life satisfaction, the elderly will be assisted to lead an active ageing life and better adapt themselves to daily life.

1.1.3 The educational influence on the elderly people's life satisfaction

In 1981, the White House Conference on Ageing pointed out that most of the main issues in old age, such as economic security, physical and mental health, and resources for the elderly, could be coped with by learning (Talento, 1984). It was believed that older people should have access to appropriate education and training to attain self-fulfillment and improved their life satisfaction and subjective well-being. In 1982, the United Nations enacted the *Vienna International Plan of Action on Ageing* to bring the right to receive education into the basic human rights of the elderly; In 1999, the World Health Organization first proposed the idea of active ageing, calling for a global campaign for active ageing. Furthermore, improving older

people's educational quality was one of the seven key tasks proposed.

This point of view has been confirmed by relevant literature, which indicated that elderly education activities are one of the important factors affecting the life and social development of them. Their learning behaviors are not only the effective tool to improve the quality of life, but also enhance their life satisfaction (Talento, 1984; Brandmeyer, 1987; Gregg, 1996; Lin, 2009; Joung, 2011; Reed & Hadad, 2016; Chae & Gusup, 2018). Many scholars believed that learning is the key to a dynamic old age. With the participation of these activities, the elderly can have a coherent and holistic feeling (Erikson, 1986; Hori, 2003; Mackowicz & WnekGozdek, 2016). Margin of Theory of needs (Mcclusky, 1971) from psychology, dividing the older people's needs of learning into five levels. It suggests that learning can increase the energy and power of the elderly and reduce the burden in the ageing process, so that they can maintain a good state of life, acquire new resources, play new life roles, and reach new levels of life development.

1.1.4 The influence of old people's coping and social support on life satisfaction

With the growing focus on ageing, researchers are beginning to pay attention to and explore the change and impact of older people's interactions with others or groups in the society after entering the old age. How do the elderly deal with problems and stress? Is there a connection between the way to interact and tackle problems and life satisfaction of the elderly? By study, it is found that social support is the various kinds of support and assistance that the elderly get through interaction with the environment. Good social support can improve the life satisfaction of the elderly (Zheng, Spesrs, Luptak & Wilby, 2015; Klimova, 2016; Parisien et al., 2016;

Cacioppo, Hughes, Waite, Hawkley & Thisted, 2006; Couture, Larivière & Lefrançois, 2005; Adams et al., 2016; Kim & Sok, 2012). Coping is one of the ways for the elderly to solve problems and mitigate stress. It is the active response when they encounter difficulties in the ageing process and a conscious behavior on purpose (Lazarus & Folkman, 1984; Hymovich & Hagopian, 1992). The way older people cope with problems is related to their life satisfaction (Dorina, 2004; Bode, Ridder & Bensing, 2006; Chiu, 2011; Chen, 2014; Sougleris & Ranzijn, 2011; Boz, 2018).

Current research on learning needs, social support, coping and life satisfaction shows that one or two of these individual variables have association with life satisfaction. Although in the past the research on these subjects was fairly rich, the study of their relationships is still worth exploring in terms of the correlation among the four, the role of social support and coping in the relationship between learning needs and life satisfaction, and how learning needs, social support and coping affecting life satisfaction.

1.2 Research motivation

China is going through a rapid population ageing, and how to help the elderly achieve active ageing has become an important task. Previous studies show that the participation in learning activities has a positive impact on promoting active ageing and improving the satisfaction of the elderly. It is the current research gaps have motivated the study in this article. The discussion is as follows.

1.2.1 Filling the existing research gaps

Old-age education is not only a basic human right that must be respected, but also an indispensable social welfare. Providing lifelong learning opportunities can help older people lead quality lives and continue to play essential roles (Henry, 1989).

Since the 1970s, however, Professor Pierre Vellas founded the first university for the aged in France, marking the beginning of senior citizen education. So far, the education of the elderly has developed rapidly in a forty-year period. It is undeniable that as an integral part of lifelong education, people who receive old-age education are still a minority part in the adult education system (Brandmeyer, 1987; Hong, 1994; Gregg, 1996; Lin, 2006; Chen & Ning, 2018).

According to the literature, from 1970s onwards, the academic community has begun to pay attention to the study about the quality life of the elderly, and further found that the direct indicator of quality life is life satisfaction. The assessment of life satisfaction helps to understand whether the elderly can succeed in the adaptation to ageing (Henry, 1989; Gregg, 1996; Huang, 2008; Reed & Hadad, 2016; Chae & Gusup, 2018). From the 1980s to the present, there are more than 120 research papers of masters and doctors on the life satisfaction of the elderly, and the majority of them were written by western and Taiwanese scholars. These studies all emphasize the research value of seniors' life satisfaction. Western scholars rather earlier recognized the value of the relationship between old-age education and life satisfaction, and made a lot of theoretical exploration and empirical research. In contrast, Chinese studies mainly focus on theories themselves or the external factors, such as the purpose, function, the cognition of education and social education of senior citizens. Some of these studies emphasize the relationship between old-age education and life satisfaction (Gregg, 1996; Lin, 2002; Chae & Gusup, 2018), and some focus on the relationship between learning needs and life satisfaction (Joung, 2011; Reed & Hadad, 2016; Tam & Chui, 2017). Some studies explore the relationship between social support and life satisfaction (Burlison, Liu, Liu & Mortenson, 2006; Lincoln,

Chatters & Taylor, 2005; Chantelle, Richmond, Nancy & Grace , 2007; Klimova, 2016; Parisien et al., 2016; Boz, 2018), and some are concerned with the relationship between coping and life satisfaction (Bode, Ridder & Bensing, 2006; Chen Guanliang, 2014; Cabras & Mondo, 2018; Oznur, 2019). In general, most of them are the study of the relationship between life satisfaction and another single variable and rather than that the integrated study of those four factors' connections. Consequently, it is necessary to conduct a quantitative study to discuss the relation models and make further verification in combination with qualitative study.

1.2.2 The features of ageing problems in Jinan, Shandong

With the severity of ageing and the research on the elderly, the emphasis of the elderly's resettlement and welfare policies by governments in the early stages was mainly the establishment of social service systems such as economic security and medical care. As the research of gerontology develops and bears fruit and senior population has strong needs, that emphasis has gradually been expanded from the tangible economic material level to the spiritual level. It is expected that the elderly will be able to plan their later years through education and learning processes (Chang, 2000). However, the development of China's old-age education has been lagging behind other ageing countries in the world. In June 1983, China's first old-age university, Shandong Red Cross Society University for the Aged was founded in Jinan. This is a landmark for the development of China's old-age education, and till now there have been more than 62,000 old-age education institutions in China, and 8.1 million elderly people have participated in the old-age education through diverse forms, such as community education, college education and distance education (Zhang, 2018). The education resources for the aged is far from enough compared

with the elderly population of 240 million nationwide. There are a variety of practical problems, for example, the imbalance of supply and demand, the lack of creativity in old-age educational systems, the deviation from the trainees' social and diverse needs in terms of the school missions, school-running ways and curriculum setting. In particular, China's research on old-age education is relatively slow, and it mainly borrows Western countries' models and focuses on theoretical studies with rare empirical research (Wang, 2017; Liu, 2014).

According to the *Blue Book of Ageing: Survey Report on the Living Conditions of China's Urban and Rural Older Persons* (2018) (China Research Center on Ageing) and *Shandong Statistical Yearbook* (Shandong Statistical Yearbook Committee, 2018), by the end of 2017, The Chinese population aged 60 and over was 241 million. Among them, there were 21.373 million older people in Shandong, accounting for 21.4% of Shandong's total population and 8.87% of the elderly across the nation; the elderly in Jinan was 1.346 million, taking up 20.72% of the city's population and 6.30% of the province's population. So, Jinan is actually a city with larger elderly population in a populous province. Judging by the international standard, Jinan has entered a moderately ageing society since the total population aged 60 and over has exceeded 20%. Shandong is located in the Central China, and Jinan, as the representative among China's second- and third-tier cities, has typical ageing problems (Gao, 2011). The author works for a Jinan's college and has built working relationships with institutions of senior education in Shandong, so it is convenient to conduct questionnaire surveys and interviews.

In addition, through literature review, the research on the satisfaction of Chinese elderly people mostly focuses on the life satisfaction of aged persons in a

certain region or a typical group or the effects of life satisfaction by studying a certain factor such as health, participation in certain activities, etc. These studies can be seen in several papers, such as Gao's (2011) and Tan's (2011), on the life satisfaction of the elderly. Among them, the studies on the relationship between old-age education and life satisfaction is fairly rare. The connections with life satisfaction discussed from the perspectives of old-age education, learning needs, coping and social support only appear in a few papers like Lin's (2002) *The study of relationship between participating learning activity and life satisfaction of older adult* and Huang's (2011) *The relationship between intergenerational supports and life satisfaction of elderly learners in Taipei city*. In view of this, the investigation of the elderly in Jinan, Shandong will help to understand this issue in more depth. This study intends to comprehensively analyze the relationships among learning needs, social support, coping and life satisfaction, attempting to study the impact of learning needs of Chinese older people on life satisfaction under the influence of social support and coping in order to figure out the influencing factors, evaluation functions and educational rules.

1.3 Research purpose and questions

Based on the backgrounds and motivation of the above research tasks, the subjects of this study include learning needs, social support, coping and life satisfaction, and the research objects are the Chinese aged people. This study mainly focuses on the learning needs of the adults who go into old age and the different ways of coping and social support taken by them when facing ageing pressures. Therefore, the purposes and problems of this study are as follows.

1.3.1 Research purpose

1. To investigate the differences in learning needs, social support, coping and life satisfaction between the old people who take courses and the ones who don't.
2. To explore the relevance and influence of the Chinese elderly's learning needs, social support, coping and life satisfaction.
3. To study the mediating effect of the Chinese elderly's social support and coping in the relationship between learning needs and life satisfaction.
4. To discuss the comprehensive predictive power of the Chinese elderly's life satisfaction influenced by learning needs, social support and coping.

1.3.2 Research questions

Based on the research purposes, the research questions are as follows.

1. Are there any differences in learning needs, social support, coping and life satisfaction between the Chinese seniors who have participate in learning and those who have not?
2. How is the relevance and influence between the Chinese seniors' life satisfaction and their learning needs, social support, coping and life satisfaction?
3. Do the Chinese elderly's social support and coping have the mediating effect in the relationship between learning needs and life satisfaction?
4. Do the Chinese seniors' learning needs, social support and coping have a comprehensive power of prediction for life satisfaction?

CHAPTER 2

LITERATURE REVIEW

In order to clarify the main research subjects and establish the structure and lay the groundwork for the study, the literature review is going to be unfolded from five aspects. The first part explores the meaning and research of the elderly's life satisfaction; the second part discusses the meaning, theories and research of the elderly's learning needs; the third section discusses the meaning and research of the social support of the elderly; the fourth section studies the meaning and research of the aged persons' coping; the last part discusses the relationships among the elderly's learning needs, social support and coping. All of them will be discussed as follows.

2.1 The meaning and research of the elderly's life satisfaction

With the ageing sweeping the world, the life quality and individual feelings of the elderly have become an important issue of concern in the field of gerontology. Quality of life was always one of the core concepts of gerontology. For measuring the quality of life and verifying whether it was active ageing, one of the important indicators was life satisfaction. Through the measurement of life satisfaction, it could help understand if the elderly were successfully adapted to the ageing process or not (Henry, 1989; Meeks & Murrell, 2001; Rocio et al., 2001). Brandmeyer (1988) pointed out that life satisfaction was a direct, stable and accurate method to measure whether a subject had active subjective feelings and to serve as an indicator of the quality of life. Therefore, life satisfaction was regarded as an important indicator to

measure the quality of life of the elderly (Reed & Hadad, 2016). The main life goal of the elderly in this stage was to achieve higher life satisfaction. That is, when the elderly entered old age, they would encounter different difficulties at the physiological, psychological and social levels. Their primary goal was to gain psychological well-being (Kuypers & Bengtsons, 1973). In order to understand the concept of life satisfaction, this section will start from three angles, which include the meaning of life satisfaction of the elderly, the research on the life satisfaction of the elderly and the measurement of the life satisfaction of the elderly. Through the study on older people's life satisfaction in the aspects of its significance, differences from other synonyms, connotation, structure and correlational literature, it is expected to comprehensively and deeply understand the essence of life satisfaction and to make scientific measurement.

2.1.1 The meaning of life satisfaction

The World Health Organization (1998) defined quality of life as the individuals' experience in living conditions in terms of their goals, expectations, standards and concerns in different cultures and values. This was a concept with a wide range of meaning. It contained individuals' physical health, mental state, independence, social relationships, personal belief and relationships with the surrounding environment. According to this definition, quality of life mainly referred to the subjective evaluation of individuals. This self-evaluation was rooted in the cultural and social context (Orley, 1994; Hao & Fang, 2000).

Life satisfaction meant a subjective evaluation based on an individual's own actual life experience (Yang, 2013). Scholars interpreted the meaning of life satisfaction from different angles. Some studies believed that life satisfaction was

subjective experience, and it was an individual's evaluation of life experience and situation from the two levels of emotion and cognition (Andrew & Withey, 1976; Campbell, 1976); some argued that life satisfaction depended on the extent to which older people accept the ageing reality, their adaptability to ageing and their control over life (Talento, 1984; Neil & Friedrich, 2004); Some researchers indicated that life satisfaction was the judgement of the elderly's personal life. It was a cognitive assessment in long-term process. The gap between the reality and the desired goal of the elderly could be well known through satisfaction, so whether older persons were well adapted to life could be precisely defined (Brandmeyer, 1987; Henry, 1989; Diener et al., 2002; Katja & Feldt, 2018). In recent years, the definitions to life satisfaction by researchers emphasized the following factors: the subjective assessment process of individuals, the consistency between reality and goals, life adaptation, psychological feelings, etc. (Becker et al., 2015; Bishop, Martin & Poon, 2006; Bowling et al., 2003; Diener et al., 2013; Edginton, Jordan & DeGraaf, 1995; Gregg, 1996; Hollis, 1998; Lai Errou, 1998; Lin, 2006; Huang, 2011).

According to the literature on life satisfaction, the descriptions used by researchers were sometimes confused with diverse concepts such as "morality," "happiness," "subjective well-being," "quality of life," "psychological adaptation," "life adaptation." Some scholar once made a comparison: in the study of quality of life, learned men in different fields used different research tools, and the definitions of quality of life were different and wide-ranging. Basically, life quality could be regarded as an extension of the traditional concept of health, which measured the holistic health that contained physical health, mental health, safe physical environment, social participation and interpersonal relationships (Joung, 2011).

Health, different from the concept of life satisfaction, is a very important part in the concept of life quality. George (1985) believed that “morality” was a state of mind, which meant that individuals could hold the positive attitude, desire and behavior in the face of difficulties; “happiness” was a temporary joy, and “life satisfaction” was a long-term evaluation process of individuals on their own (Henry, 1989). Lin (2002) pointed out that in the third stage of happiness research, its definition was quite close to the concept of life satisfaction. With the research to the fourth stage, it was found that happiness was also affected by short-term emotion. As a result, the emotional factor became a non-negligible element in happiness, which led to a conceptual difference between life satisfaction and happiness. In summary, according to the literature review and the analysis of similar concepts, this study defined life satisfaction as the elderly’s subjective evaluation process and internal psychological feelings on their overall status. Actively coping with ageing, adapting to ageing, and narrowing the gap between expectations and actual achievements would help to improve the satisfaction of the elderly.

The rapid development of ageing in the world made the public pay attention to the relevant issues of the elderly people, and the research on aged people’s life satisfaction also increased compared with the past, but most studies selected aged groups as research objects rather than advanced age groups (Larson, 1978; Angelini, Cavapozzi & Corazzini, 2012). Life satisfaction was an important indicator of the quality of life of the elderly, and quality of life was a multi-faceted concept (Chen & Lin, 1995; Craig, Chaney, Shores & Glascoff, 2015; Becker et al., 2015; Diener et al., 2013), each person had different feelings about life satisfaction, and it was difficult to illustrate all aspects with a single level of meaning (Lin, 2002).

Therefore, most researchers agreed that life satisfaction was a concept with different levels, but there were various views on the number of meaning facets and the exact meaning at each level, which then led to the different concepts for measurement and measurement tools for life satisfaction. Among them, the Life Satisfaction Index A (LSIA), the Life Satisfaction Index Z (LSIZ) and the Salamon-Conte Life Satisfaction in the Elderly Scale (SCLSES) were widely used. They would be discussed separately below.

Neugarten, Havighurst and Tobin (1961) conducted open interviews with 92 elderly people aged 50-90, and extracted measurable elements from the interview data to create Life Satisfaction Index A (LSIA), which included 20 questions. Respondents chose yes or no for each one. This scale defined satisfaction as a constructive concept, a multidimensional measurement including five dimensions (Brandmeyer, 1987; Diaz, 1988). First, the mentality towards life was or strong interest or disinterest. It was the personal enthusiasm for life, which also meant the personal participation, including the participation in activities, interaction with people or thinking. Secondly, attitudes towards life, or the attitudes towards various arrangements in life accepted by individuals. Thirdly, whether the desired goal was achieved. Fourthly, self-concept, it is including the physiological state, the psychological state and the social self. Fifthly, the emotional state, or whether the emotional state of an individual was optimistic or pessimistic. On this basis, Wood, Wylie and Sheafor (1969) reduced the number of test questions from 20 to 13, and proposed the Life Satisfaction Index Z. Then the reliability and validity were modified according to the scores (Talento, 1984).

Salamon and Conte (1982) used a self-developed Salamon-Conte Life

Satisfaction in the Elderly Scale to survey 408 elderly people aged 55-90 years. Their life satisfaction was consisted of eight factors, which included the joy of daily life, the meaning of life, the consistency of goal attainment, emotional state, self-concept, self-perceived health status, financial and economic security and social contact interaction. Brockett (1985) used the Salamon-Conte Life Satisfaction in the Elderly Scale (SCLSES) as a research tool. The questionnaire contained 40 questions, and the scale structure was basically consistent with the eight factors of the original scale. Diener et al. (2013) focused on the effectiveness and theoretical value in the life satisfaction scale, comprehensively analyzing the reliability, validity and the sensitivity of variation of life satisfaction measurement. Besides, the rationality in psychological measurement was also attached importance.

2.1.2 The research on life satisfaction

Based on the above research on the meaning of life satisfaction, researchers in different countries conducted empirical research on the life satisfaction of the elderly. Some of these studies chose the consistency of the mentality of life, emotional state, desired goals and goals (Silverman, Hecht & McMillin, 2000); some studies selected such facets as daily life, emotional state, self-concept, and family compatibility (Jian, 2004; Huang, 2011); a few of them were involved in social demographic variables, social relations, personality, daily life and self-esteem (Zhang & Leung, 2002); some were even divided into six directions to study the life satisfaction of the elderly, including the fun of daily life, the meaning of life, the goal attainment, emotional state, self-concept, social interaction, etc. (Lin, 2002). In conclusion, although classifications were various, most of them included daily life, emotional state, the consistency of desired goals and goals to achieve, and social

relationships.

The research found that social demographic variables such as gender, age, educational background, marital status, schooling, physical condition, economic status and living condition were all related to the life satisfaction of the elderly. Some of these variables reached a consensus on the predictive power of life satisfaction. For example, the better the health status and economic status of the elderly, the higher the life satisfaction (Hilleras, Jorm & Herlitz, 2001; Choi, 2001; Lin, 2002; Kempen, Koster, Bosma & Gertrudis, 2006; Hung & Lu, 2014). There were still debates about the impact on life satisfaction by other variables such as gender, age, educational background and marital status. Some studies considered that with the age increasing, life satisfaction became lower (Gwozdz, 2010). Some others believed that life satisfaction rose and then fell as age increased (Baird, Lucas & Richard, 2010).

In recent years, some researchers began to pay attention to important factors affecting the life satisfaction of the elderly, such as changes in life satisfaction before and after retirement (Maurer & Chapman, 2018; Lawrence, 2012; Nicolaisen, Thorsen & Eriksen, 2012; Adams & Rau, 2011), and Maurer and Chapman (2018) further pointed out that the feelings of individuals after retirement were related to both personality and coping, and the individuals' life satisfaction could be improved through active intervention; as some studies indicated, the participation of activities was conducive to improving life satisfaction (Southcott & Li, 2018; Y ıksek, 2017; Zhu & Huang, 2016; Hung & Lu, 2014); The research by Windsor, Curtis and Luszcz (2015) considered that the elderly with a sense of mission were more motivated by their goals, which made them have better health and feel more happiness and then improved life satisfaction. This study was consistent with the research of Chen (2016)

and Lee (2016); and there were also research focusing on the impact of stress on life satisfaction of the elderly (Sougleris & Ranzijn, 2011; Cassandra, 2015) and relationship between inter-generational relations and life satisfaction in older people (Boz, 2018; Strom & Strom, 2016).

In summary, life satisfaction was one of the important indicators to measure the quality of life of the elderly. It was a multi-faceted concept. Through the measurement and research on the life satisfaction of the elderly, it could effectively help the aged persons to improve their satisfaction. However, by examining the above studies, it was found that few of them were conducted in China, and some of our existing variables were not well designed. In view of the particularity of China's ageing, the rapid change in the trend of ageing and the unbalanced regional development, it was necessary to make an empirical survey based on the above literature and the purposes of this study in order to understand the real situation of the life satisfaction of the elderly in China.

2.1.3 The measurement of life satisfaction

In the scales for measuring life satisfaction, the widely used were Life Satisfaction Index A (Neugarten, Havighurst & Tobin, 1991; Brandmeyer, 1987; Diaz, 1988), Life Satisfaction Index Z (Wood, Wylie & Sheaf), 1969; Talento, 1984), and Salamon-Conte Life Satisfaction in the Elderly Scale (Salamon & Conte, 1982; Brockett, 1985). They were used to observe the pleasures of older people in daily life, the meaning of life, the consistency of attaining goals, emotional state, self-concept, self-perceived health status, financial and economic security, social interaction.

The life satisfaction scale of this study adopted Huang's (2011) life satisfaction scale of elderly learners in Taipei, which mainly referred to Lin's (2002)

questionnaire on participating in learning activity and life satisfaction of older adult and Jian's (2004) life satisfaction scale of elderly learners and the Salamon-Conte Life Satisfaction in the Elderly Scale was used as a blueprint to integrate similar content and extract the key points. Four facets, including daily life, emotional state, self-concept and family compatibility, were used as the cornerstone of life satisfaction. The study of this article chose older people in Jinan, Shandong Province as respondents, and mainly focused on the relationships among learning needs, social support, coping and life satisfaction. It had a similar social and cultural background with the respondents of Huang's (2011) questionnaire on life satisfaction of elderly learners in Taipei. The research questions were relatively close, and Huang's questionnaire had been analyzed and formally tested. Because of the good reliability and validity, the questionnaire was used to design the questionnaire on life satisfaction of the elderly in Jinan, Shandong Province.

2.2 The meaning, theories and research of learning needs of the elderly

With the popularization and promotion of adult education, lifelong education and learning-oriented society, the concept of continuous learning and self-development at every stage of life has gradually enjoyed popular support. As the last phase in lifelong education, old-age education is attracting more and more attention with the global ageing deepening. Old-age education is an educational activity that is generated by the learning needs of the elderly. Its purposes are to meet the needs of the elderly and promote their lifelong development. To meet the learning needs of the elderly is the continuous, intrinsic and essential source of the development of old-age education. In a manner of speaking, the learning needs of the elderly are both the source and the purpose of old-age education. It is also the basic

driving force for the development of the education of the elderly. This section will explore the meaning, theories, related research, measurement and aspects related to life satisfaction of older people's learning needs.

2.2.1 The meaning of learning needs of the elderly

Need is a complex concept covering multiple areas of psychology, physiology and society. It is commonly seen in related fields such as psychology, education, and management. Need was both physiological and psychological. It was a state of deprivation for the subjects, which could stimulate the subject to take action to achieve the goal (Darley, Glucksberg & Kinchla, 1991). It was a necessary or desirable state of the subjects, and was often used to express deficiencies in individuals or groups. It could be perceived by the subjects themselves or by others (Houle, 1996). Suarez (1994) argued that need encompassed three meanings: it was a discrepancy, which was the gap between the actual situation and the target; it was a preference or a want, that is to say, it was an individual's intuitive desire and likes; it was a deficit, and it meant that the individual did not reach the level of satisfaction. In summary, need was a diversified concept involving physical, psychological and social factors. Different concepts could be defined from different angles, which could be summarized as the subject's physiological internal drive and psychological deficiency. The internal drive came from physiological needs and had nothing to do with learning. However, the psychological deficiencies would generate motivation to drive the subject to take action to attain the goal, narrowing the gap between the current situation and the state. So, the learning needs originated from psychological deficiencies.

Learning is an important field studied in modern psychology. It has

similarities with needs and is a concept that is difficult to define. British psychologist and educator Bain pointed out three main aspects of learning: learning was the further grasp to something in a certain field already known by a person; learning was the expansion and classification of a man's own experience. Learning was a process in which people tested ideas and theories with an infinite number of problems (Lin, 1985). Jarvis (2008), a scholar of adult education, believed that learning was an individual's private journey. He argued that learning referred to the perception of the social environment through body (genes, physiological and biological features) and mind (knowledge, skills, attitudes, values, emotions). The acquired knowledge was transformed into personal experience by cognition, emotion or time, and this process shaped a person's characteristics of constant change (Joung, 2011). The so-called learning needs was the individuals' needs for learning. The individuals need to learn something for the interests of their own, organizations and the societies. Something that was needed to be learnt showed the gap between goals and the reality that individuals, organizations and societies expected to achieve (Knowles, 1980), or it was, by external judgment, the lack of qualities the individual learners should have, so they expressed the needs, desires or preference of learning (Peterson, 1983).

To distinguish the different definitions of needs, Scissons (1982) illustrated the educational needs through three concepts, which were competence, motivation, and relevance. Competence referred to the knowledge and abilities that one must possess at work; motivation meant the tendency to enhance individuals' abilities; relevance meant that it was useful for individuals to gain a certain knowledge or skill. Therefore, if it emphasized the needs for competence, it only referred that this ability was possessed by the individuals; if it emphasized the needs of relevance, it meant

that this need was important and helpful to the individual. It was believed that the needs must be a combination of the three factors. In other words, the individuals would have the willingness to learn when they realized that there was a lack of knowledge or ability and this kind of knowledge or ability was essential to themselves.

See the Figure 2.1:

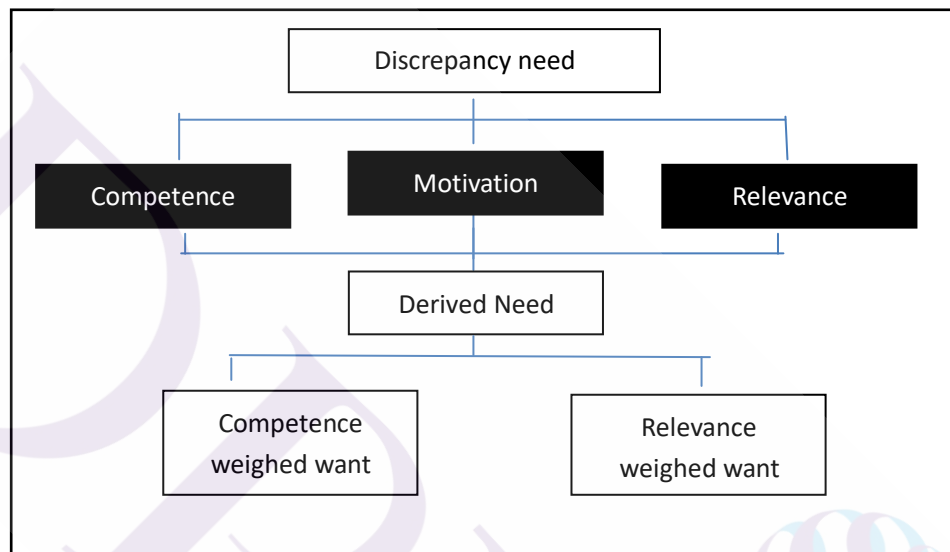


Figure 2.1 The components of educational needs

Source: Scissors (1982)

Sometimes the expressions of learning needs in the literature could be written as “educational needs” or kept the same due to the different research perspectives. Learning was an educational activity, which was done by the teacher and the learner together. It was called “educational needs” from the perspective of educators or researchers (Lin, 1995), while if it was discussed from the perspective of the learners, then “learning needs” was more precise. Because this study selects the elderly as the respondents, it is often expressed as “learning needs.” Nevertheless, considering the loyalty to the original, some are also expressed as the “educational needs” in the following. Since their connotations are the same, there will be no more

explanations for these two terms in the following.

2.2.2 Theoretical research on the learning needs of the elderly

The needs were first studied as a field of psychology. Psychologists had proposed a variety of theories for psychological needs. Among them, hierarchy of needs proposed by A. H. Maslow was widely accepted and spread.

Maslow (1970) believed that all human behaviors were caused by needs, and human needs could be divided into two categories and seven levels, including low-level needs and high-level needs. low-level needs, also known as basic needs or deficiency needs (D-needs), included four levels, and they were, in turn, physiological needs, safety needs, love or belonging needs and esteem needs. High-level needs were derived after meeting the low-level needs, and it was necessary for the individuals' psychological growth. This kind of needs lasted in a long period, and it aimed to develop potentials and achieve self-realization, so it was also called meta needs, growth needs or being needs. The following four levels were needs to know, aesthetic needs, self-actualization and transcendence. In some articles, self-actualization and transcendence were combined into one. In this case, high-level needs were divided into three levels: needs to know, aesthetic needs, and self-actualization. Maslow's hierarchy of needs did not specifically put forward the concept of learning needs. Learning, nevertheless, was an important way for humans to meet their psychological needs, so learning needs could be regarded as another form of expression to meet individuals' psychological needs (Lin, 1997). In addition, Maslow's hierarchy of needs brought up the view of whole person. Individuals' physical, psychological, emotional, and intelligent needs were interrelated. In terms of learning, if learners' needs could not be met and they were still in a situation where survival and security

could not be guaranteed, it was difficult to have the desire to seek knowledge (Zhu, 1997). According to this, there was a correlation between needs and learning.

The generation of learning needs conformed to Maslow's hierarchy of needs, which was the needs of human's self-development. However, scholars held different views on how to classify learning needs: Bergenin (1967) pointed out that learning needs should include the following three categories. First, the representational educational needs: the subjects themselves thought they were natural and real needs, but in fact they might represent things with other meanings; secondly, felt educational needs: the needs that the subjects considered necessary, and it was necessary for the development of personal education. Some of these were real and some were false; thirdly, real educational needs: what learners really lacked and could acquire them from learning experience. Atwood and Ellis (1971), when analyzing the needs of adult learners, believed that learning needs should contain five categories: existing, scarce learning needs; learning needs that could be met through learning; the integration of the above two; educational needs that could be considered necessary and could be perceived; symptomatic needs, the needs which was considered to be substantial but only showed the symptoms. Monette (1977) analyzed the hidden meanings and the development process by teasing out the concepts about "needs" in the literature of adult education. After comparing the concept definitions and classifications of various studies on the learning needs of adult education, they were divided into four categories. The first category was basic human needs, or natural needs, which were synonymous with bio-psychological drive. This kind of needs was intrinsic, natural, non-learning states, such as hunger, thirst, sex, etc. The second one was felt and expressed needs, which was the state in which the individuals could feel

inadequate needs in their perceptions. Felt needs which were expressed were called expressed needs. Although felt needs would not express the real needs in detail due to personal perceptual limitation, such needs were still commonly used. Next, normative needs referred to the difference between the actual status, or condition, and the ideal standard. The ideal standard was, referring to some ideal models or expected standards, to bridge gaps or make up the deficiencies after showing the actual situation by the evaluation and diagnosis. Different value judgments would affect the identification of standards, so normative needs would change with social values changing or knowledge developing. Last but not least, comparative needs would compare groups or individuals with same characteristics, and then found out the gap between the two.

Adult education researcher Knowles (1980) put forward the educational needs on the basis of Maslow's hierarchy of needs. Knowles (1980) argued that needs could be divided into two categories, one for basic human needs and the other for educational needs.

Basic or organismic needs included six aspects. Physical needs: it was easy to observe and consciously to experience. Only when physical or material needs were satisfied, the learning could be concentrated on. Growth needs: the urgent needs of growth were the elements of learning motivation. Growth includes knowledge, understanding, skills, attitude, interest, and discrimination ability. The needs for security: they included physical and psychological needs, self-esteem, and self-protection self-cognition from threats. The needs for new experience: people were eager to gain relatively risky, exciting needs while pursuing safety. The needs for affection: all people wanted to be liked, which was social needs. Some people were

willing to dedicate, and some others were pleased to share their likes, experiences, joys and sorrows. The needs for recognition: all people needed to be valued and gain appreciation and respect from someone or something.

Education needs referred to the gap between the actual ability of performance and the required ability, which was what the individuals should learn for the interests of themselves, organizations or societies. Its nature was also the gap between actual states of individuals, organizations, or societies and the expectations, while this gap could be narrowed through learning. See Figure 2.2:

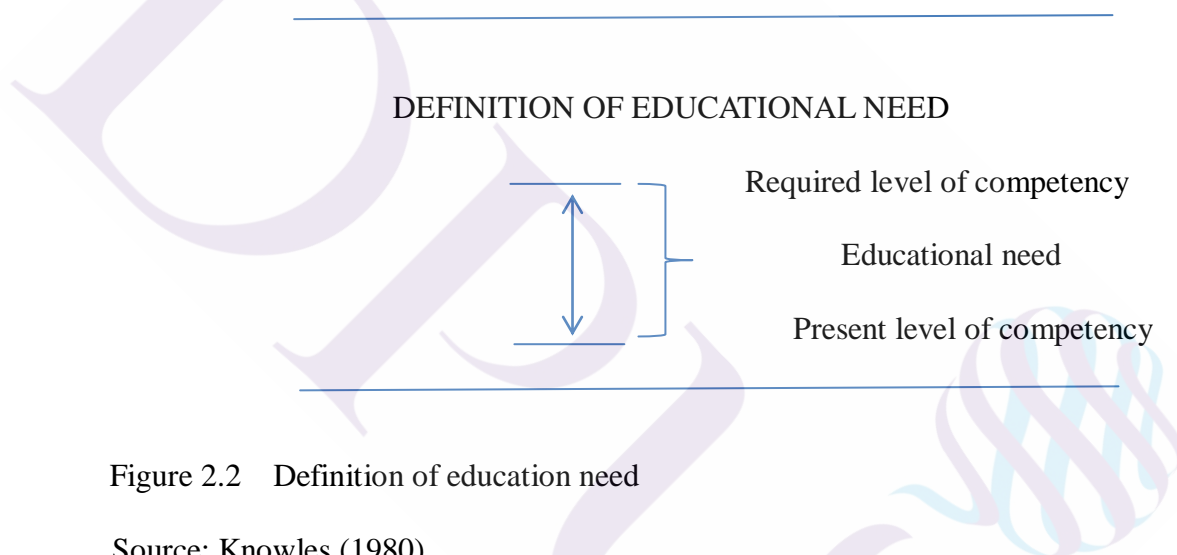


Figure 2.2 Definition of education need

Source: Knowles (1980)

In summary, Maslow (1970) proposed the hierarchy of needs from a psychological perspective; Bergenin, Atood, and Elli classified the education needs; Monette (1977) summarized basic human needs, felt and expressed needs, normative needs and comparative needs from personal and social perspective. Knowles (1970) proposed basic or biological needs and educational needs in the aspect of education. In the meanings and classifications of needs proposed by the above scholars, Maslow (1970) and Monette (1977) did not explicitly put forward the viewpoint of learning. In the process of life development, individuals needed to use learning as a means to meet

its development in order to complete the tasks of each stage. The so-called learning needs were the strategy to achieve development (Lin, 1995, 1997).

Because the elderly were experiencing the ageing process at the levels of physiology, psychology and society, their learning activities were bound to be affected and restricted. At the same time, due to their individualized knowledge and life experience, different individuals would inevitably produce different learning needs. So old people's learning needs were more special than other subjects. Hareven (1977) believed that it had to go through a complicated process to understand the learning needs of the elderly, because the development stages of individuals' lives were isolated tasks, they were often linked with social problems, causing the intervention of the welfare department and the government department. So, the value of these issues was not easy to find. Merriam and Lumsden (1985) pointed out that the arrival of super-ageing societies reflected a large number of problems and needs of the elderly. By forcing outdated laws to be amended, new institutions could be created to cater for new needs.

The complete theoretical concepts of the elderly's learning needs include the concept of educational needs by McClusky (1971), the learning needs of older people proposed by Moody (1976) from the perspective of sociology, and the two major concepts of aged people's learning needs, including expressive needs and instrumental needs, were divided by Londoner (1978) (Chiu, 1991; Hori & Fujiwara, 2003; Merriam & Lumsden, 1985). Please see them as follows.

McClusky (1971), a professor of education at the University of Michigan, known as the "father of old-age education," published the *Background and Issue on Education* at the White House conference, emphasizing that the needs of older

learners should be attached importance. In this way, traditional old-age education dominated by social services had a new direction. In this conference, McClusky (1970) pointed out that since the 1970s, there was a new understanding for education. Regardless of age, education would play a positive role in the development of human nature, and older people could participate in learning to achieve individual development. According to this, McClusky (1971) proposed Theory of Margin, Wei, Hu and Chen (2010) interpreted it as: the elderly often managed to maintain the energy power they enjoyed in the past. If individuals were unable to keep a good condition in old age, they might lose these resources for survival; and if they could maintain a better condition, they might acquire new resources, played new roles and fulfilled duties. It might also lead them to a new level of life development. Margin referred to the relationship between the burden of the elderly and the ratio of the change in the energy and power they had. As shown in the Figure 2.3:

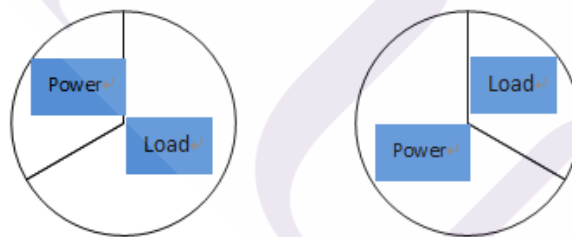


Figure 2.3 Expectation relationship of ratio change between energy and burden of the elderly

Source: Wei, Hu and Chen (2010)

In the development of an individual's life, no matter at any stage, the individual was facing, adapting to and improving the change in the relationship between "energy" and "burden." This change was particularly acute in the old age. When people entered the later years, the key to learn was to increase energy. In other

words, in the old age, the energy was greater than the burden, so there were more life satisfaction and unhurried coping. This was why the elderly should be encouraged to continue learning and self-development. This essential reason also showed the possibility and necessity of the elderly to obtain an active ageing through learning.

McClusky (1970) proposed the concept of the range of needs by analyzing the educational needs of the elderly. He believed that in terms of physical appropriateness, the minimum needs of the individual were to survive; and when the minimum appropriateness was exceeded, the needs become health needs. As far as the appropriateness of income was concerned, the minimum income of an individual was for a living, and the pay rise was for self-esteem and the needs for free choice. To have this opportunity to choose would also lead to personal development (Wei, Hu and Chen, 2010; McClusky, 1971; Weiman, 1987). On this basis, McClusky (1970) proposed five types of older people's needs:

Coping needs: the needs for individuals to fully play their roles in a complex society. When the elderly entered the old age, the first thing they face was reduction, such as the reduction of income, the reduction of influence, the reduction of social connections, and the reduction of stamina. At the same time, ageing caused the elderly's decline of physiology and cognition, and the original ways of interacting with social connections were not enough to cope with the changing society. Therefore, the elderly's burden increased while energy reduced, and the ratio between the two changes, affecting their satisfaction with life. Through learning, older persons could develop survival skills needed in the social changes, effectively responding to the difficulties they faced. It was the first need for old-age education to be satisfied. Peterson (1983) argued that these courses about coping needs could be divided into at

least five categories: understanding normal physiological ageing knowledge, strategically adapting to old-age life; developing new interpersonal relationships, planning for new life; planning economic life; curriculum to regulate emotions; learning knowledge of ageing, previously coping to the elderly life. When Cosky (1987) was explaining McClusky's (1970) learning needs of older people, he pointed out that education needs for physical health should be put at the first place. If individuals' health needs were not met at a minimum, they could not survive healthily and there would be no other levels of needs. Therefore, coping needs were the most basic survival needs. Courses derived from such needs were more common in older people's education.

Expressive needs: older people could get feedback and satisfaction from participating in the activities. Older people participated in activities because of their personal interests, such as physical exercise, photography, yoga, music, dance, etc. Participating in these courses were mostly driven by the spontaneous needs of the elderly, and the purposes were simply for attending activities, from which they could get benefits, feel interesting and gain a sense of participation and satisfaction. McClusky (1971) believed that it was necessary to reduce the restrictions on the elderly's expressive needs as much as possible, and to provide more courses related to these needs. Peterson (1983) believed that the curriculum of expressive needs for the elderly could be divided into two groups: physical education for leisure activities and activities of social relations.

Contributive needs: older people often sought opportunities for service, hoping to contribute to society and achieve self-fulfillment from contributions. Basically, people could help others to enhance their sense of self-worth. For the

elderly, contributions meant more opportunities and social interaction, but more importantly, societies could enjoy benefit and contributors' sense of self-value could get promoted. Therefore, contributive needs were also called service needs, such as the participation of the elderly in various volunteer activities. Peterson (1983) considered that there were three types of courses meeting the contributive learning needs of older people: developing and leading the way for older people to contribute; helping older people find their interests and potentials; helping older people gain adequate service knowledge and skills. The above courses could help older people continue to participate in service work.

Influence needs: education provided courses that helped older people recognize their social roles and offer social support. McClusky's (1971) theory emphasized that although the ability of the elderly in all aspects had been diminished, they were not incapable to take part in the education. The elderly were still willing to integrate into the society, and they wanted to exert their influence on the society and the world in which they lived. If properly educated, they could regain their lost ability to meet influence needs. But participating in social work required background knowledge of public affairs and social issues. Peterson (1983) believed that courses could be offered to seniors in four directions: assisting older people to identify their positions and roles; assisting older people to develop skills to participate in public affairs; assisting older people to understand the use of social resources and related support systems; assisting older people to develop the ability to assess the results of participating activities.

Transcendence needs: the elderly needed to understand the meaning of life more deeply in their later years, reviewing most of their past time and breaking

through physiological limitations. People of all ages had self-transcendence needs, this kind of needs from the elderly was particularly strong. Because of their older age, it was more likely to lead the deep thinking about life. Peterson (1983) argued that the following three types of courses could be offered to the elderly, such as inviting experts to share their experiences through lectures; helping the elderly in different ages and from different cultural backgrounds develop outlooks; organizing activities in the curriculum to help the elderly think introspectively.

McClusky's (1971) Theory of Margin pointed out that education could play a role in the development of human nature regardless of any stages of life. When people entered old age, they would face many losses. Through learning, the elderly could gain more energy and power to reduce the burdens added during the ageing process. In this way, aged people could maintain a good living condition, thereby acquiring new resources and new social roles. Meanwhile, new responsibilities were generated, and they would reach new levels of life development (Wei, Hu & Chen, 2010). McClusky also divided the learning needs of the elderly into five levels, namely, coping needs, expressive needs, contributive needs, influence needs and self-transcendence needs. Meanwhile, McClusky (1971) also pointed out that it was important to draw a distinction between educational wants and educational needs. There were many needs for the elderly, but these needs were clearly not in the areas that older people want. In addition to meeting the needs of older people's interests, it was necessary to study the deep needs of the elderly, so that the elderly would finally realize that their recognized needs and unrecognized needs would be satisfied through old-age education.

Based on the sociological point of view, Moody (1976) analyzed four

forms of learning needs of the elderly from the angle of social welfare. Rejection: it was a social approach that guided the elderly to discover their own needs. According to this view, for an old man who evaded repression, this irrational education plan should be provided to him. Social services: one of the most popular learning programs for the aged today. The basic assumption was that the target group or individual could be served by the government or experts to keep them busy. Participation: it was to promote the elderly to take activities continuously and to enhance the self-consciousness. Self-actualization: this was the most difficult level of needs to reach. Personal development and spiritual growth were the ultimate goals of the older persons' development.

Londoner (1978) adopted social system theory and the concept of instrumental education activities and expressive education activities proposed by Havighurst (1961) in the sociological framework, and it classified the learning needs of the elderly into expressive needs courses and instrumental needs courses. Instrumental learning needs: the learning purpose was to connect with the outside world, such as reading, writing and computer. Expressive learning needs: the purpose of participating in learning was to learn, such as painting, singing. The academic community had different opinions about whether the elderly were biased towards the instrumental learning needs curriculum or the expressive learning needs curriculum. Hiemstra (1985) argued that older people preferred plans that engaged in instrumental learning needs; while Peterson (1983) believed that older people liked activities transiting from instrumental learning needs to expressive learning needs; Londoner (1978) considered instrumental learning needs were more able to meet the needs of older people's survival and growth than expressive learning needs.

In summary, McClusky (1971), Moody (1979) and Londoner (1978) put forward the meaning and modes of the elderly's learning needs from different aspects, and proposed a complete theoretical concept. From a psychological point of view, McClusky (1971) divided the learning needs of the elderly into five levels, from the most basic coping needs, expressive needs, contributive needs, influence needs to self-transcendence needs; Moody (1979) divided, from the perspective of sociology, the learning needs of the elderly into four categories: rejection, social services, participation and self-actualization; Londoner (1978) divided, based on social system theory, the learning needs of the elderly into expressive needs courses and instrumental needs courses. Based on this, it could be found that the levels of needs proposed by McClusky (1971) were the most complete, and could basically cover other scholars' ideas. Therefore, the design of the questionnaire for learning needs of the elderly in this study would also be carried out under this theoretical framework.

In conclusion, according to McClusky's (1971) Theory of Margin, education was an effective way for older people to meet recognized or unrecognized needs. Through learning, seniors could increase energy and reduce burdens, and could constantly develop themselves. Consequently, they would lead a more leisurely and meaningful life. The gap between the actual situation and the expected goal could be closed via study to obtain a good subjective evaluation and psychological feelings, thereby the life satisfaction could be improved. From this, it could be found that senior citizen education had changed from initially solving social problems to helping the elderly to participate in the society by self-reliance, from social service to the development of the elderly (Chang, 2009).

2.2.3 Research on the learning needs of the elderly

With the development of educational gerontology in the field of learning needs, for more than 40 years, there were always scholars who studied actively the older people's needs of learning and put forward their views on the particular needs. Merriam (1999) argued that a review of life was important in educational needs, and Williamsa and Montelpare (1998) argued that the primary educational needs of older people should be the individuals' leisure and self-development needs (Hori, 2003).

Most of the research is based on the aforementioned theories of learning needs of the elderly, and is carried out under the framework of the hierarchy of needs. For example, Purdie and Boulton-Lewis (2003) conducted research on the learning needs of senior citizens over 70 years old in Brisbane, Australia, including learning needs, learning barriers and the effects of learning achievement. This study fell into interviews and questionnaires. A total of 17 elderly people accepted interviews and 160 elderly people took part in questionnaire survey. The study found that the learning needs of the elderly included scientific skills and knowledge, health knowledge, leisure and entertainment, life issues, etc. After analyzing the survey questionnaire, it was found that transportation, health and safety issues were the most urgent for them to learn, and the learning needs for sociality (such as the establishment of the new social links) was not highly recognized. Hori and Fujiwara (2003) conducted a questionnaire survey on the needs of Japanese disabled elderly for learning needs and activity restrictions, and sent the questionnaire to 505 disabled older people who were over 60 years old with normal cognition and 364 questionnaires were collected. In this study, the learning needs of the elderly were divided into four aspects: external needs, internal needs, instrumental needs, expressive and communicative needs. It was found

that more than 80% of the elderly showed that they had learning needs, and the degrees of needs sorted into the order from highest to lowest were health improvement, insurance, medical care, communication with other elderly people, gardening and pottery. In *An Introduction to Old-age Education*, Chen & Ji (2004) divided the learning needs of the elderly into four categories, namely, the needs to improve psychological and ideological literacy, the needs for health and longevity, the needs to enrich spiritual life, and the needs to learn life skills. In 2008, Taiwan's education authorities entrusted Huang, Lin, Liang and Lin (2008) to conduct a study on "A report on the learning intentions of pre-retirees and older adults in Taiwan." The research aimed on five items. The first was to understand the elderly's learning needs. The study adopted a questionnaire survey, issued 9,226 questionnaires and collected 6,025. The study found that the elderly had the strongest learning needs for health care, family and interpersonal relationships, and then social politics, retirement planning and adaptation, self-realization and meaning of life, leisure and entertainment. The research pointed out that the elderly's learning needs and age, gender, education backgrounds, marital status, economic status, children's status, and residential areas. Retirement had nothing to do with learning needs (Huang, Lin, Liang and Lin, 2008). Xu and Li (2017) sampled the learning needs of adults over the age of 45 in seven provinces. With reference to the World Health Organization's theory of active ageing and the active ageing indicators established by the Economic Commission for Europe, the learning needs fell into three aspects, safety, health and participation.

In recent years, researchers were more diversified in the study of learning needs, which did not just focus on the content and classification of the elderly's

learning needs, but proposed to provide a new core curriculum of general education for the aged, so that more people were able to understand the psychophysiological characteristics and needs of the elderly as well as integrating multiple types of information to provide a composite solution (Farah & Montepare, 2019). Researcher Maurer (2018) believed that learning could make older people better adapt to the retirement process. Tam and Chui (2017) made a cross-cultural comparison of the recognition for ageing and learning among Hong Kong and Australian seniors. Wang et al., (2016) implemented the focus group interviews with 43 Chinese seniors to understand their learning motivation, learning needs, learning barriers, etc. It was recommended to develop active intervention strategies to help the development of old-age education. So, this research field of view was wider.

2.2.4 Measurement of learning needs of the elderly

The learning needs of the elderly defined in this study are the missing part, and the elderly have realized that this part can adapt themselves better to ageing life. On the other hand, the outside world can judge whether the aged need or not, and the elderly have intention to make up the shortage, which manifests in the desire or preference of learning. According to the literature review, questionnaire survey is the most-commonly used method for assessing the learning needs of the elderly. Looking at related studies, it can be found that the learning needs of the elderly cover many factors affecting their life, from basic physiological needs to self-improvement and self-transcendence. Basically, health, household life, scientific knowledge and the use of skills, and meaning of life are all included. The learning needs scale of this study planned to use Joung's (2011) questionnaire on learning needs of the elderly. This scale chose McClusky (1971)'s Theory of Margin as the theoretical basis to explore

older persons' learning needs, and drew lessons from Huang et al. (2008), Purdie & Gillian (2003), Hori & Fujiwara (2003) to build the questionnaire framework of older learners' learning needs. Learning needs could be roughly divided into three parts: basic life skills needs, self-expressive needs and the exploration of the meaning of life. This study's research objects were the older people in Jinan, Shandong Province. The author mainly discussed the links among learning needs, social support, coping and life satisfaction. The survey objects had similar social and cultural backgrounds with those in Joung's (2011) research. The research topics in both studies were relatively close, and his questionnaire had been pre-tested and officially tested. So, the reliability and validity were better than others. Therefore, the author took this questionnaire as the blueprint to produce the questionnaire on the learning needs of the elderly in Jinan, Shandong. There were three specific facets. First, basic life skills need. The topics included health, home maintenance, financial management and technological application skills. Secondly, self-expressive needs. They focused on three subjects, including interpersonal relationships, leisure activities and intelligence, civil rights or social participation. Thirdly, the meaning of life exploration. The themes included self-understanding and self-realization, or self-transcendence, social roles, services or contributions.

2.2.5 The relationship between aged people's learning needs and life satisfaction

In 1971, the White House Conference on Ageing triggered people's attention to the learning of the elderly. Learning would become one of the ways for the aged to live a rich and meaningful life (Zhang, 2011). At this meeting, McClusky (1971) put forward Theory of Margin, pointing out that learning at any stage of life

would play a role in the development of human nature. Through learning, the elderly could gain more energy and power to maintain a good living condition and reach new levels of life development. Learning was an effective way for older people to meet the conscious and unconscious needs through learning, increasing the “energy” and reducing the “burden.” So, older persons could constantly improve themselves to live a leisured and meaningful life. The gap between the actual situation and the expected goal could be closed via study to obtain a good subjective evaluation and psychological feelings, thereby the life satisfaction could be improved.

The elderly had special learning needs. Understanding the learning needs of the elderly was a complicated process. The society needed to formulate laws, regulations and welfare measures to help the elderly to participate in the study. The special learning needs of the aged required to be correctly recognized. Only in this way, older people could be involved in the learning process and achieved self-development (Merriam & Lumsden, 1985). Older adults’ learning needs were also a kind of connection, the connection with the past and the future, the connection with others and the society (Hori, 2003). It could reflect the state of self-development, the orientation of connection to the past and the future, the needs for self-realization and transcendence (McClusky, 1971; Moody, 1976). Demir-Güdül’s (2015) study pointed out that students with lower motivations had lower levels of life satisfaction. Reed and Hadad’s (2016) survey on older people over the age of 50 found that more social participation could be provided for the elderly through learning, and their loneliness would reduce and life satisfaction would improve.

For more than 40 years, in the research of the relationship between learning needs and life satisfaction, Talento (1984) studied life satisfaction and assessment of

learning and activities among the elderly; Fisher (1986, 1987) studied the differences between the elderly who have taken courses and those who have not in terms of learning needs, self-directed learning, educational level; Lin (2002) conducted the “research on the relationship between participating learning activity and life satisfaction of older adult;” Joung (2011) implemented the study of “A Study of Life Quality, Learning Needs, Learning Attitude and Ego-Development Relationship of the Hakka Elders in Hualien and Taitung Area.” The conclusions of these studies consistently pointed out that the participation of older people in learning activities could help improve life satisfaction. Chae and Gusup (2018) conducted the study of “Determinans of Older Korean Adults’ Participation in Life-long Learning Programmes and Life Satisfaction,” taking Korean elderly as respondents. They found that by participating in learning and meeting the learning needs of the elderly, life satisfaction could be significantly improved. Mackowicz and Wnek-Gozdek’s (2016) “It’s Never Too Late to Learn-How Does Polish U3A Change the Quality of Life for Seniors?” and Tam and Chui’s (2017) “Ageing and Learning: What Do They Mean to Elders Themselves?” were consistent with this conclusion. Through learning, the elderly’s self-development needs could be met, while they could participate more in social activities to establish relationships with others in order to achieve higher satisfaction. Therefore, the study in this article believes that the learning needs of the elderly have an impact on their life satisfaction, and the hypothesis is as follows:

Hypothesis H_{1a}: there are differences between the elderly in Jinan, Shandong who have participated in the study of senior university and those who have not in terms of life satisfaction among older people in Jinan, Shandong.

Hypothesis H_{1b}: there are differences between the elderly in Jinan,

Shandong who have participated in the study of senior university and those who have not in terms of learning needs among older people in Jinan, Shandong.

Hypothesis H_{2a}: The learning needs of the elderly in Jinan, Shandong Province have a significant impact on life satisfaction.

2.3 The Meaning and Research of Social Support for the Elderly

The old age was a high-risk stage of life with multiple diseases and limited resources. Changes in retirement, widowhood, environment made the social support that was felt by the elderly particularly significant (Adams et al., 2016). The better the social support for the elderly the happier life they had, and the higher the life satisfaction the lower the mortality rate (Cacioppo, Hughes, Waite, Hawkley & Thisted, 2006; Couture, Lariviere & Lefrançois, 2005; Aldwin & Levenson, 2001; Kim & Sok, 2012; Lee, Besthorn, Bolin & Jun, 2012). Thus, understanding the meanings of social support and their related research is very important for understanding older learners, exploring the influence of social support and the ways learning needs have influence on life satisfaction. This section will start from the aspects of the meaning of social support for the elderly, related research, measurement and the relationships with life satisfaction.

2.3.1 The meaning of social support for the elderly

The study of social support originated in the 1970s, and this concept was due to social solidarity and social bond (Chen, 1993). Researchers studied separately from different fields such as psychology and sociology and medicine. Differences in research objects and research tools led to different terms: social bond, social networks, meaningful social contact, and human companionship and social support. The commonality of these names was to emphasize the compositional relationships

between interpersonal interactions (Tumer, 1983). While social support referred to the quality of life influenced by the relationships and interactions between individuals in the social context, emphasizing the results of getting support through the interactions with others (Lin, 1986). In fact, social support did not have a unified definition, but was generalized by a variety of explanations (Sarason & Pierce, 1990). At first, the meaning of social support referred to the different forms of conscious support, from family and friends when individuals faced stress situations, including money, goods, technologies and guidance, and it was believed that social support was the interaction between the subject and others (Caplan, 1974; Cassel, 1974; Krause, 2001; Taylor, 2003). Cobb (1976) defined social support as a kind of information from an objective perspective. This information could make people who obtained them believe that they were cared for and respected, or feel that they were communicating with others. Social support was the exchange of information at the interpersonal level. Sarason, Levine, Basham and Sarason (1985) argued that social support was a behavior or process that could provide support, and it was the individuals' necessary response to others, which reflected the levels of people's participation. Whether social support could help individuals, it was the driving force for promoting human development in the social environment.

From this we could see that social support was a diversified concept. Hupcey (1998) believed that there were six necessary factors for social support: providing resources, recipients' feelings of being taken care of or happiness, the positive behavioral outcome, the links between supporters and recipients, support which was not from a single source, and volunteer support. Duffy and Wong (2000) argued that the six factors could be integrated into three elements. First, social affinity:

it meant that the friends or family members that the individual could contact when the individual needed support. Second, existing support: when the individual needed social support, others could provide effective support. Third, conscious social support: the individuals' subjective understanding for the effects of social support offered from others.

The above viewpoints were the description and definitions of social support by researchers from different angles. Throughout these materials, social support was a concept with multiple structures. Tardy (1985) summarized five points of social support: direction, disposition, description and evaluation, content and network. In short, social support included individual cognition and environmental factor that directly reflected the interaction between the subject and others (Atchley, 2000); social support was an important resource for individuals to face problems and stress situations. Through the interaction with others or groups, the individuals could be aware of the various forms of assistance provided by supporters (Litwun & Landau, 2000; Barker, 2003; David & Stephen, 2003). In summary, this study synthesized relevant literature and defined social support as: the various forms of support and assistance obtained by the elderly through the environmental interaction in order to meet the elderly's needs and enhance subjective feelings.

Relevant research on social support were always diversified. The classifications of social support were different in different perspectives and different eras. Most scholars discussed it with interactive perspectives and divided the meaning of social support into various forms, from two to six types. They would be explained as follows.

The two types: Many scholars agreed to divide social support into two

basic types: emotional support and practical support (Dean & Lin, 1977; Morgan & Zimmweman, 1990; Stansfeld, 2006; Thoits, 1986). Dean and Lin (1977), Thoits et al. (1986) proposed emotional support and tool support. Emotional support offered the support of social psychology such as caring, compassion, acceptance, and respect; tool support provided substantial and specific assistance, such as warnings, information provision, division of family responsibilities, and financial support. Morgan and Zimmweman (1990) argued that social support was divided into emotional support and tool support. Emotional support meant the communication with others and emotional support from others; tool support, also known as actual help, referred to the transfer of items that occurred between the supporter and the recipient. Stansfeld (2006) believed that emotional support referred to the provision of information and the feeling of positive self-evaluation; practical support meant actual help and financial support. According to the points of above scholars, the most basic social support of individuals in the society could be divided into emotional support and tool support.

The three types: they referred to the view that social support could be divided into three categories. The researchers who held such views were as follows. Cobb (1976) defined social support as providing counseling to help individuals feel cared for and respect; social support was also a kind of network. Individuals in the network had common and mutual obligations, conveying emotion to each other and affirm self-worth. This kind of social support was mainly related to three categories. First, emotional support: expressing love, respect, etc.; second, recognized support: expressing consent and recognition; third, instrumental support: providing money, time and physical help, and making individuals feel that they are in a social network

which is associated with others, and in which they have an obligation to support each other. Houser, Berkman and Bardsley (1985) pointed out that social support could be divided into emotional support, recognized support and tool support, and its meaning and classification were basically consistent with Cobb's point of view. Jacobson (1986) also separated social support into three categories, but the difference was that it was divided into emotional support, information support, and substantive support. Among them, emotional support meant giving care, recognition, empathy, encouragement, etc., and it made people feel respected and accepted. Information support meant supporters helped recipients analyze, face and solve problems, such as providing information, giving advice and making corrections. Substantive support was to directly give specific substances or services to help recipients solve problems, such as giving money, handling household chores, solving issues. The better the feelings of these three levels, the higher the social support of recipients. Vaux (1988) also divided social support into three areas: support for network resources, supportive behaviors, and subjective evaluation for support. O'Reilly (1988) suggested that social support should be seen as the structure of behaviors and social network. The classification of social support proposed was as follows. Social support content: what kind of support is it? Emotional, informative or instrumental support? What are the sources of social support and what do they provide? Applicability of social support: which kind of support is useful to the recipients? subjective feelings support or objective feelings support? In conclusion, although the research perspectives were different or different inductive explanations were made, scholars who divided social relations into three categories basically agreed that social support could provide three kinds of functional support, namely, emotional support, social support and

instrumental support (Cobb, 1976; Houser & Bardsley, 1985; Jacobson, 1986).

The four types: Researchers who believed that social types need to be further subdivided into four categories are as follows. House (1981) argued that social support was a kind of human-to-human communication, according to which social support was divided into four categories. Emotional support: mentally consolation, such as self-esteem, emotion, care and trust. Instrumental support: substantial help, providing money, material assistance and actual help. Information support: the provision of information related to the living environment, including advice, suggestions, guidance; evaluation support, mainly referring to providing self-evaluation, information related to the society and giving confirmation or feedback. Gottlieb (1983) divided social support into substantive support, service support, emotional support, cognitive guidance and companionship. Cohen and Wills (1985) divided social support into four categories according to the nature of the resources provided by social support. Respectful support: it meant that the individuals are respected and accepted by others, and it is also known as emotional support. Information support: it was conducive to mitigate problematic events, and it could provide information and advice and helped deal with issues. Social membership: it allowed to spend time with others, so that individuals would have a sense of belonging. Instrumental support: it referred to providing substantive or material assistance. Cutrona and Russell (1986) divided social support into emotional support, social network support, substantive support and information support. Langford et al. (1997) divided social support into emotional support, instrumental support, information support and assessment support. Throughout the above perspectives, the above scholars subdivided social support from emotional support, instrumental

support and social support, but the assessment support proposed by House, Langford (1997) was closer to emotional support, and both of them were the emotional communication between supporters and recipients. Nonetheless, Cohen and Wills (1985), Cutrona and Russell (1986) proposed the social, accompanied relationship, whose value lied in the sense of belonging that could be generated when individuals interacted with others, and which was similar to the meaning of social network support proposed by Cobb (1976) that was more differentiated from emotional support, instrumental support and information support. In summary, the author believed that the four types could fall into emotional support, instrumental support, information support and accompanied support.

The five types: the following researchers believed that there were five types of social support: Cutrona and Russell (1990), Bossert (1994), Hupcey (1998), Sarsfino (1994), Chiu (2001), etc. Cutrona and Russell (1990) divided social support into emotional support, social network support, self-esteem support, substantive assistance and information support. Sarsfino's (1994) classification included emotional support, respectful support, substantive or instrumental support, information support and network support. Bossert (1994) believed that social support could be divided into five aspects: emotional support, message support, respectful support, substantive support, and network support. Hupcey's (1998) five categories were based on the nature of social support, the supporters and recipients, the intentions or behaviors of social supporters, the reciprocity and social networks. Chiu's (2001) classification included material tools support, emotional support, respectful support, information support, and friends support. In the above social support classification, in addition to emotional support, information support, tool

support and friends support, respect support was another subdivision among them. It was basically similar to the support of emotions, and was considered to be classified into emotional support.

The six types: Weiss (1974) divided social support into intimate support, social integration support, parenting support, value support, alliance support, and guidance support. Barrera, Sandler, and Ramsay (1981) suggested that there were material assistance, behavioral assistance, intimate interaction, guidance, feedback and positive social interaction. Barrera and Ainlay (1983) revised the classification of social support into material assistance, behavioral assistance, intimate intercourse, guidance, feedback, and positive social interactions. Although the above six types were more specific, looking at them in detail, the meaning of instrumental support was similar to that of material assistance and behavioral assistance. The meaning of emotional support was close to that of value support, intimate intercourse and intimate interaction. The concept of accompanied support was much closer to that of social integration support, alliance support and active social interaction. Therefore, the classification could be considered to fall into four categories: emotional support, instrumental support, information support, and accompanied support.

Throughout the above different classifications of the meaning of social support, it could be found that social support referred to the help that individuals received from life. Whether the support was tangible or intangible, spiritual or material, all could promote individuals to reduce stress and achieve life satisfaction. Although the classifications ranging from two to six categories, their content could be basically covered under four aspects: emotional support, instrumental support, information support and accompanied support. According to this, the author designed

the structure of the questionnaire on social support for the elderly.

2.3.2 Research on social support for the elderly

With the increasing emphasis on the research of social support in recent years, scholars from various countries have carried out various social surveys and empirical studies on social support in combination with different subjects. The studies have found that individual social support is often related to individual demographic variables, such as gender, age, health status, marital status, income, etc. Studies showed that women were more socially supportive than men (Burleson, Liu, Liu & Mortenson, 2006; Cutrona & Russell, 1991), and the relationship between social support and age experienced by individuals varied with growth of age (Kunzmann, Kupperbusch & Levenson, 2005). Individuals who had good health, good marital status, lived with relatives and friends and had good financial condition received more social support (Connidis, 1994; Lincoln et al., 2005; Glaser, Tomassini, Racioppi & Stuchbury, 2006; Lark, 2005; Silva, Griep & Rotenberg, 2009; Sirri, Magelli & Grandi, 2010).

Different genders had different social support due to the growth of both sexes in different social environments. Women were encouraged to develop emotional support skills, and men were encouraged to develop problem-solving skills. Therefore, the dependence and needs for social support were also different. Women's social support in emotion and information was higher than that of men because women had better social performance and were more likely to communicate with their peers, so the research indicated that women were more likely to provide emotional support than men (Burleson, Liu, Liu & Mortenson, 2006; Cutrona & Russell, 1991). Richmond, Ross, and Egeland (2007) selected 31,625 Canadians as research subjects in the study

of the “relationship between physical health and social support,” and the research conclusion pointed out that women’s needs for emotional support were higher than sensibility. Basow and Ubenfeld (2003) held different views. They believed that this phenomenon was not caused by social support of sexual impact, but by the individuals’ rich emotions and considerate qualities. Regarding the relationship between gender and social support, the current views were not consistent and still needed to be further explored.

The study found that age and the social support of individuals were related. Lincoln, Chatters and Taylor (2005) chose 591 African American women as research objects to conduct a social support study by questionnaires, and found that age had significant influence on social support. The older the age, the higher the emotional social support. With age, needs for emotional support became higher (Walker, 1997), where family support was more important than the support of friends (Froehlich, Fialkowski, Scheers, Wilcox & Lawrence, 2006). Other forms of support (like information support) were slowly decreasing (Shaw, Krause, Liang & Bennet, 2007).

In general, health had considerable influence on social support, because the better the physical and mental states of individuals, the more social support they received. The lower the degree of depression in the elderly, the more emotional support and substantive support they received (Dean, Kolody & Wood, 1990; Keyes, 2005; Moradi & Funderburk, 2006). For groups suffered from depression, social support was a particularly important protection system (Almeida, Kawachi, Molnar & Subramanian, 2009). When depression is controlled, individuals’ social support was also improved (Russell & Cutrona, 1991). Moradi and Funderburk (2006) argued that reducing psychological stress was significantly related to the extent to which

individuals felt social support. If individuals' physical and mental health was neglected, it would plague the social support they had perceived.

Through the survey, the researchers agreed that marital status had an impact on individuals' social support. Connidis (1994) selected 678 older people aged more than 55 as targets to study "social support factors affecting older learners" by questionnaires and found that unmarried people lacked emotional support and accompanied support compared with married people. There was no significant difference in total support between the two. The study by Lincoln et al. (2005) reaffirmed the above arguments and considered that married people had higher levels of emotional social support than unmarried individuals. Social support was an important factor in every stage of human beings. Stable socio-economic status and family relationships had a significant impact on social support. It could enhance psychological endurance to reduce stress, and those who had good marriage relationships were able to have better emotional support and accompanied support (Clark, 2005; Glaser, 2006; Silva, 2009; Sirri, Magelli & Grandi, 2010). Glaser et al. (2006) highlighted that more social support should be given to older people who have lost their spouses.

Social support research also found that both living conditions and economic conditions were related to social support. Lincoln et al. (2005) pointed out that individuals' recognition of environmental factors was related to social relationships, and economic pressures affected physical and mental health and then led to less social support. The steady earners would get much more social support.

In summary, those studies suggested that different cultural backgrounds, different geographical areas, different historical stages, and different research objects

could reflect different social support. This study selected the elderly in central China as the research objects, and the relationships between the demographic characteristics and social support are needed to further analyze.

2.3.3 The measurement of social support for the elderly

The social support scale for this study intends to adopt Chiu's (2011) questionnaire on social support for the elderly. It is based on the scales designed by Barrera, Slander and Ramsa (1981) and Weiss (1974). It splits social support roughly into four aspects: emotional support, information support, tool support, and accompanied support. This study explores the relationships among the elderly's learning needs, social support, coping and life satisfaction. The survey objects are the aged in Jinan, Shandong Province. It has a similar social and cultural background to the respondents in the the social support questionnaire of the elderly in Chiu's (2011) survey. Both the research topics for social support are relatively close, and Chiu's questionnaire has sought advice from many experts and scholars. The predictions and formal tests have been carried out, and the reliability and validity are good. Therefore, the questionnaire has been adopted to form the questionnaire on social support for the elderly as a survey tool.

2.3.4 The relationship between social support and life satisfaction of the elderly

Previous studies showed that the social support experienced by the elderly in the ageing process had an impact on life satisfaction. If individuals had good social support, their life satisfaction also increased. Social support was the main factor of predicting life satisfaction. The lower the individuals social support, the more the depressive symptoms and lower life satisfaction. There was a correlation between

social support and life satisfaction, and many researchers backed this view (Boz, 2018; Zheng et al., 2015; Klimova, 2016; Parisien et al., 2016; Cacioppo, Hughes, Waite, Hawkey & Thisted, 2006; Couture, Lariviere & Lefrançois, 2005; Adams et al., 2016; Kim & Sok, 2012; Lee, Besthorn, Bolin & Jun, 2012).

Chiu's (2011) research results of the study on the relationships among social support, coping and subjective well-being when senior learners were confronted with problems showed that the social support and coping of the elderly were positively correlated with the subjective feelings of life of the elderly, and social support and coping could predict these feelings. Chen (2001) studied the influence of the social support experienced by the elderly on their quality of life, satisfaction and well-being with 3363 older people. It was found that for the elderly, the support provided by family members was the biggest spiritual pillar. The elderly with family support had a better self-perception and higher satisfaction. Portero and Olive (2007) conducted a study on the relationships among health status, social support and happiness of senior university students. It was found that for elderly students, the lack of support from friends was the greatest potential crisis for the physical and mental health of individuals. Therefore, the elderly must actively engaged in social activities and learning activities and fitted in groups, by which individuals would have a positive effect on the physical and mental health, so they could further enhance their life satisfaction. Park and Yeo (2012) conducted a study of 200 Korean immigrant elderly people to explore the relationships among religious piety, social support and life satisfaction. The results of the study suggested that the higher the religious piety, the higher the social support and the satisfaction of life. The participation and social support might be the important factors to improve the quality of life of Korean elderly

immigrants. Social services that promoted religious belief and social support were conducive to improving the life satisfaction of this kind of elderly people. Zheng et al. (2015) investigated the use of the Internet by 350 elderly people to understand the key factors for older people to use the Internet to obtain social support: social connections, information collection and self-efficacy. It was found that the use of the Internet by the elderly was correlated with life satisfaction, which was supported by the research of Klimova (2016) on the elderly in the Czech republic. Parisien et al.'s (2016) study on the relationships among social support, psychological needs, and life satisfaction of 370 elderly cancer patients in the United States indicated that social support was related to life satisfaction. Boz (2018), in another way, used interviews as a research tool to understand how the elderly communicated and established social support in order to meet the needs of individuals and to establish relationships and gain a sense of belonging. The study considered that social support affected the feelings of life satisfaction of the elderly. In summary, the study in this article also believes that the factor of social support affects the life satisfaction of the elderly. The assumption is as follows:

Hypothesis H_{1c}: there are differences between the elderly in Jinan, Shandong who have participated in the study of senior university and those who have not in terms of social support among older people in Jinan, Shandong.

Hypothesis H_{2b}: Social support for the elderly in Jinan, Shandong has an influence on life satisfaction.

2.4 The meaning and research of the ways of coping of the elderly

In the process of ageing, the elderly often faced the loss, such as the loss of physical functions, the reduction of incomes, the loss of social relations, etc., and the

elderly needed to find ways to maintain the energy and power they had enjoyed in the past (Wei, Hu and Chen, 2010). In fact, in the development of an individual's life, no matter at any stage, the individual was always facing, adapting and improving the change in the relationship between "energy" and "burden." What's worse, the impact of this change was particularly acute in the old age. Learning was a way, and the key to the elderly's learning was to increase the "energy," so that the "energy" in the old age could be greater than the "burden." It could help the elderly to maintain a better condition, so they might obtain new resources and played new roles to fulfill responsibilities. They might also reach new levels of life development, consequently making life more satisfied and comfortable. This was the essential reason why the elderly should be encouraged to continue to learn and develop themselves. It also showed the possibility and necessity for the aged to acquire active ageing through learning. The White House Conference on Ageing in 1981 also clearly stated that most of the major problems in old age, such as economic security, physical and mental health, and resources for the elderly, could be solved by learning (Talento, 1984). In order to understand coping, this section will discuss the meaning of coping by the elderly, the related research on coping and how to measure the factors related to life satisfaction.

2.4.1 The meaning of the elderly's coping

As a way to solve problems in the elderly, coping attracted more and more researchers' attention, and scholars tried to study the ways to alleviate problems and pressures faced by the elderly (Blanchard, Chen & Norris, 1997) to help older people cope better with the ageing process.

Coping was often confused with similar concepts such as adaptation,

defense. The researchers analyzed this concept and considered that the definition of coping included handling, ingenious tackling, proper dispose, competition, rivalry, and countervailing (Lu, 2001; Xu, 2001; Sun, 2003; Yan, 2005). When individuals faced environmental or inner demands or conflicts, especially when these conflicts and demands became burdens, coping would be individuals' actions and inner positive response and treatment (Lazarus, 1976). It was also the responses of individuals to prevent and control emotional stress on life stress (Pearlin & Schooler, 1978). These effective ways could alleviate the pain brought by events and pressure, and it could also reduce stress and help individuals develop themselves (Gmelch, 1982). Lazarus and Folkman (1984) defined coping as to deal with external or internal burdens or negative needs of individuals by changing their cognition and behaviors. It had the following four characteristics. Coping was the interaction between people and the outside world, and it was not a static process; in the process of coping, individuals continuously identified and evaluated the stress sources; the result of cognitive evaluation would affect coping, and the ways of coping changed when the pressure sources became different; coping was an acquired skill rather than inborn skill.

Therefore, coping was a process of confronting difficulties, and each individual had a unique way of coping (Huang, 1993). This was a purposeful self-adjustment process, and it was the subjects' attempt to cope with the situations and inherent pressures that had exceeded individuals' endurance through cognition, behaviors and emotion (Hymovich & Hagopian, 1992). Coping was a positive and purposeful thought and action, not just a subconscious defensive strategy, the purpose of which was to reduce anxiety and solve problems. However, although coping might cause positive effects and reduce stress, it might also increase negative burdens and

affect the physical and mental health of individuals (Chang, 1989). In short, coping was the response to stress in the interaction between individuals and the environment. It was a process of comprehensive cognition, emotion and behavior. Coping itself was neither good nor bad, but its effects might be positive or negative, and the results of coping affected both the environment and individuals at the same time (Li, 2005).

Lazarus and Folkman (1984) pointed out in their transactional theory of stress and coping that stress was the result of interaction between people and the environment, while coping was the response to changing stress. In order to measure this process, the scale of ways of coping was revised to conduct empirical research, and coping was divided into two aspects: the problem-focused and the emotion-focused. There were three problem-focused coping ways: confrontation coping, planned problem-solving and self-control. There were four emotion-focused coping ways: alienation, acceptance of responsibility, evasion of responsibility, positive re-cognition. In addition, seeking social support was the coping combined problem-focused and emotion-focused features. It should be noted that the above coping methods do not work independently. When individuals are in front of stress, they may use both problem-focused and emotion-focused coping (Lazarus & Folkman, 1984).

Lazarus and Folkman (1988) further pointed out that coping was subjects' response to stress and a process of behavioral efforts to change through the perception and assessment of the situation. So, when the subjects' needs for internal or external environments exceeded the limit that individuals can bear, they would continually strive to change through cognition, assessment and action, minimizing threats and injuries. It could be divided specifically into problem-focused and emotion-focused

coping. Problem-focus response meant that individuals had the ability to change, reduce the pressure caused by problem events or increased resources to help diminish stressors through cognition. Such common ways of coping included solving problems proactively or directly, analyzing causes, changing expectations, learning new skills and actively looking for help (Chen & Tang, 2005). Emotion-focused coping meant that when the problems from individual cognition to the external environment were difficult to solve or could not be solved, individuals instead adjusted the inner psychology to reduce the stress caused by pressure so that individuals would get good emotions, such coping strategies as changing ideas, choosing to forget or seeking objects who could provide emotional support. As for the above two methods of response, the academic community was still inconclusive which one was more suitable for regulating pressure. When individuals faced controllable situations, they generally adopted the problem-focused ways of coping. When faced with unbearable situations, they adopted the emotion-focused ones (Lazarus & Folkman, 1984). Some scholars also believed that each coping mode had both advantages and disadvantages. Escape could be used to effectively reduce short-term pressure, but could not predict and solve long-term problems (Suls & Fletcher, 1985). In contrast, although the problem-focused approach could reduce long-term pressure, it increased short-term emotional stress (Miller & Mangan, 1983). The coping in two orientations could not be simply evaluated. Only the individuals' response to stress and effectiveness by the two could be assessed. The appropriate coping was to help individuals to adapt environments very well in accordance of the situational requirements (Jalowiec, Murphy & Powers, 1984). Scheier, Weintraub and Carver (1986) conducted a study of 291 postgraduates and found that when they thought that the situation was

controllable, they used the problem-focused coping, while when the situation was uncontrollable, they tended to adopt the emotion-focused coping. This result proved the above theory of Lazarus and Folkman. But Scheier, Weintraub and Carver (1986) also pointed out that in addition to solve emotional issues, different emotion-focused coping strategies might play different roles, even causing conflict with each other and leading to negative effects and escape, so the researchers further indicated that this kind of escape might be more valuable in research, and it was necessary to further review these classification structures.

In view of this, Carver et al. (1989) incorporated the concept of “escape” into the functions of coping, and classified the ways of coping. Then the COPE Questionnaire were created with a total of 60 questions. In the inconvenience of too many questions, in 1997, Carver modified this scale into the Brief COPE, which contained 28 questions in 14 subscales. It included active coping, planning, positive reconstruction, acceptance, humor, religion, emotional support, instrumental support, self-escape, venting, denial, substance abuse and behavioral escape. The higher score the respondents got from a subscale, the more likely it was used to cope with stress.

Suls, David and Harvey (1996) pointed out that in Carver’s Brief COPE, there were high correlations among the 14 subscales, such as denial and behavioral escape, active coping and planning, so they should be replaced with more simplified subscales. Tobin et al. (1989) attempted to re-classify the ways of coping. He argued that the researchers in the past were not able to study the relationships between them. As a result, the original classification was not accurate. In addition to the problem-focused and emotion-focused classification, there were other different classification methods such as engagement-disengagement, adaptation-maladjustment.

The further study on the results of factors analysis by the WOC scale showed that “engagement” and “disengagement” could be incorporated in the classification structure in combination with Scheier et al.’s (1986) research.

So, the ways of coping could be split into: engagement-problem-focused, engagement-emotion-focused, disengagement-problem-focused, disengagement-emotion-focused, and they were verified by the method of class analysis for the rationality of their hypothesis. On this basis, Blanchard-fields (2007) divided the ways of coping according to the results of interviews with adults into four categories: problem-based coping, emotional coping, help-seeking coping and evasive negation coping, as shown in Figure 2.4:

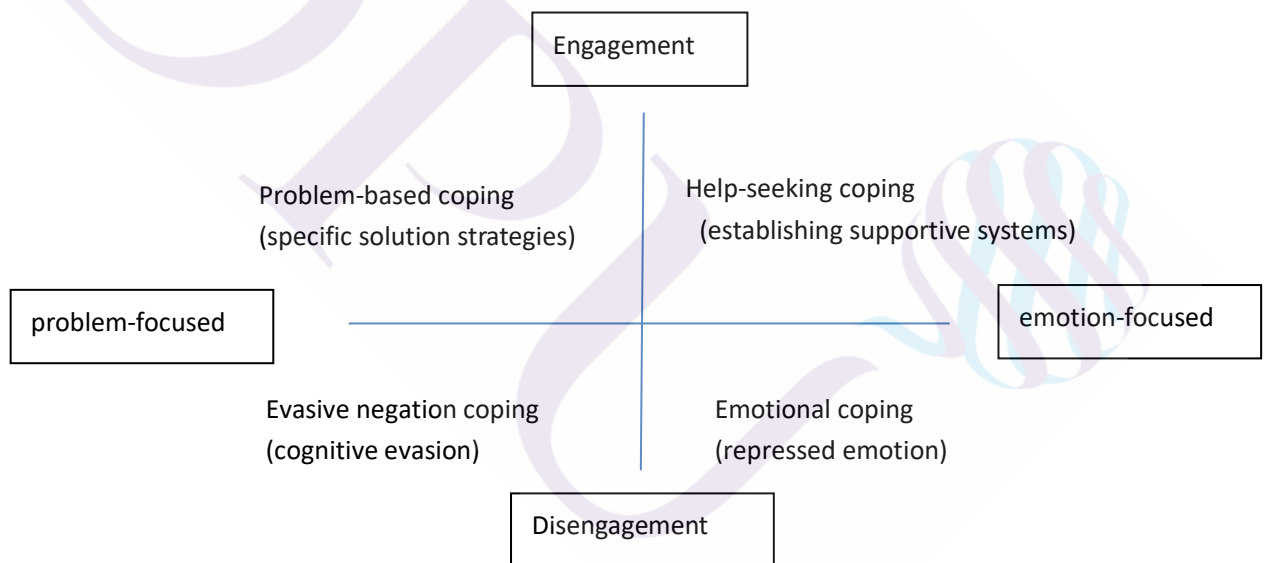


Figure 2.4 Blanchard-field’s (2007) classification for coping

Source: Chiu (2011)

Among them, the “problem-based coping” preferred to specific solution strategies, which meant that when individuals faced life stress or frustration, they got to know the source of the problems, and analyzed and evaluated the selection of strategies. Finally, they formulated plans to take action to solve the problems.

“Help-seeking” meant establishing supportive systems. Individuals who faced pressure seek support from others, regulating emotions and reduce stress; “emotion” meant repressive emotions, which meant that they could not change the status quo, so became pessimistic, negative and self-destructive; “evasive negation” meant cognitive evasion, referring to refusal of recognizing the unpleasant reality and believing in destiny just like ostriches buried their heads in the sand to avoid danger. The author intended to use these four factors as the basic facets of the questionnaire to conduct a questionnaire survey on the ways of the elderly’s coping.

2.4.2 The research on the ways of coping with the elderly

The ways of coping had various performances due to differences in subjects and differences in problems. Their impact was also multi-faceted. Strough, Chen and Swenson (2002) pointed out that married people would actively “seek assistance” in the face of problems and stress situations, while unmarried people tended to use “emotional” and “evasive negation” coping ways. In the study, Strough et al. (2002) also found that marital status affected the living situations. Married people tended to adopt the coping of “seeking assistance,” and unmarried people tended to use “specific solution strategies” of problem-based coping. If the solitary people were pessimistic, they might adopt the coping of “evasive negation.” Rao, Apte and Subbakrihna (2003) found that married women in the survey often used “help-seeking” coping in the face of stress, and they rarely escaped from pressure. If married women had jobs and were economically independent, then “help-seeking” coping had a positive impact on their happiness and life satisfaction. The above studies indicated that different marital conditions often affected individuals to adopt different ways of coping. Similar to marital status, the study also found that

individuals' health status and age were related to coping (Chris, 2002; Blanchard-Fields, 2007), while gender had no significant correlation with coping (Dorina, 2004). Chris (2002) believed that the self-perceived health situations of elderly individuals would affect the performance of their coping. In particular, individuals with good health were more confident and adopted "specific solution strategies" when they were confronted with issues, and their ways of coping were more positive. Unhealthy people had a poor sense of personal life control, lacking of confidence in alleviating life stress and having a weak willingness. They preferred to the "emotional" or "help-seeking" coping. Some researchers found that age was related to the ways individuals coped with. The older they were, the more effective ways of coping they could learn and apply. When faced with stress, they were more aware of the right ways of coping. Young people were accustomed to adopting "specific solution strategies" to solve problems independently and the elderly tended to "seek help" to solve problems for improving individual well-being (Blanchard-Fields, 2007).

Nemeroff et al. (2010) conducted a study of the relationships among social support, stress and precondition in 134 elderly people over the age of 65. The survey pointed out that precondition and control for difficulties and stress could ease the pressure from social support. There were correlations between the variables. Sougleris, Christina, Ranzijn and Rob (2011) conducted a study of 224 residents in the Australian community on coping, life goals and life satisfaction. The findings indicated that positive coping was an important factor, which should be improved by intervention, to help improve the quality of life in the elderly.

2.4.3 Measurement for the ways of coping with the elderly

The questionnaire for the study's coping ways was based on Chiu's (2011) questionnaire on the elderly's ways of coping. The adapted scale referred to the scales compiled by Carver et al. (1989) and Tobin et al. (1989). The ways of coping were broadly divided into four aspects: specific solution strategies, supportive systems, cognitive evasion and repressed emotion. The study in this article explored the relationships among learning needs, social support, coping and life satisfaction. The survey objects were the elderly in Jinan, Shandong Province, who had the similar social and cultural backgrounds with the aged in Chiu's (2011) questionnaire survey on the elderly's ways of coping, and the research questions for coping of both studies were relatively close. This questionnaire sought for many experts' guidance and suggestions, and the predictions and formal tests were carried out, so it had good reliability and validity. Therefore, the questionnaire was adopted as a research tool of the questionnaire on the elderly's ways of coping in Jinan, Shandong Province.

2.4.4 The relationship between the older people's coping and life satisfaction

The life satisfaction of the elderly was a multi-faceted concept. It could be divided into real life situations, emotional states, the consistency between expectations and goals, and family members, among which, the ways of coping for stress and difficulties the elderly encountered during the ageing process were closely related to life satisfaction. Researchers generally believed that positive coping ways had a positive impact on the elderly's problem-solving, and positive coping approaches had a strong relationship with higher life satisfaction. (Sougleris & Ranzijn, 2011; Chiu, 2011).

The ways of coping adopted by older people in dealing with problems had a positive impact on life satisfaction, and many researchers' conclusions supported this view. For example, Guedea's (2006) research on social support, coping and subjective well-being of Brazilians showed that coping and social support influenced each other and affected life satisfaction and positive emotions; Bode et al. (2006) pointed out that coping-oriented educational plans could help older people select better coping strategies and improve their behavioral patterns and ability. Ouwehand et al. (2008) suggested that using strategies of coping helped improve self-efficacy, older people could overcome stressors through education to fit better in future life. Chiu's (2011) "study of the relationships among social support, coping and subjective well-being when elder learners face problems" showed that the social support and coping of the elderly were positively correlated with the subjective feelings of life of the elderly, and social support and coping were predictive of this kind of feelings. Sougleris and Ranzijn (2011) conducted a study of the 224 residents of the Australian community to test whether positive coping ways could play a role in life goals and life satisfaction. The results of the study indicated that the positive coping was an important variable in the mental health of the elderly, which helped to improve life satisfaction. Eryılmaz (2014) based on the view of Lazarus and Folkman (1984) that stress and life satisfaction were correlated established a relation model of stress, coping, characteristics and subjective initiative, and believed that low levels of stress and positive coping would have a positive impact on life satisfaction. If students had lower motivation, their life satisfaction would be lower (Demir-Güdü, 2015). Buser and Kearney's (2010) study on the ways of coping, stress and life satisfaction of college students showed that the greater the pressure of individuals, the lower their

life satisfaction became. Once the pressure had been controlled, the positive coping would have a positive impact on life satisfaction. This conclusion was also supported by the results of Cabras and Mondo's (2018) research on the relationships among coping, optimism and life satisfaction among 298 freshmen at Cagliari University in Italy. The study pointed out that positive coping strategies and optimism had significant influence on life satisfaction. Oznur (2019) carried out a study of 568 students in Bartın University, Turkey on the relationships among coping, motivation and life satisfaction. It was found that the individuals' ways of coping with stress and life satisfaction were connected. In summary, the study in this article considered that the older people's ways of coping were also related to life satisfaction, learning can improve coping. The hypotheses were as follows:

Hypothesis H_{1d}: there are differences between the elderly in Jinan, Shandong who have participated in the study of senior university and those who have not in terms of coping among older people in Jinan, Shandong.

Hypothesis H_{2c}: the ways of coping of older people in Jinan, Shandong Province have an influence on life satisfaction.

2.5 Relevance of the elderly's learning needs, the ways of coping and social support

In order to further explore the relevance of the elderly's learning needs, social support, and the ways of coping, this part aims to summarize the relationships among the three through literature compilation and analysis.

2.5.1 Relevance between older people's learning needs and social support

Parisien et al. (2016) conducted the research on 143 elderly people in 13 communities, and established community-based programs to train older people on

ageing knowledge, memory strategies, and healthy lifestyles for more than 10 weeks. It aimed to help the elderly to maintain their cognitive ability and encouraged them to participate in social activities. The project evaluation showed that the activities were feasible, and the satisfaction and participation rate of the elderly was pretty high, so the training courses played a positive role of guidance. Mackowicz and Wnek-Gozdek (2016) conducted a qualitative case study of the elderly in the University of Third Age in Poland, which indicated that the participation in learning had a positive impact on the participation in social activities, the adaptation to change, and gaining and providing more support. A study conducted by Reed and Hadad (2016) on a continuing education program involving 50-year-old and older people believed that learning could provide more experience and community participation for the elderly. It could also reduce loneliness and improve the social support for learners and life satisfaction. Gurjot Kaur (2017) believed that social support and coping of the elderly were related to the older's life pressure and life satisfaction. Social support played a regulatory role in the relationship between stress and life satisfaction. Under the condition of low levels of social support, the greater the pressure on the elderly, the lower the life satisfaction.

In summary, the elderly participating in education courses and activities could get more social support (Parisien et al., 2016; Mackowicz & Wnek-Gozdek, 2016; Reed & Hadad, 2016; Gurjot 2017). The study in this article also suggested that social support for older people was relevant to learning needs and the hypothesis was as follows:

Hypothesis H_{3a}: social support for the elderly in Jinan, Shandong has the mediating effect between learning needs and life satisfaction.

2.5.2 Relevance between older people's learning needs and the ways of coping

In general, when individuals encountered setbacks or difficulties, calmly overcoming negative emotions and actively coping could help improve motivation and life satisfaction (Deniz et al., 2012). Choosing positive ways of coping was conducive to achieving desired goals. Studies on students indicated that if students had low motivations and moods and their attention were distracted, they tended to evade problems and their life satisfaction was low (Hannigan et al., 2004; Eryılmaz, 2014; Demir-Güdü, 2015). Oznur (2019) conducted a study on the relationships among ways of coping, motivation and life satisfaction for 568 students at Bartın University in Turkey, aiming to test the mediating effect of coping in the relationship between motivation and life satisfaction when people were confronted with stress. The study used the coping scale, the adult motivation scale and the life satisfaction scale to collect data for the research, applying descriptive statistics to analyze the data. Besides, the structural equation models were used for testing the relation models of the ways of coping with stress, motivation and life satisfaction. The results showed that the way students coped with stress, motivations and satisfaction with life had no significant difference due to genders. There were relations among motivation, life satisfaction and ways to cope with stress, and the mediating effect model for coping was then established.

There were previous studies on the motivation and coping of college students (Hannigan et al., 2004; Eryılmaz, 2014; Demir-Güdü, 2015; Oznur, 2019), but there was no research on learning needs and coping for the elderly. In addition, the study on mediating effect of coping on the learning needs and life satisfaction of the

elderly was also not conducted. So, this study proposed the following hypothesis:

Hypothesis H_{3b}: the ways of coping of the elderly in Jinan, Shandong Province have the mediating effect between learning needs and life satisfaction.

2.5.3 Relevance between older people's social support and ways of coping

Some studies suggested that the ways of coping by which older people tackled problems were related to social support. Guedea's (2006) research on social support, coping and subjective well-being of Brazilians showed that coping and social support influence each other. Chiu's (2011) study of the relationships among social support, coping and subjective well-being when elder learners face problems showed that the social support and coping of the elderly were positively correlated with the subjective life experience, and social support and coping were relevant. Parisien et al. (2016) conducted a study of the relationships among social support, psychological needs and life satisfaction of 370 elderly cancer patients in the United States, which indicated that the relevance of social support for the aged was related to their mental state and life satisfaction. This result had the consistency with Gurjot's (2017) study on the relations of social support, ways of coping with problems, life stress and life satisfaction, which suggested that social support had a correlation with coping and social support had an impact on the feelings of life satisfaction. The lower the levels of social support, the more negative the ways of coping. In addition, life satisfaction would decline. In conclusion, the study in this article also considered that the older people's coping and social support duplicated the mediating effect between learning needs and life satisfaction, so the hypothesis was:

Hypothesis H_{3c}: the ways of social support of the elderly in Jinan, Shandong Province have the mediating effect between learning needs and coping.

Hypothesis H_{3d}: the ways of coping of the elderly in Jinan, Shandong Province have the mediating effect between social support and life satisfaction.

Hypothesis H₄: learning needs, social support and coping for the elderly in Jinan, Shandong have an overall prediction for their life satisfaction.

All in all, learning needs, social support, and the ways of coping have important influence on the life satisfaction of the elderly. Learning needs are one of the important needs in the old age, regardless of whether the needs are recognized. Meeting their needs can improve life satisfaction. Learning is a positive way in which the elderly can participate in society, develop themselves and cope with ageing. Social support can increase communication with the outside world and can improve the coordination between living materials and affairs. It can develop their sense of belonging and pleasure, and thus rise life satisfaction. The positive ways of coping by the elderly is conducive to facing stress and solving problems. These coping ways is positively related to life satisfaction. That is, when the elderly use positive ways of coping, it is easier to obtain strong life satisfaction. Negative ways of coping will reduce their life satisfaction. Therefore, the continuous participation in learning can meet the needs of the elderly's self-development and make them gain more social support. Besides, they can cope with their old-age life in a better way, and benefit their physical and mental health and subjective perception evaluation. Therefore, the study on the influence of learning needs, social support and coping on life satisfaction deserves attention and further exploration, aiming to better help them meet the learning needs, to achieve self-development and improve life satisfaction. At last they will attain the healthy and active ageing. However, the current research on the elderly is still limited. There is no study on this field in China mainland, so further research is

needed.

Based on the above discussion, the main purpose of this study is to explore the relationships among learning needs, social support, coping and life satisfaction of the elderly, also the research objects, in Jinan, Shandong. After the literature review, the author believes that the past studies on the correlations among learning needs, social support, coping and life satisfaction are still insufficient: First, the relations between variables is unclear. In the past, the studies were limited to the relationship between only two variables, and there was no research on crossover relations among learning needs, social support, coping and life satisfaction. Second, the paths between variables had not been established. Therefore, this study intends to explore the above issues from the perspective of the relationships among learning needs, social support, coping and life satisfaction, and make sure whether individuals' learning needs, social support and coping have connections with and have prediction for life satisfaction. Consequently, the gaps of past studies can be supplemented. The author hopes this study could be a reference for future academic research and for educators engaged in old-age education.

CHAPTER 3

RESEARCH METHOD

This study aims to explore the relationships among learning needs, social support, coping and life satisfaction of the elderly. Through the literature review, the questionnaires, interview outlines, methods of data analysis and pre-tests can be formed. The following will in turn illustrate research process, research structure and hypotheses, research objects, sampling methods and questionnaire distribution, research tools, material analysis, and pre-test and analysis.

3.1 Research process

The purpose of this study is to explore the effects of learning needs, social support and coping on life satisfaction of the elderly. In order to understand the thoughts and performance of the aged, the author takes older people who have participated in the study and those who have not in Jinan, as respondents, using the methods of questionnaire survey and focus group interviews. Taking quantitative research as the principle approach and qualitative research as the supplementary approach, the content of questionnaires is based on the scales of relevant studies whose reliability and validity have been proven. Combined with Jinan's local situations, the questionnaires for pre-test have been formed after modifying some questions, and formal questionnaires have been created through statistical test analysis and can be used for the questionnaire survey. After the data analysis by the statistical software, focus group interviews have been conducted for qualitative research. After

the results are consolidated, the conclusions and recommendations have been prepared and used for the report. The research process is as follows.

1. Collecting data, literature and determining the research directions and themes.
2. Conducting literature review based on research topics.
3. Determining the questionnaires according to literature review.
4. Implementing the pre-test after the experts' revision and examination.
5. Deleting the unsuitable questions and producing the questionnaires according to the analysis results of pre-test and reliability and validity.
6. Formal test.
7. Questionnaire collection, inspection, data entry and statistical analysis.
8. Drawing up the interview outline according to the results of statistical analysis; sending it to experts for revision and examination.
9. Organizing focus group interviews and analyzing interview data.
10. Integrating, analyzing and concluding the research results; proposing conclusions and recommendations.
11. Writing the research report.

To clarify the research process, the simplified research flow chart is shown in Figure 3.1:

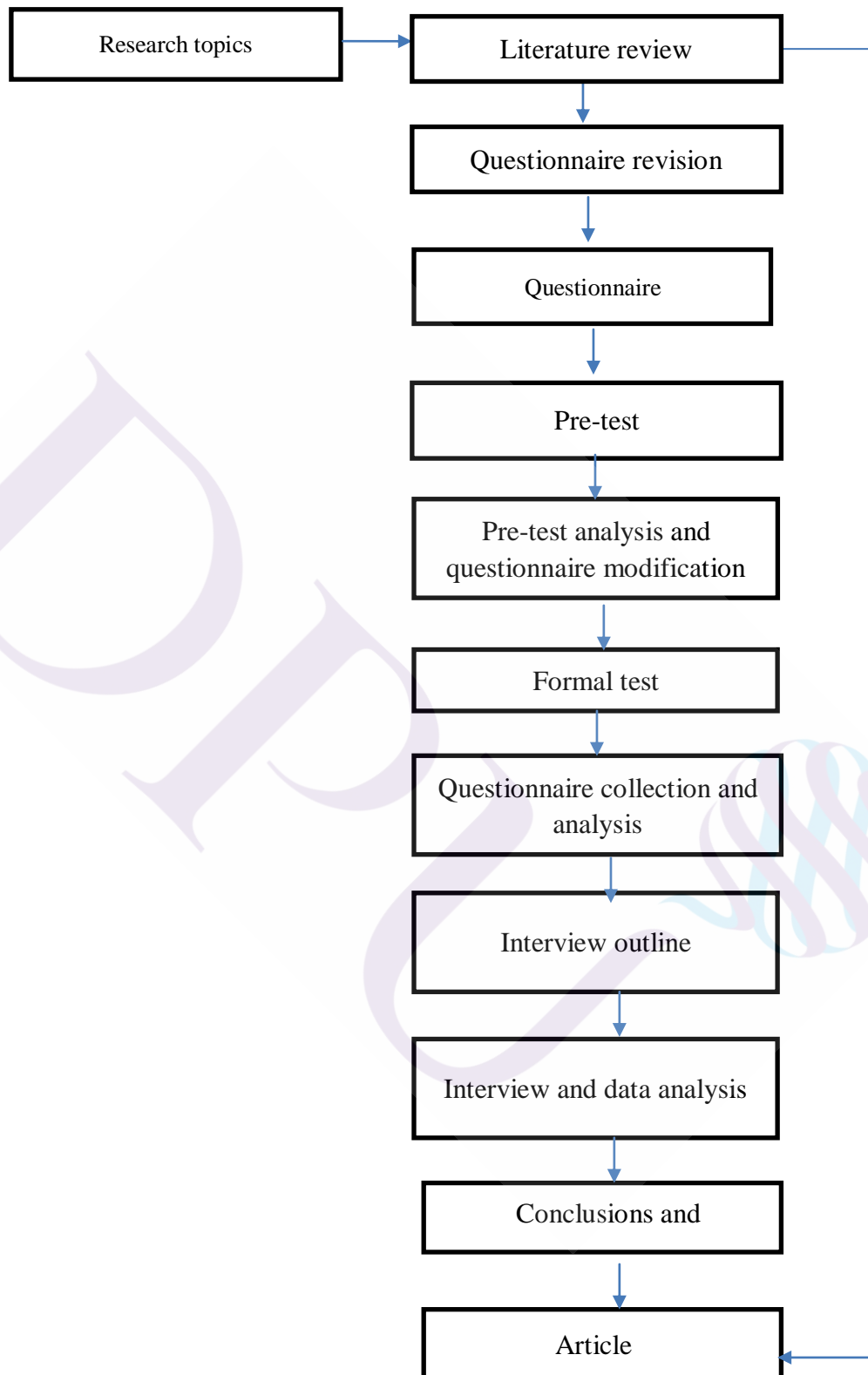


Figure 3.1 Research process

3.2 Research structure and hypotheses

3.2.1 Research structure

Based on the above ideas, the research structure of this dissertation is shown in Figure 3.2.

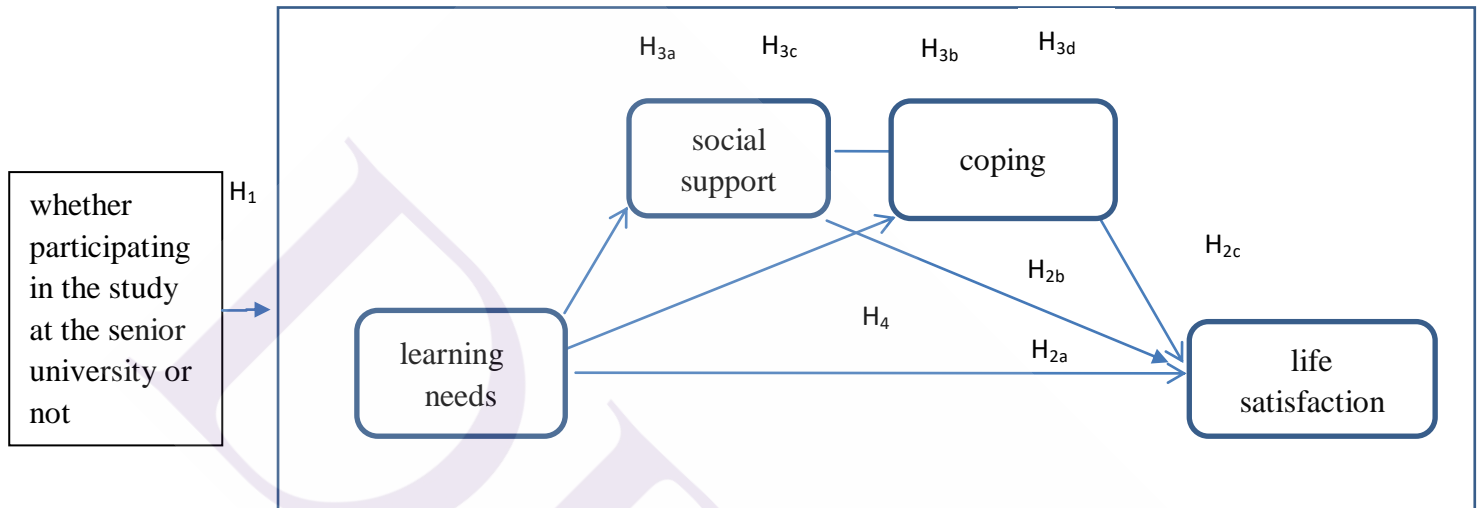


Figure 3.2 Research structure

Source: Chae & Gusup, 2018; Reed & Hadad, 2016; Boz, 2018; Parisien et al, 2016; Oznur, 2019; Adams et al, 2016; Aldwin & Levenson, 2001; Chiu, 2011; Gurjot, 2017; Lin, 2002; Jian, 2004

In this study, the author has analyzed the differences in learning needs, social support, coping and life satisfaction of elderly people in Jinan, Shandong Province who have participated in the study of the elderly university and those who have not by one-way ANOVA and independent-samples t. The correlations among learning needs, social support, coping and life satisfaction have been analyzed by Pearson product-moment correlation coefficient (PPMCC), and multiple regression analysis, mediation model and multiple mediation process are used for analyzing the prediction of learning needs, social support, coping and life satisfaction.

3.2.2 Hypotheses

Based on the research purposes and the literature review, the hypotheses are as follows:

1. Hypothesis H_1 : there are differences between the elderly in Jinan, Shandong who have participated in the study of senior university and those who have not in terms of learning needs, social support, coping and life satisfaction among older people in Jinan, Shandong (Lin, 2002; Jian, 2004).

1) Hypothesis H_{1a} : there are differences between the elderly in Jinan, Shandong who have participated in the study of senior university and those who have not in terms of life satisfaction among older people in Jinan, Shandong

2) Hypothesis H_{1b} : there are differences between the elderly in Jinan, Shandong who have participated in the study of senior university and those who have not in terms of learning needs among older people in Jinan, Shandong

3) Hypothesis H_{1c} : there are differences between the elderly in Jinan, Shandong who have participated in the study of senior university and those who have not in terms of social support among older people in Jinan, Shandong

4) Hypothesis H_{1d} : there are differences between the elderly in Jinan, Shandong who have participated in the study of senior university and those who have not in terms of coping older people in Jinan, Shandong

2. Hypothesis H_2 : the learning needs, social support and coping of the elderly in Jinan, Shandong have a significant impact on life satisfaction (Chae & Gusup, 2018; Reed & Hadad, 2016; Boz, 2018).

1) Hypothesis H_{2a} : the learning needs of the elderly in Jinan, Shandong have significant influence on life satisfaction.

2) Hypothesis H_{2b}: the social support for the elderly in Jinan, Shandong has a significant impact on life satisfaction.

3) Hypothesis H_{2c}: the ways of coping of the elderly in Jinan, Shandong have a significant influence on life satisfaction.

3. Hypothesis H₃: the social support and coping of elderly people in Jinan, Shandong have the mediating effect between learning needs and life satisfaction (Parisien et al, 2016; Oznur, 2019; Adams et al, 2016; Aldwin & Levenson, 2001).

1) Hypothesis H_{3a}: social support for the elderly in Jinan, Shandong has the mediating effect between learning needs and life satisfaction.

2) Hypothesis H_{3b}: the ways of coping of elderly people in Jinan, Shandong have the mediating effect between learning needs and life satisfaction.

3) Hypothesis H_{3c}: social support for the elderly in Jinan, Shandong has the mediating effect between learning needs and coping.

4) Hypothesis H_{3d}: the ways of coping of the elderly in Jinan, Shandong have the mediating effect between social support and life satisfaction.

4. Hypothesis H₄: the learning needs, social support, and coping of elderly people in Jinan, Shandong have significant prediction power for life satisfaction (Chiu, 2011; Gurjot, 2017).

3.3 Participants, sampling methods and questionnaire distribution

3.3.1 Research sites and Participants

According to the *Blue Book of Ageing: Survey Report on the Living Conditions of China's Urban and Rural Older Persons* (China Research Center on Ageing, 2018) and *Shandong Statistical Yearbook* (Shandong Statistical Yearbook Committee, 2018), as of the end of 2017, the Chinese population at the age of 60 and

over was 241 million. Among them, there were 21.373 million older people in Shandong, the elderly in Jinan was 1.346 million. So, Jinan is actually a city with larger elderly population in a populous province. Judging by the international standard, Jinan has entered a moderately ageing society, which is very representative. This study is conducted on elderly people at 60 years old and over in Jinan, Shandong Province. Half of them are elderly learners in senior universities, and the other half are those who have not participated in old-age university studies.

3.3.2 Sampling method

The purpose of this study is to understand the relationships among learning needs, social support, coping and life satisfaction of Chinese people over the age of 60. Considering the samples' representativeness and sampling's efficiency, this study has used two-stage sampling, in which the first phase, the pre-test phase, has chosen stratified sampling, and the second phase has adopted purposive sampling. According to Wu Minglong's (2005) research, the elderly's life satisfaction scale contained 26 questions. In order to reach the sampling number, 5-10 times of the 26 questions and ensure the pre-test sampling's representativeness, the author has drawn 300 samples, in which half of the elderly studying in the senior university and another half not, from the aged living in communities in Lixia District and studying at the Daguanyuan campus of Shandong University for the Aged. The effective samples for pre-test have to reach more than 150.

The number of samples to be officially tested has been calculated by the formula of sample size of simple random sampling: $N=Z^2*\sigma^2/d^2$ (Levy, Lemeshow, 1991), where N is the required sample size and Z is the statistic Z of the confidence level. When the confidence level is 90%, then the statistic Z is 1.64. d is 1/2 of the

confidence interval, and the overall expected value of the target's proportion is 50%. The error range is less than 3%, and the minimum sample size is 750. Taking into account the representativeness of the data, the collection rate and the commonality of the older students, this study has selected 1000 samples in Jinan, Shandong Province for research by purposive sampling. Sampling one community in each municipal district, there are a total of 10 communities, and each 60 questionnaires have been distributed to one community. Sampling one faculty in each campus of Shandong University for the Aged, each 120 questionnaires have been distributed to one faculty, so there are a total of 1080 questionnaires.

3.3.3 Questionnaire distribution

As for the questionnaire survey in the test phase of this study, the pre-test time is from April 1st to April 6th, and the formal test phase is from April 9th to April 28th. The questionnaires for the elderly who have not participated in the study have been distributed by each community or sub-district office. The selected communities are mature and have been established for more than ten years and there are dense elder population in these neighborhoods, so it is convenient to collect data. By contacting the neighborhood committee of each communities, questionnaires have been distributed to the elderly in the older persons' community centers or day care centers. Giving out and collecting questionnaires on site can ensure the data reliability and the number collected. In each community, about 60 questionnaires have been given out to randomly selected aged persons over the age of 60 who have not participated in the senior university.

The questionnaire survey for the elderly in the senior university has been confined in four campuses of Shandong University for the Aged: Daguan Yuan

Campus, Yanshan Campus, Yixinyuan Campus and Shanda Campus. The author has contacted the teachers in charge and drawn samples from one department in each campus in consideration of the different time schedules majors. The survey objects have been randomly selected from 3-6 classes with a total of 120 students. Giving out and collecting questionnaires on site can ensure the data reliability and the number collected. The test time is about 20 minutes per person.

Table 3.1 The list of sampling regions, sampling numbers and collection numbers

District in Jinan	Sampling	Proportion	Collection	Collection rate	Qualified questionnaire	Research date
Lixia District	60	5.6%	46	76.7%	43	April 9
ShiJoung	60	5.6%	44	73.3%	39	April 11
Huaiyin	60	5.6%	49	81.7%	42	April 13
Licheng	60	5.6%	52	86.7%	44	April 15
Tianqiao	60	5.6%	53	88.3%	49	April 17
Changqing	60	5.6%	49	81.7%	43	April 19
ZhangChiu	60	5.6%	49	81.7%	42	April 21
Jiyang	60	5.6%	50	83.3%	45	April 23
Laiwu	60	5.6%	57	95.0%	51	April 25
Gangcheng	60	5.6%	54	90.0%	46	April 27
Daguanyuan	120	11.1%	89	74.2%	76	April 10
Yanshan	120	11.1%	101	84.2%	83	April 12
Yixinyuan	120	11.1%	95	79.2%	71	April 16
Shanda	120	11.1%	98	81.7%	78	April 20
Total	1080	100.0%	886	82.0%	752	

3.4 Research tools

In order to achieve the goal of the research, this study intends to take

measures of questionnaire survey and semi-structured interview. In addition to the scales related to the seniors' learning needs, coping, social support and life satisfaction, research tools also include questionnaires to collect empirical data and interviews to conduct empirical research. Therefore, this study has been conducted mainly by literature analysis and questionnaire survey, and the semi-structured depth interviews have been used as a supplementary approach.

3.4.1 Survey questionnaire

The variable measurement has adopted the method of respondents' subjective perception, 5-point Likert scale and questions for degree assessment to illustrate each variable. The key elements of measurement involved in all variables need respondents to fill out. The questions for variable measurement are mainly derived from the measurement items of the scales that have been tested by the theoretical literature of direct quotation.

In this study, the variables are learning needs, social support, coping, and life satisfaction. Among them, learning needs have three first-class indicators, namely, needs for basic living ability, needs for self-expression and needs for exploring meaning of life, and 23 measurement questions. Life satisfaction has four first-level indicators, including life fun, emotional state, self-concept, family relationship, and 26 measurement questions. The ways of coping contain four first-class indicators, including specific solution strategies, supportive systems, cognitive evasion and repressed emotion, and 14 measurement problems. Social support has emotional support, academic support, instrumental support and information support, and includes 16 measurement problems. The questionnaires have been attached at the end of this article, and the sources, reliability and validity of the questionnaires are as

follows.

3.4.1.1 The elderly's learning needs

The definition of learning needs of the elderly in this study: the lack of skills or needs that the elderly has known and that can help the aged fit better in ageing life, or the needs judged by the outside world and the older people intend to fill the gap or make up for the deficiencies. Therefore, they will show their desires or preference of learning. According to the literature review, questionnaires are the most commonly-used method for assessing the needs of the elderly. Considering the rationality, effectiveness and the reliability and validity of the research structure, this study intends to use Joung's (2011) questionnaire survey of learning needs scale. This scale has three factors of learning needs including needs for basic living ability, needs for self-expression and needs for exploring meaning of life. Each factor is based on ten learning themes. In combination with the specific situations in Jinan, Shandong, after the revision of some topics, the questionnaire on the learning needs of the elderly in Jinan, Shandong has been made as a survey tool. There are 10 learning topics, and details are as follows. Needs for basic living ability: health, household maintenance, financial management and technological skills. Needs for self-expression: interpersonal relationships, leisure activities and intelligence, civil rights or social participation. Needs for exploring meaning of life: self-understanding and self-realization, or self-transcendence, social roles, services or contributions. This questionnaire sets 23 questions, including 7 on learning needs of basic life ability, 7 on learning needs of self-expression and 9 on learning needs of exploring meaning of life. With the 5-point Likert scale, respondents according to the topic descriptions select the options that are closest to their feelings in terms of "need strongly," "need,"

“undecided,” “do not need” and “not at all” matching to the points of 5, 4, 3, 2, 1 respectively.

Referring to the studies of Huang et al.'s (2008) learning needs scale selecting Taiwanese seniors as research objects, Purdie and Gillian's (2003) learning needs scale selecting Australian seniors as research objects and Hori and Fujiwara's (2003) learning needs scale selecting Japanese seniors as research objects, Joung's (2011) learning needs scale for the older learners was revised by experts and scholars. A total of 136 pre-test questionnaires were given out in Joung's study, and 133 copies were collected for project analysis and factor analysis. In the project analysis, the discrimination test and homogeneity test of the questions had been up to the standard: the critical ratio (CR) of each problem had reached a significant level of .001, which indicated that those questions's discrimination was workable.

This scale adopted principal factor analysis, and the factor analysis was carried out by varimax. Through drawing scree plots for scale analysis, according to the distribution, the trend after the fourth component was flat, so it was appropriate to select three or four key components. At last, the characteristics of each question were examined, and the component 1 was named as “basic life ability,” the component 2 was named “self-expression,” and the component 3 was named “exploration for meaning of life,” totaling 23 questions. Cronbach α was used as a method for testing the reliability of the scale. The subscales' reliability coefficients were .913, .921, .885, and the whole scale's reliability coefficient was .954, so both were higher than .70. These coefficients showed a high internal consistency and good overall questionnaire reliability.

3.4.1.2 The elderly's life satisfaction

The life satisfaction scale of this study intends to use Huang's (2011) questionnaire on intergenerational relations and life satisfaction of elderly learners in Taipei. In combination with the study of the questionnaire structure needed to be presented in this article, including four aspects of daily life, emotional state, self-concept and family, after the revision of similar topics and the combination with the unique situations in Jinan, the questionnaire on life satisfaction of the elderly in Jinan, Shandong has been compiled as a survey tool. The first draft of this questionnaire sets 26 questions, including 7 questions about daily life, 6 questions about emotional state, 8 questions about self-concept and 5 questions about family. Under the framework of the 5-point Likert scale, respondents according to the topic descriptions select the options that are closest to their feelings in terms of "agree completely," "agree," "undecided," "disagree" and "disagree completely" matching to the points of 5, 4, 3, 2, 1 respectively. The higher the scores, the higher the life satisfaction, and vice versa.

Huang's (2011) seniors' life satisfaction scale mainly referred to Lin's (2002) questionnaire on participating learning activity and life satisfaction of older adult and Jian's (2004) life satisfaction scale. She also asked her tutor Dr. Huang and many other experts for guidance and suggestions to revise the content. The pre-test lasted a month, a total of 160 pre-test questionnaires were handed out and 144 were collected. The project analysis, reliability analysis and factor analysis showed that the questionnaire design was good and the scale's reliability was high. By using the factor analysis to test the construct validity, the results showed that the Kaiser-Meyer-Olkin test for sampling adequacy (KMO) was .863, which was suitable for factor analysis to

test its validity. After factor analysis, four elements were obtained: life fun, emotional state, self-concept and family. The overall explanatory variable was 73.41%, and the subscales' reliability coefficients were .725, .880, .762, .847. The overall scale's reliability coefficient was .891, which showed high internal consistency, and the whole questionnaire was reliable.

3.4.1.3 The elderly's social support

The social support scale of this study has used the social support scale for senior learners designed by Chiu (2011). The scale contains four aspects: emotional support, information support, instrumental support, and friends support. Combined with the particular situations of the investigation site, jinan, shandong province, the questionnaire on social support for the elderly in Jinan, Shandong had been made for the survey. The first draft of the questionnaire sets 16 questions, including 4 questions on emotional support, 4 questions on information support, 4 questions on instrumental support, and 4 questions on friend support. Under the framework of the 5-point Likert scale, respondents according to the topic descriptions select the options that are closest to their feelings in terms of "agree completely," "agree," "undecided," "disagree" and "disagree completely," which match to the points of 5, 4, 3, 2, 1 respectively. The higher the scores, the higher the social support, and vice versa. Chiu's (2011) scale was mainly based on the Carver et al.'s (1989) and Tobin et al.'s (1989) scales, and she asked Dr. Huang and many experts for guidance and revision. A total of 150 pre-test questionnaires were sent out, and 110 were collected. After the project analysis, factor analysis and reliability and validity analysis of the scale, it showed that the scale's internal consistency was high and the overall questionnaire was reliable and valid.

3.4.1.4 The elderly's ways of coping

The coping scale in the study of this article has used the coping scale for senior learners designed by Chiu (2011). The scale contains four aspects: specific solution strategies, supportive systems, cognitive evasion, and repressed emotion. Combined with the particular situations of Jinan, Shandong province and the modification of some questions, the questionnaire on ways of coping for the elderly in Jinan, Shandong has been made for the survey. The first draft of the questionnaire sets 16 questions, including 4 questions on specific solution strategies, 4 questions on supportive systems, 4 questions on repressed emotion and 4 questions on cognitive evasion. With the 5-point Likert scale, respondents according to the topic descriptions select the options that are closest to their feelings in terms of “agree completely,” “agree,” “undecided,” “disagree” and “disagree completely,” which match to the points of 5, 4, 3, 2, 1 respectively. The higher the scores, the higher the ability of coping, and vice versa. Chiu's (2011) scale was mainly based on the Carver et al.'s (1989) and Tobin et al.'s (1989) scales, and she asked Dr. Huang and many experts for guidance and revision. A total of 150 pre-test questionnaires were sent out, and 110 were collected. After the project analysis, factor analysis and reliability and validity analysis of the scale, it showed that the scale's internal consistency was high and the overall questionnaire was reliable and valid.

3.4.2 Focus group interviews

This study intends to collect qualitative research data through interviews and use semi-structured interviews to understand the perspectives of older people with different backgrounds on issues related to this study. It is expected to provide a supplementary point of view on the field of learning for the aged.

3.4.2.1 Interview purpose

This study intends to use semi-structured interviews to collect qualitative data to make up for the deficiencies of questionnaires. The purpose of interviews is to seek common findings from research through the integration of qualitative and quantitative methods to examine the findings. The results and findings of the two methods have been discussed as reference for follow-up studies.

3.4.2.2 Interview procedure

To achieve the success in depth interviews, the procedure conducted is as follows: to obtain the cooperation of the interviewees; to be friendly and proactive; to ask for permission to record the conversation; to establish good communicative relationships; to respect the interviewees; to clarify the interview questions and to be a good listener; to ask questions according to the outline and to take notes at any time; to record the respondents' answers truly and comprehensively (including their expressions and body language); to give the records to the respondents for examination and confirmation before interviews end; to use clarification, repetition, empathy and other techniques to make the interviewees happy to express their feelings during the process; to confirm the content of the interview records. The interviews in this study are semi-structured focus groups interviews for individuals, each of which lasts about 90-120 minutes.

3.4.2.3 Interview outline

This study needs to design the interview outline based on the measurement results of the scales, and ask experts to revise the content. The experts can be seen in Table 3.2.

Table 3.2 List of experts

Expert	Work unit	Position
Fu **	Shandong University for the Aged	Vice-president
Yang **	Department of Senior Citizens Welfare, Beijing College of Social Administration	Dean
Si **	Shandong Association of Senior Citizens	Vice-chairman
Cheng **	Department of Elderly Care Management, Shandong Institute of Commerce and Technology	Department head
Li **	Division of Department of Elderly Welfare, Civil Affairs of Shandong Province	Deputy director
Wei **	Retirees Service Center, Department of Commerce of Shandong Province	Director

After the formal application of the questionnaire, according to the main findings of the data analysis results, focus group interviews have been conducted to two groups of 6-8 respondents; one for the elderly university students and one for the elderly who are not university students. For details of the respondents, see Table 3.3 List of basic data of interviewees. The interviews are semi-structured and conducted in a random sampling manner, which is designed according to the various hierarchical structures of each variable. During actual interviews, questions have been only asked based on the basic framework and situations at the time. The respondents answer questions in a semi-open way, which is easy to verify the data of questionnaires. The interview outline has been divided into two types according to whether the interviewees participate in the elderly university study:

1. The interview outline with older people who have participated in the study of the elderly university

- 1). Have you studied at educational institutions such as a university for the

aged? What is your motivation for participation?

2). Which courses do you think are suitable for you at the elderly university?

Why?

3). How are the results of your study at the university for the elderly? Are they helpful for your life satisfaction?

4). What kinds of problems you are facing now? How do you solve them?

5). Does your social support, such as family ties, information support and accompanied support, change with ageing?

6). Do you think that participating in the study will help you solve problems and get more support?

7). Which parts in the curriculum at the university for the aged should be improved? Would you suggest friends to study at a university for the aged? Do you have any other opinions or supplementary comments for the university for the aged?

2. The interview outline with older people who have not participated in the study of the elder university

1). Have you studied at educational institutions such as a university for the aged? Why not?

2). If you are going to study, what kinds of courses do you prefer to participate in, and why?

3). How satisfied are you with your life now? Do you think it is helpful to participate in the study?

4). What kinds of problems you are facing now? How do you solve them?

5). Does your social support, such as family ties, information support and accompanied support, change with ageing? Do you think that participating in the

study will help you solve problems and get more support?

6). In the future, would you like to participate in the study through the university for the elderly or other ways?

Table 3.3 List of basic data of interviewees

Respondent number	Whether to take courses or not	Gender	Age	Occupation before retirement
D1	Yes	Female	67	Civil servant
D2	Yes	Female	75	Teacher
D3	Yes	Female	63	Technician
D4	Yes	Male	70	Teacher
D5	Yes	Male	74	Government unctionary
D6	Yes	Male	70	Technician
D7	Yes	Male	74	Teacher
D8	Yes	Female	66	Doctor
T1	No	Male	78	Teacher
T2	No	Female	81	Researcher
T3	No	Female	69	Worker
T4	No	Female	66	Enterprise employee
T5	No	Female	68	Self-employment
T6	No	Female	78	Salesperson
T7	No	Male	80	Worker

3.5 Data analysis

The research procedure in this study includes studying the literature, selecting research topics, preparing research plans, selecting research tools, conducting pre-tests, revising formal questionnaires and interview outlines, implementing formal tests, carrying out research and depth interviews, processing

materials and collating interview data, and writing the article. Accordingly, the whole process can be divided into three stages: research preparation, formal implementation and report writing.

3.5.1 Research preparation

In this stage, the research issues related to the learning needs, social support, coping and life satisfaction of the elderly at home and abroad have been collated. Through reading pertinent literature and analyzing the collected data, the preliminary direction and structure of the research topics have been formulated. After the discussion with advisors, the research topics have been confirmed.

From the beginning of preparation to the entire research process, all the theories and studies related to learning needs, social support, coping and life satisfaction of the elderly have been collected, concluded and analyzed. Through the continuous exploration and correction, they have been taken as the framework of this study and the theoretical basis for the design or adoption of measurement tools.

3.5.2 Formal test

This study has adopted questionnaires and interviews to collect data. The research tools include “the questionnaires on the relationships among learning needs, social support, coping and life satisfaction of older people in Jinan, Shandong Province and interview outlines. There are four sub-questionnaires: the questionnaire on learning needs of the elderly in Jinan, Shandong, the questionnaire on social support of the elderly in Jinan, Shandong, the questionnaire on coping of the elderly in Jinan, Shandong, and the questionnaire on life satisfaction of the elderly in Jinan, Shandong.

3.5.2.1 Selecting pre-test questionnaires and making predictions and analysis corrections

The domestic and foreign literature have been collected according to the research objects and research fields, and the preliminary drafts of the questionnaires on the relationships among learning needs, social support, coping and life satisfaction of older people in Jinan, Shandong Province have been created. The selected samples have been tested with pre-test questionnaires and been collected for statistical analysis. The project analysis has been used to analyze the discrimination for testing questionnaires' reliability. The validity of questionnaires has been tested by factor analysis. After the analysis correction, the formal questionnaires have been produced as the testing tool for this study.

3.5.2.2 Formal test and collection

The formal questionnaires include four sub-questionnaires: the questionnaire on learning needs of the elderly in Jinan, Shandong, the questionnaire on social support of the elderly in Jinan, Shandong, the questionnaire on coping of the elderly in Jinan, Shandong, and the questionnaire on life satisfaction of the elderly in Jinan, Shandong. After the modification, the tests have been conducted on the elderly in ten districts of Jinan and four campuses of Shandong University for the Aged. The total number of questionnaires that have been distributed is 1080, and 886 have been collected, and the collection rate is 82%. All questionnaires have been given out and collected by the author.

3.5.2.3 Data analysis and discussion

As for the questionnaire data, after the questionnaires have been collected and unqualified questionnaires, such as questionnaires with incomplete answers,

multiple selections or answer omissions, have been removed, the author have sorted out all the answers and input them into the computer. Then all the data from valid questionnaires have been sorted and coded, and the research hypotheses have been verified and analyzed by the statistical software. Finally, the results have been explored in detail. The statistical methods used in this study include project analysis, factor analysis, mean, standard deviation, percentage, *t*-test, one-way MANOVA, regression and mediation analysis, and multiple mediation process.

1. Descriptive analysis. Based on the analysis by the mean, standard deviation, and percentage of descriptive statistics, the basic data of each research variable and samples have been obtained to understand the scores of the subjects on the scales.

2. Factor analysis and reliability analysis. In the measurement of each variable indicator system, the exploratory factor analysis has been used to identify the scales, and the statistical analysis tools have been used to describe the collected data. The principal factor analysis of the statistical analysis tools has been selected to measure the indexes and to test the reliability and validity, so the consistency of the components of the indicator systems with theoretical analysis can be proved. In the comprehensive analysis of each index, the analytic hierarchy process has been used to assign weights to specific evaluation indicators, analyzing the relative importance of each aspect to variables and the contribution of each aspect.

3. One-way ANOVA. To test the differences between learning needs, social support, coping and life satisfaction of the elderly between those who have involved in the study and those who have not.

4. Pearson correlation coefficient, regression analysis, multiple mediation

process. Using statistical tools to establish models of learning needs, social support and coping, the impact of learning needs, social support and coping on the life satisfaction of older learners can be known. In addition, these models can prove the impact among variables, and the corresponding conclusions can be drawn.

3.5.2.4 Focus group interviews

The interviews in this study have been conducted by the author. The formal interviews are all face-to-face talks. In the course of interviews, the author gives open-ended questions to respondents and they are asked to answer them truthfully and directly. Before interviews, the author has managed to get respondents' consent so the whole process can be recorded. At the same time, talking points have been noted as many as possible in order to summarize and analyze the data later, and it is necessary to confirm the correctness of the notes with respondents. After interviews, the data have to be analyzed to prove the correctness and authenticity and be compared with the results of the questionnaires.

3.5.2.5 Report writing

Finally, based on the research structure and research focus and nature, the survey results and interview data have been analyzed and summarized. Then the author has written research conclusions and recommendations according to the research process and research findings.

3.6 Pre-test

3.6.1 Implement of pre-test

According to the suggestion of Wu (2005), the number of pre-test respondents should follow the rule that the number should be 3-5 times the number of questions in the sub-scale with the most questions. If factor analysis was conducted,

the respondents' number should be 5-10 times the number of those questions. Therefore, in this study, the pre-test was implemented based on the appropriate proportion of research objects, and the data collected from the pre-test results was analyzed by SPSS as the basis for the question analysis and factor analysis. In the pre-test questionnaires, the life satisfaction scale contains the most 26 questions. Considering the answer rate and collection rate, the number of pre-test respondents should be 300, which is the basis of reliability and validity of the research preparation tool and the basis of the revision of the questions.

In this study, the senior citizens of the Heping Community in Lixia District and the students of Daguan Yuan campus of Shandong University for the Aged were selected to partake in the pre-test. The author distributed the questionnaires herself and organized the tests. Later, the questionnaires were collected, examined, and collated to ensure the authenticity and validity of the data. The information of questionnaire collection is shown in Table 3-6-1.

Table 3.4 Distribution and collection of the pre-test questionnaires

Group	Work unit	Distribution	Collection	The qualified
The elderly not partaking in the study	Heping Community, Lixia District	150	119	102
The elderly partaking in the study	Daguan Yuan Campus, Shandong University for the Aged	150	117	101
Total		300	236	203

3.6.2 Collation and analysis of the pre-test data

After the pre-test questionnaires were collected, 203 qualified questionnaires, including 101 filled up by seniors who have participated in the study

and 102 by those who have not participated in the study, were selected for data entry. The data then were encoded by the statistical software to perform the item and factor analysis for forecast.

The analysis results of life satisfaction scale, learning needs scale, social support scale, and coping scale are as follows.

3.6.2.1 Item analysis

The item analysis aims to find the CR value of each question. First, the scores of all respondents on the pre-test questionnaires were ordered from highest to lowest. The elderly with scores ranked the top 25% to 33% belonged to high-level group, and the elderly with scores ranked the bottom 25% to 33% belonged to the low-score group. Using the t-test to obtain the significant difference between the two groups, most analyses took the highest and lowest 27% of the scores of all the respondents as the high-score group and low-score group (Wu, 2001). The greater the critical ratio, the greater the difference between high- and low-level groups on a question and the higher the degree of discrimination. The rule of selecting questions is that the value t needs to reach a significant level of .05.

1. The elderly's life satisfaction scale

Using the observed value processing summary to check the number of missing questions, it was found that the number of missing questions in the scale is zero, which suggested that there was no question in the scale that made respondents reluctant, feel difficult to answer, or omit to answer questions.

In the aspect of the examination of question discrimination, the highest and lowest 27% of the scores of all the respondents were taken as the high-score group and low-score group, and t-test was applied to every question. The reliability analysis,

i.e. the correlation analysis between each question and the total score, was carried out to the scale for understanding the correlation between the score of each question and the total score. Setting the correlation coefficient to .3, the questions under this standard were self-concept Question 1, emotional state Question 5 and family life Question 2.

After the correction, the standardized coefficient of the scale was .852, which indicated that the scale had good internal consistency. The following is a summary of the item analysis and reliability analysis of the scale as shown in Table 3.5.

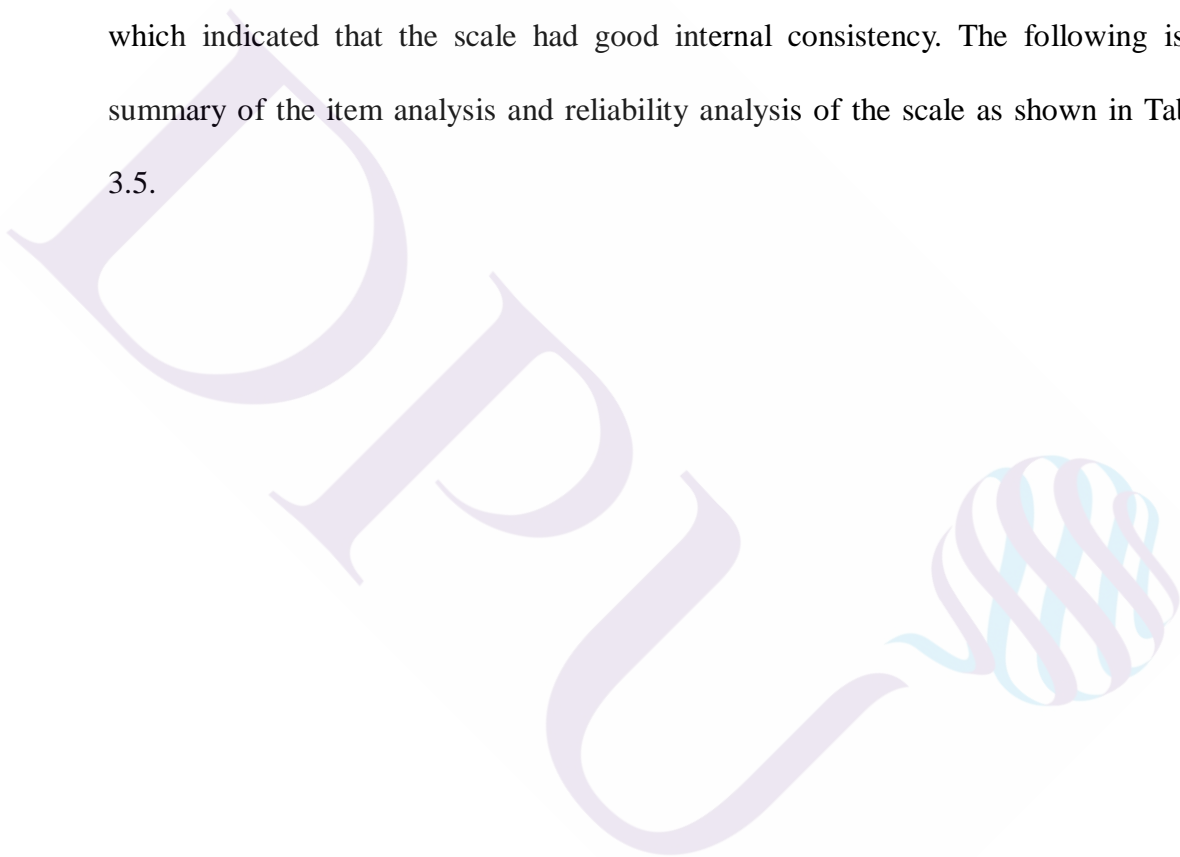


Table 3.5 Item analysis of the elderly's life satisfaction scale

Aspect	Question number	CR value	Correlation coefficient	Cronbach's Alpha value when deleting the item	Question selection	New question number
Joy of life	Joy of life 1	4.523***	.408***	.848***	Reserved	Joy of life 1
	Joy of life 2	3.996***	.386***	.848***	Reserved	Joy of life 2
	Joy of life 3	3.199***	.342***	.849***	Reserved	Joy of life 3
	Joy of life 4	1.071***	.548***	.841***	Reserved	Joy of life 4
	Joy of life 5	2.156***	.514***	.843***	Reserved	Joy of life 5
	Joy of life 6	1.969***	.558***	.841***	Reserved	Joy of life 6
	Joy of life 7	0.035***	.320***	.850***	Reserved	Joy of life 7
Emotional state	Emotional state 1	2.415***	.327***	.849***	Reserved	Emotional state 1
	Emotional state 2	2.711***	.355***	.849***	Reserved	Emotional state 2
	Emotional state 3	1.127***	.564***	.841***	Reserved	Emotional state 3
	Emotional state 4	1.18***	.461***	.845***	Reserved	Emotional state 4
	Emotional state 5	2.421***	.122***	.856***	Deleted	
	Emotional state 6	2.308***	.416***	.847***	Reserved	Emotional state 6
Self-concept	Self-concept 1	0.736***	.283***	.851***	Reserved	Self-concept 1
	Self-concept 2	1.541***	.461***	.846***	Reserved	Self-concept 2
	Self-concept 3	2.432***	.448***	.846***	Reserved	Self-concept 3
	Self-concept 4	2.581***	.413***	.847***	Reserved	Self-concept 4
	Self-concept 5	2.078***	.432***	.847***	Reserved	Self-concept 5
	Self-concept 6	3.019***	.444***	.846***	Reserved	Self-concept 6
	Self-concept 7	0.946***	.536***	.842***	Reserved	Self-concept 7
	Self-concept 8	1.006***	.395***	.848***	Reserved	Self-concept 8
Family life	Family life 1	3.103***	.316***	.850***	Reserved	Family life 1
	Family life 2	3.254***	.163***	.854***	Deleted	
	Family life 3	3.749***	.331***	.849***	Reserved	Family life 2
	Family life 4	3.262***	.395***	.848***	Reserved	Family life 3
	Family life 5	2.888***	.300***	.850***	Reserved	Family life 4

Cronbach's Alpha value is .852. *** $p < .001$

According to the item analysis results of the elderly's life satisfaction, it was found that the correlation coefficient of emotional state Question 5 and family life Question 2 hadn't reached to .3. After the inspection, it was considered that the emotional state Question 5 "I am less worried than my friends" and family life Question 5 "I often play with my kids and grandchildren," which were similar to some other questions, should be deleted. The correlation value between the item and the total score was less than .3 on self-concept Question 1 "I am very important to people around me." After the discussion with experts considering that the item had certain relevance to the variable "social support," it was then retained.

2. The elderly's learning needs scale

Using the observed value processing summary to identify the number of missing questions, it was found that the number of missing questions in the scale is zero, which suggested that there was no question in the scale that made respondents reluctant, feel difficult to answer, or omit to answer questions. In the aspect of the examination of question discrimination, the respondents with the highest and lowest 27% of the scores were selected as the high-score group and low-score group, and t-test was applied to every question. In the scale, the results from t-test were all significantly up to .05. The reliability analysis of the scale, which was the analysis between each item and the total score, could figure out the correlation between the score of each question and the total score.

The correlation coefficient was .3 and none were below this value. The corrected standardized coefficient of the scale was .891, indicating that the scale had good internal consistency. The summary of item analysis and reliability analysis of the scale are shown in Table 3.6.

Table 3.6 Item analysis of the elderly's learning needs scale

Aspect	Question number	CR value	Correlation coefficient	Cronbach's Alpha value when deleting the item	Question selection	New question number
Basic living ability	Basic living ability 1	13.593***	.543***	.742***	Reserved	Basic living ability 1
	Basic living ability 2	8.403***	.573***	.737***	Reserved	Basic living ability 2
	Basic living ability 3	6.903***	.477***	.753***	Reserved	Basic living ability 3
	Basic living ability 4	4.763***	.516***	.746***	Reserved	Basic living ability 4
	Basic living ability 5	6.523***	.536***	.742***	Reserved	Basic living ability 5
	Basic living ability 6	3.996***	.436***	.764***	Reserved	Basic living ability 6
	Basic living ability 7	14.29***	.456***	.758***	Reserved	Basic living ability 7
Self-expression	Self-expression 1	12.715***	.356***	.757***	Deleted	
	Self-expression 2	5.66***	.494***	.729***	Reserved	Self-expression 1
	Self-expression 3	5.778***	.583***	.708***	Reserved	Self-expression 2
	Self-expression 4	2.919***	.415***	.745***	Reserved	Self-expression 3
	Self-expression 5	4.706***	.531***	.721***	Reserved	Self-expression 4
	Self-expression 6	5.985***	.481***	.734***	Reserved	Self-expression 5
	Self-expression 7	12.904***	.521***	.726***	Reserved	Self-expression 6
Explore the meaning of life	Explore the meaning of life	5.767***	.492***	.783***	Reserved	Explore the meaning of life 1
	Explore the meaning of life	3.483***	.450***	.787***	Reserved	Explore the meaning of life 2
	Explore the meaning of life	4.409***	.476***	.785***	Reserved	Explore the meaning of life 3
	Explore the meaning of life	5.856***	.475***	.784***	Reserved	Explore the meaning of life 4
	Explore the meaning of life	4.225***	.521***	.778***	Reserved	Explore the meaning of life 5
	Explore the meaning of life	6.29***	.533***	.777***	Reserved	Explore the meaning of life 6
	Explore the meaning of life	6.519***	.535***	.776***	Reserved	Explore the meaning of life 7
	Explore the meaning of life	5.884***	.479***	.785***	Reserved	Explore the meaning of life 8
	Explore the meaning of life	6.464***	.504***	.780***	Reserved	Explore the meaning of life 9

Cronbach's Alpha value is .891. *** $p < .001$

According to the item analysis of the elderly's learning needs scale, it was found that the correlation coefficient of the self-expression Question 1 and the total score was .356, which was less than other questions' correlation. After the inspection of the question "learn to make proper arrangement for travel," it was found that this question was not fit into the real situation of the elderly in China mainland since most of them preferred travels in tourist groups or with their children. There were few of them traveling independently, so this question was deleted.

3. The elderly's social support scale

Using the observed value processing summary to identify the number of missing questions, it was found that the number of missing questions in the scale was zero, which suggested that there was no question in the scale that made respondents reluctant, feel difficult to answer, or omit to answer questions. In the aspect of the examination of question discrimination, the respondents with the highest and lowest 27% of the scores were selected to join the high-score group and low-score group, and t-test was applied to every question.

In the scale, the values by t-test all reached to .05. The reliability analysis of the scale, which was the analysis between each item and the total score, could figure out the correlation between the score of each question and the total score. The correlation coefficient was .3 and none were below this value. The corrected standardized coefficient of the scale was .853, indicating that the scale had good internal consistency. The summary of item analysis and reliability analysis of the scale are shown in Table 3.7.

Table 3.7 Item analysis of the elderly's social support scale

Aspect	Question number	CR value	Correlation coefficient	Cronbach's Alpha value when deleting the item	Question selection	New question number
Information support	Information support 1	10.151***	.545***	.725***	Reserved	Information support 1
	Information support 2	7.779***	.552***	.722***	Reserved	Information support 2
	Information support 3	9.619***	.579***	.708***	Reserved	Information support 3
	Information support 4	14.297***	.602***	.696***	Reserved	Information support 4
Friend support	Friend support 1	9.766***	.473***	.680***	Reserved	Friend support 1
	Friend support 2	6.816***	.610***	.601***	Reserved	Friend support 2
	Friend support 3	6.494***	.493***	.667***	Reserved	Friend support 3
	Friend support 4	10.817***	.495***	.684***	Reserved	Friend support 4
Tool support	Tool support 1	19.061***	.422***	.794***	Reserved	Tool support 1
	Tool support 2	8.502***	.568***	.747***	Reserved	Tool support 2
	Tool support 3	8.337***	.662***	.715***	Reserved	Tool support 3
	Tool support 4	6.844***	.592***	.739***	Reserved	Tool support 4
	Tool support 5	10.123***	.596***	.739***	Reserved	Tool support 5
Emotional support	Emotional support 1	12.132***	.652***	.765***	Reserved	Emotional support 1
	Emotional support 2	8.836***	.720***	.696***	Reserved	Emotional support 2
	Emotional support 3	9.493***	.648***	.780***	Reserved	Emotional support 3

Cronbach's Alpha value is .853. *** $p < .001$

4. The elderly's coping scale

In the scale, the values by t-test all reached to .05. The reliability analysis of the scale, which was the analysis between each item and the total score, could figure out the correlation between the score of each question and the total score. The correlation coefficient was .3, and only the value of repressed emotion Question 2 was under this standard. After the correction, the standardized coefficient of the scale

was .725, which indicated that the scale had good internal consistency. The following is a summary of the analysis of the scale as shown in Table 3.8.

Table 3.8 Item analysis of the elderly's coping scale

Aspect	Question number	CR value	Correlation coefficient	Cronbach's Alpha value when deleting the item	Question selection	New question number
Specific solution strategies	Specific solution strategies 1	10.849***	.592***	.678***	Reserved	Specific solution strategies 1
	Specific solution strategies 2	6.117***	.626***	.660***	Reserved	Specific solution strategies 2
	Specific solution strategies 3	8.651***	.697***	.625***	Reserved	Specific solution strategies 3
	Specific solution strategies 4	11.017***	.342***	.818***	Reserved	Specific solution strategies 4
Establish supportive systems	Establish supportive systems 1	8.732***	.443***	.588***	Reserved	Establish supportive systems 1
	Establish supportive systems 2	8.591***	.556***	.456***	Reserved	Establish supportive systems 2
	Establish supportive systems 3	10.743***	.411***	.631***	Reserved	Establish supportive systems 3
Cognitive evasion	Cognitive evasion 1	23.23***	.467***	.647***	Reserved	Cognitive evasion 1
	Cognitive evasion 2	8.579***	.556***	.535***	Reserved	Cognitive evasion 2
	Cognitive evasion 3	20.675***	.497***	.610***	Reserved	Cognitive evasion 3
Repressed emotion	Repressed emotion 1	1.921***	.465***	.525***	Reserved	Repressed emotion 1
	Repressed emotion 2	2.16***	.273***	.653***	Deleted	
	Repressed emotion 3	0.792***	.494***	.504***	Reserved	Repressed emotion 2
	Repressed emotion 4	0.35***	.427***	.554***	Reserved	Repressed emotion 3

Cronbach's Alpha value is .725. *** $p < .001$

According to the item analysis of the elderly's coping scale, it was found that the correlation coefficient between repressed emotion Question 1 and the total score was .273, which was pretty low. After the inspection of the question "I have always spoken out unpleasant things," it was found that this question was unclear to express the meaning in the aspect of coping, so it was deleted.

3.6.2.2 Factor analysis

There are three main functions of factor analysis. First, factor analysis can help researchers to verify validity; second, factor analysis can help researchers simplify the content of measurement, or say, complex structures, and classify many variables with similar concepts into several specific categories of the same nature, conducting the most direct and appropriate measurement with the least number of questions; third, factor analysis can be used to prepare for measurement, to conduct item analysis, and to test the pros and cons of the questions (Chiu, 2010). Based on this, the pre-test data analysis have used the results of factor analysis as the benchmark to decide whether to remain questions in the scales. Factor analysis mainly contains principal factor analysis to extract the common component in each subscale. The following will illustrate the results of the analysis of the elderly's life satisfaction scale, the elderly's learning needs scale, the elderly's coping scale and the elderly's social support scale.

1. The elderly's life satisfaction scale

Wu (2008) pointed out that the larger the KMO (Kaiser - Meyer - Olkin measure of from adequacy, KMO), the more the common factors between variables and the lower the partial correlation coefficient between variables, which was more suitable for factor analysis. It was best to conduct factor analysis when the KMO

value was higher than .90; it was also acceptable when the value was over .80 or .70. The KMO value of this scale is .815, which is close to 1; the Chi-Squared value by Bartlett's test of sphericity is 2052.807 and the statistical significance is .000, which has been up to the standard of significance. This shows that the scale is suitable for factor analysis.

This scale has adopted the principal factor analysis and varimax to analyze the components. According to Wu's (2005) scree plot of the eigenvalue pattern, the scree plot of the factor analysis for the elderly's life satisfaction has been made. From its distribution, after the fifth component, the trend is gradually getting flat and the slope is approaching to 0. It is appropriate to choose 4-5 key components.

Based on the results of the item analysis, the author has conducted a confirmatory factor analysis on the 24 questions in the questionnaire, and adopted the principal factor analysis to extract common components among the measured variables to construct the validity of the subscale. The eigenvalue is 1.25, and the total variance explained is 53.751%, as shown in Table 3.9. According to the characteristics of each tested question in Table 3.10, the changes in the names of each aspect are shown in Table 3.11. The factor loadings of all questions in Table 3.12 are greater than .3. They all have met the criteria for question selection and therefore have been retained (Zaltman & Bugar, 1975).

Table 3.9 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	5.797	24.154	24.154	5.797	24.154	24.154	4.516	18.816	18.816
2	3.703	15.430	39.583	3.703	15.430	39.583	3.977	16.570	35.386
3	2.082	8.677	48.260	2.082	8.677	48.260	2.493	10.386	45.772
4	1.318	5.491	53.751	1.318	5.491	53.751	1.915	7.979	53.751
5	1.289	5.372	59.123						
6	1.061	4.422	63.545						
7	.905	3.772	67.317						
8	.852	3.550	70.867						
9	.754	3.143	74.011						
10	.708	2.950	76.961						
11	.648	2.699	79.660						
12	.584	2.434	82.094						
13	.558	2.323	84.417						
14	.513	2.136	86.553						
15	.469	1.955	88.508						
16	.431	1.798	90.306						
17	.409	1.702	92.008						
18	.391	1.627	93.635						
19	.346	1.441	95.076						
20	.319	1.327	96.403						
21	.287	1.197	97.601						
22	.248	1.033	98.634						
23	.180	.749	99.383						
24	.148	.617	100.000						

Extraction Method: Principal Factor analysis.

Table 3.10 Rotated Component Matrix^a

Question	Component			
	1	2	3	4
Joy of life 5	.881			
Joy of life 4	.853			
Joy of life 6	.842			
Self-concept 7	.833			
Emotional state 3	.821			
Emotional state 4	.698			
Self-concept 8	.577			
Self-concept 4		.731		
Self-concept 5		.717		
Self-concept 2		.715		
Self-concept 3		.696		
Self-concept 6		.649		
Emotional state 5		.618		
Self-concept 1		.568		
Emotional state 2		.499		
Joy of life 7		.392		
Emotional state 1		.358		
Family life 3			.829	
Family life 4			.815	
Family life 2			.738	
Family life 1			.541	
Joy of life 1				.748
Joy of life 2				.743
Joy of life 3				.503

Extraction method: Principal factor analysis.

Rotation method: Varimax with kaiser normalization.

a. Rotation converged in 5 iterations.

Table 3.11 Question adjustment

New question number	Original question number	Content
Emotion and feeling 1	Joy of life 5	I feel as if my life was cut off from the outside world, and there is no pleasure.
Emotion and feeling 2	Joy of life 4	Most of the things I am doing now are monotonous and boring.
Emotion and feeling 3	Joy of life 6	I have been too lazy to think and to move, and I feel that life is meaningless.
Emotion and feeling 4	Self-concept 7	I feel old and tired of many things.
Emotion and feeling 5	Emotional state 3	I often feel lonely.
Emotion and feeling 6	Emotional state 4	Some things often make me feel very annoyed.
Emotion and feeling 7	Self-concept 8	No matter what others say, I feel that it's not good to get old.
Self-cognition 1	Self-concept 4	Others often say that I look good.
Self-cognition 2	Self-concept 5	I can handle many things myself without relying on others.
Self-cognition 3	Self-concept 2	Compared with people of the same age, I am still lucid.
Self-cognition 4	Self-concept 3	It is inevitable that older people have an inconvenience in life, but I have the courage to overcome.
Self-cognition 5	Self-concept 6	Although I am older, my mind is still young.
Self-cognition 6	Emotional state 5	Although I am physically weak now, I am still very happy.
Self-cognition 7	Self-concept 1	I am very important to people around me.
Self-cognition 8	Emotional state 2	I am happier now than in my youth.
Self-cognition 9	Joy of life 7	Overall, I am satisfied with my current life.
Self-cognition 10	Emotional state 1	I rarely feel bad.
Family life 1	Family life 3	I get along very well with my family most of the time.
Family life 2	Family life 4	When I am in a bad mood, my family will comfort and support me.
Family life 3	Family life 2	I often talk to my family about my true feelings.
Family life 4	Family life 1	Children's attitude towards me makes me feel happy.
Joy of life 1	Joy of life 1	I can have fun from many things I am doing now.
Joy of life 2	Joy of life 2	I often participate in some activities.
Joy of life 3	Joy of life 3	As I grow older, I find that life is better than I originally thought.

Table 3.12 Summary of factor analysis for the elderly's life satisfaction

Aspect	Question number in formal test	Question in pre-test	Factor loading	Eigenvalue	Variance explained			
Emotion and feeling	Emotion and feeling 1	Joy of life 5	.537	5.797	24.154			
	Emotion and feeling 2	Joy of life 4	.566					
	Emotion and feeling 3	Joy of life 6	.598					
	Emotion and feeling 4	Self-concept 7	.571					
	Emotion and feeling 5	Emotional state 3	.600					
	Emotion and feeling 6	Emotional state 4	.506					
	Emotion and feeling 7	Self-concept 8	.440					
	Self-cognition 1	Self-concept 4	.481					
	Self-cognition 10	Emotional state 1	.343					
	Self-cognition 2	Self-concept 5	.514					
Self-cognition	Self-cognition 3	Self-concept 2	.505	3.703	15.430			
	Self-cognition 4	Self-concept 3	.505					
	Self-cognition 5	Self-concept 6	.515					
	Self-cognition 6	Emotional state 5	.443					
	Self-cognition 7	Self-concept 1	.323					
	Self-cognition 8	Emotional state 2	.394					
	Self-cognition 9	Joy of life 7	.345					
	Family life	Family life 1	Family life 3			.410	2.082	8.677
		Family life 2	Family life 4			.300		
Family life 3		Family life 2	.338					
Family life 4		Family life 1	.319					
Joy of life	Joy of life 1	Joy of life 1	.446	1.318	5.491			
	Joy of life 2	Joy of life 2	.422					
	Joy of life 3	Joy of life 3	.356					

2. The elderly's learning needs scale

The KMO value of this scale is .850, which is close to 1; the Chi-Squared value by Bartlett's test of sphericity is 1633.176 and the statistical significance is .000, which has been up to the standard. This shows that the scale is suitable.

This scale has adopted the principal factor analysis and varimax to analyze the components. According to Wu's (2005) scree plot of the eigenvalue pattern, the scree plot of the factor analysis for the elderly's learning needs has been made. From its distribution, after the fifth component, the trend is gradually getting flat and the slope is approaching to 0. It is appropriate to choose 4-5 key components.

Based on the results of the item analysis, the author has conducted a confirmatory factor analysis on the 22 questions in the questionnaire, and adopted the principal factor analysis to extract common components. The eigenvalue is 1.25, and the total variance explained is 52.883%, as shown in Table 3.13. Rename the aspects according to the characteristics of each question in Table 3.14. As shown in Table 3.15, referring to the classification of Chen, Ji et al.'s (2004) *An Introduction to Old-age Education*, Aspect 1 was named "Spiritual learning needs," Aspect 2 was named "Learning Needs to improve health," Aspect 3 was named "Learning needs to enrich life," and Aspect 4 was named "Learning needs for living skills." The results are shown in the Table 3.16.

Table 3.13 Total variance explained

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings ^a
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	6.731	30.595	30.595	6.731	30.595	30.595	3.841
2	2.134	9.698	40.293	2.134	9.698	40.293	2.709
3	1.425	6.477	46.770	1.425	6.477	46.770	2.684
4	1.345	6.113	52.883	1.345	6.113	52.883	2.401
5	1.107	5.032	57.915				
6	.993	4.513	62.428				
7	.904	4.109	66.537				
8	.876	3.981	70.518				
9	.783	3.558	74.076				
10	.694	3.156	77.232				
11	.661	3.004	80.235				
12	.577	2.623	82.859				
13	.518	2.353	85.212				
14	.514	2.337	87.549				
15	.447	2.032	89.581				
16	.400	1.818	91.399				
17	.396	1.802	93.201				
18	.340	1.547	94.747				
19	.320	1.455	96.203				
20	.296	1.345	97.548				
21	.282	1.282	98.830				
22	.257	1.170	100.000				

Extraction method: Principal Axis Factoring.

a. When factors are correlated, sums of squared loadings cannot be added to obtain a total variance.

Table 3.14 Rotated Component Matrix^a

Question	Component			
	1	2	3	4
Self-expression 5	.752			
Explore the meaning of life 5	.660			
Explore the meaning of life 6	.649			
Explore the meaning of life 7	.605			
Self-expression 4	.602			
Explore the meaning of life 9	.591			
Explore the meaning of life 8	.566			
Self-expression 6	.524			
Explore the meaning of life 4	.415			
Explore the meaning of life 2		.667		
Explore the meaning of life 3		.645		
Self-expression 1		.589		
Self-expression 3		.577		
Self-expression 2		.537		
Basic living ability 5			.752	
Basic living ability 7			.692	
Explore the meaning of life 1			.674	
Basic living ability 6			.553	
Basic living ability 1				.812
Basic living ability 3				.761
Basic living ability 2				.617
Basic living ability 4				.529

Table 3.15 Question adjustment

New question number	Original question number	Question content
Spiritual pursuit 1	Self-expression 5	Learning to do volunteer social work
Spiritual pursuit 2	Explore the meaning of life 5	Learning to make new friends
Spiritual pursuit 3	Explore the meaning of life 6	Learning to solve difficulties
Spiritual pursuit 4	Explore the meaning of life 7	Learning environmental protection
Spiritual pursuit 5	Self-expression 4	Learning ways to lead small groups
Spiritual pursuit 6	Explore the meaning of life 9	Learning to know who you are
Spiritual pursuit 7	Explore the meaning of life 8	Learning the relationship between religion and life
Enrich life 1	Self-expression 6	Learning the current political and economic situation
Enrich life 2	Explore the meaning of life 4	Learning to communicate with children and grandchildren
Enrich life 3	Explore the meaning of life 2	Learning Chinese traditional folklore and culture
Enrich life 4	Explore the meaning of life 3	Learning the knowledge of organic agriculture
Enrich life 5	Self-expression 1	Learning how to show courtesy when going abroad
Enrich life 6	Self-expression 3	Developing artistic hobbies, such as painting and pottery
Enrich life 7	Self-expression 2	Learning foreign languages
Improve health 1	Basic living ability 5	To know what sports can improve health
Improve health 2	Basic living ability 7	To know which diets can improve health
Improve health 3	Explore the meaning of life 1	Learning general medical knowledge
Improve health 4	Basic living ability 6	To know more about your own interests
Living skills 1	Basic living ability 1	Learning to use bank cards, cash machines and mobile payment
Living skills 2	Basic living ability 3	Learning to use modern technologies, such as the Internet and mobile to contact family
Living skills 3	Basic living ability 2	Learning knowledge of money management
Living skills 4	Basic living ability 4	Learning the packaging and instruction manuals of what you have bought

Table 3.16 Summary of factor analysis for the elderly's learning needs

Aspect	Question number in formal test	Question in pre-test	Factor loading	Eigen-value	Variance explained
Needs for spiritual pursuit	Spiritual pursuit 1	Self-expression 5	.541	6.731	30.595
	Spiritual pursuit 2	Explore the meaning of life 5	.532		
	Spiritual pursuit 3	Explore the meaning of life 6	.609		
	Spiritual pursuit 4	Explore the meaning of life 7	.592		
	Spiritual pursuit 5	Self-expression 4	.514		
	Spiritual pursuit 6	Explore the meaning of life 9	.592		
	Spiritual pursuit 7	Explore the meaning of life 8	.540		
Needs for enriching life	Enrich life 1	Self-expression 6	.652	2.134	9.698
	Enrich life 2	Explore the meaning of life 4	.496		
	Enrich life 3	Explore the meaning of life 2	.524		
	Enrich life 4	Explore the meaning of life 3	.559		
	Enrich life 5	Self-expression 1	.531		
	Enrich life 6	Self-expression 3	.414		
	Enrich life 7	Self-expression 2	.463		
Needs for improving health	Improve health 1	Basic living ability 5	.522	1.425	6.477
	Improve health 2	Basic living ability 7	.502		
	Improve health 3	Explore the meaning of life 1	.582		
	Improve health 4	Basic living ability 6	.513		
	Living skills 2	Basic living ability 3	.388		
	Living skills 3	Basic living ability 2	.447		
	Living skills 4	Basic living ability 4	.527		

3. The elderly's social support scale

The KMO value of this scale is .803, which is close to 1; the Chi-Squared value by Bartlett's test of sphericity is 1314.927 and the statistical significance is .000, which has been up to the standard. This shows that the scale is suitable for factor analysis. This scale has adopted the principal factor analysis and varimax to analyze the components. According to Wu's (2005) scree plot of the eigenvalue pattern, the scree plot of the factor analysis for the elderly's learning needs has been made. From its distribution, after the fifth component, the trend is gradually getting flat and the slope is approaching to 0. It is appropriate to choose 4-5 key components.

Based on the results of the item analysis, the author has conducted a confirmatory factor analysis on the 16 questions in the questionnaire, and adopted the principal factor analysis to extract common components among the measured variables to construct the validity of the subscale. In this factor analysis, with the eigenvalue >1 , four factors were selected as the question selection standard, and total variance explained was 52.008%. The results are shown in the Table 3.17. The factor loadings of all questions are greater than .3. They all have met the standard for question selection and therefore have been retained (Zaltman & Burgar, 1975).

Table 3.17 Summary of factor analysis for the elderly's social support

Aspect	Question in pre-test	Question number in formal test	Factor loading	Eigenvalue	Variance explained
Information support	Information support 1	Information support 1	.532	5.219	29.699%
	Information support 2	Information support 2	.523		
	Information support 3	Information support 3	.618		
	Information support 4	Information support 4	.599		
Friend support	Friend support 1	Friend support 1	.469	1.972	9.343%
	Friend support 2	Friend support 2	.447		
	Friend support 3	Friend support 3	.359		
	Friend support 4	Friend support 4	.406		
Tool support	Tool support 1	Tool support 1	.361	1.642	7.556%
	Tool support 2	Tool support 2	.426		
	Tool support 3	Tool support 3	.531		
	Tool support 4	Tool support 4	.468		
	Tool support 5	Tool support 5	.536		
Emotional support	Emotional support 1	Emotional support 1	.549	1.263	5.411%
	Emotional support 2	Emotional support 2	.548		
	Emotional support 3	Emotional support 3	.470		

4. The elderly's coping scale

The KMO value of this scale is .775, which is close to 1; the Chi-Squared value by Bartlett's test of sphericity is 748.158 and the statistical significance is .000, which has been up to the standard. This shows that the scale is suitable for factor analysis. This scale has adopted the principal factor analysis and varimax to analyze

the components. According to Wu's (2005) scree plot of the eigenvalue pattern, the scree plot of the factor analysis for the elderly's learning needs has been made. From its distribution, after the fifth component, the trend is gradually getting flat and the slope is approaching to 0. It is appropriate to choose 4-5 key components.

Based on the results of the item analysis, the author has conducted a confirmatory factor analysis on the 13 questions in the questionnaire, and adopted the principal factor analysis to extract common components among the measured variables to construct the validity of the subscale. In this factor analysis, with the eigenvalue >1 , four factors were selected as the question selection standard, and total variance explained was 62.377%. The results are shown in the Table 3.18. Most of the questions in the questionnaire have met the selection criteria, although the factor loadings of few questions are slightly low.

Table 3.18 Summary of factor analysis for the elderly's coping

Aspect	Question in pre-test	Question number in formal test	Factor loading	Eigenvalue	Variance explained
Specific solution strategies	Specific solution strategies 1	Specific solution strategies 1	.482	3.319	26.084%
	Specific solution strategies 2	Specific solution strategies 2	.471		
	Specific solution strategies 3	Specific solution strategies 3	.584		
	Specific solution strategies 4	Specific solution strategies 4	.333		
Establish supportive systems	Establish supportive systems 1	Establish supportive systems 1	.325	2.757	21.209%
	Establish supportive systems 2	Establish supportive systems 2	.377		
	Establish supportive systems 3	Establish supportive systems 3	.318		
Cognitive evasion	Cognitive evasion 1	Cognitive evasion 1	.306	1.100	8.461%
	Cognitive evasion 2	Cognitive evasion 2	.364		
	Cognitive evasion 3	Cognitive evasion 3	.424		
Repressed emotion	Repressed emotion 1	Repressed emotion 1	.360	0.861	6.623%
	Repressed emotion 3	Repressed emotion 2	.381		
	Repressed emotion 4	Repressed emotion 3	.331		

3.6.2.3 Reliability and validity

1. Reliability analysis

The reliability of this study was tested by the internal consistency of each aspect. Therefore, the Cronbach's Alpha values in each aspect and the whole

questionnaire were obtained by SPSS to understand the reliability of the subscales. The following will illustrate the results of the elderly's life satisfaction scale, the elderly's learning needs scale, the elderly's coping scale, and the elderly's social support scale.

1) Reliability analysis of the elderly's life satisfaction scale

By analyzing the internal consistency, the Cronbach's α values of each aspect in the scale are between .587 and .801, and the overall Cronbach's α value of the scale is .858, indicating that the scale is consistent internally. A detailed list of the reliability of each aspect and the number of questions is shown in 3.19.

Table 3.19 Reliability coefficients in life satisfaction scale

Aspect	Question number	Cronbach's Alpha value
Joy of life	3	.518
Emotion and feeling	7	.842
Self-concept	10	.754
Family life	4	.747
Total	24	.858

Cronbach's α of emotional state was lower than other aspects, and after the inspection of the questionnaire it was found that this was because of the content of the questions. In this aspect, there are two reverse questions, that is, emotional state Question 3 "my anxiety is much less than my friends" and emotional state Question 4 "I sometimes feel lonely." Generally speaking, reverse questions are easy to make respondents confused, and the expressions in some questions are ambiguity, such as emotional state Question 1 "I rarely feel bad," whose double negation makes the

elderly difficult to understand. If it was changed to “I often feel very good,” the expression would be clearer and easier to understand. Some questions are easy to be ambiguous, such as the emotional state Question 5 “in spite of the low physical capacity, I am still very happy.” Some older people thought that they were healthy, so they chose “disagree completely” or “disagree.” If it was changed into “although I have some physiological changes, I still feel happy”, the expression would be more accurate.

2) Reliability analysis of the elderly’s learning needs scale

The Cronbach’s α values of each aspect in the scale are between .757 and .801, and the overall Cronbach’s α value of the scale is .858, indicating that the scale is consistent internally. A detailed list of the reliability of each aspect and the number of questions is shown in 3.20.

Table 3.20 Reliability coefficients in learning needs scale

Aspect	Question number	Cronbach’s Alpha value
Living skills	4	.743
Improve health	4	.739
Enrich life	3	.676
Spiritual pursuit	11	.843
Total	22	.886

3) Reliability analysis of the elderly’s social support scale

The Cronbach’s α values of each aspect in the scale are between .720 and .815, and the overall Cronbach’s α value of the scale is .853, indicating that the

scale is consistent internally. A detailed list of the reliability of each aspect and the number of questions is shown in 3-6-18.

Table 3.21 Reliability coefficients of the elderly's social support scale

Aspect	Question number	Cronbach's Alpha value
Information support	4	.768
Friend support	4	.720
Tool support	5	.788
Emotional support	3	.815
Total	16	.853

4) Reliability analysis of the elderly's coping scale

The Cronbach's α values of each aspect in the scale are between .653 and .754, and the overall Cronbach's α value of the scale is .739, indicating that the scale is consistent internally. A detailed list of the reliability of each aspect and the number of questions is shown in 3.22.

Table 3.22 Reliability coefficients of the elderly's coping scale

Aspect	Question number	Cronbach's Alpha value
Specific solution strategies	4	.754
Establish supportive systems	3	.653
Cognitive evasion	3	.691
Repressed emotion	3	.653
Total	23	.739

2. Validity analysis

This study has tested the questionnaires in terms of content validity and construct validity. First, the questionnaires have been verified by research when conducting form tests, and they have been assessed by experts to establish the content validity. Second, the statistical software has been used to verify the validity of the questionnaires by item analysis and factor analysis, aiming to establish the construct validity.



CHAPTER 4

RESEARCH RESULTS

The purpose of this study is to understand the relationships between the learning needs, social support, coping and life satisfaction of the elderly in China. Questionnaires and interviews are used as research tools. The elderly over 60 years old in Jinan, Shandong are selected as respondents, and all the data have been studied by statistical analysis. According to the order of the research issues, this chapter divides the survey results into five sections for analysis. The first section is the results of basic data analysis of the respondents; the second section is the results of impact and correlation analysis of the respondents' learning needs, social support, coping and life satisfaction; the third section is the results of the analysis of respondents' mediating effect of social support and coping on learning needs and life satisfaction; the fourth section is the analysis results of the predictive power of learning needs, social support and coping on life satisfaction; the fifth section is the results of difference analysis of participants who have participated in learning and those who have not in the aspects of learning needs, social support, coping and life satisfaction. They will be discussed as follows.

4.1 Analysis results of the basic data of respondents in formal tests

4.1.1 Normality tests of formal test samples

Huang (2002) believed that when the sample data met the normality assumption, the obtained estimated results or statistical inference could be ensured, so

the univariate normality tests should be first carried out.

4.1.1.1 Normality test of respondents' life satisfaction

The distribution of life satisfaction of respondents is similar to the standard normal distribution curve, which indicates that life satisfaction has a good normality. In the normal Q-Q plot, the diagonal line from the lower left to the upper right represents the standard normal distribution. If the sample data could all be around the diagonal, it could be determined that the sample data conformed to the normal distribution (Chen & Wang, 2018). Based on this benchmark, in normal Q-Q plot of life satisfaction, the scattered data points of life satisfaction are basically on or near the diagonal of standard normal distribution, so it can be determined that the data of life satisfaction have normality. After the detrending process, the sample data points of life satisfaction are also distributed near 0, and only a few abnormal data points have larger values. This is consistent with the results shown in the histogram and Q-Q plot, so life satisfaction has normality.

4.1.1.2 Normality test of respondents' learning needs

The distribution of respondents' learning needs is similar to the standard normal distribution curve, indicating that learning needs have a good normal distribution. Based on the benchmark of determining normality of variables, the data points of learning needs are generally on or near the diagonal of the standard normal distribution, so the data of learning needs have normality. After the detrending process, the sample data points of learning needs are also distributed near 0, and only a few abnormal data points have larger values. This is consistent with the results shown in the histogram and Q-Q plot, so learning needs has normality.

4.1.1.3 Normality test of respondents' social support

The distribution of social support of the respondents is similar to the standard normal distribution curve, indicating that social support has a good normality. Based on the benchmark of determining normality of variables, the data points of social support are generally on or near the diagonal of the standard normal distribution, so the data of learning needs have normality. After the detrending process, the sample data points of social support are also distributed near 0, and only a few abnormal data points have larger values. This is consistent with the results shown in the histogram and Q-Q plot, so social support has normality.

4.1.1.4 Normality test of respondents' coping

The distribution of coping of the respondents is similar to the standard normal distribution curve, indicating that coping has a good normality. Based on the benchmark of determining normality of variables, the data points of coping are generally on or near the diagonal of the standard normal distribution, so the data of coping have normality. After the detrending process, the sample data points of coping are also distributed near 0, and a few abnormal data points are near 0. This is related to the histogram and QQ map. This is consistent with the results shown in the histogram and Q-Q plot, so coping has normality.

4.1.2 Item analysis results of formal test samples

A total of 752 valid formal questionnaires were collected as shown in Table 4.1. Among them, 308 (41%) of the elderly were in the study of the elderly university and the sample distribution was relatively average.

Table 4.1 Composition of respondents in formal test

Aspect	Group	Number	%
Learning or not	The elderly partaking in the study	444	59.0
	The elderly not partaking in the study	308	41.0
	Total	752	100

The mean, standard deviation, variance, skewness, and kurtosis are used to measure the respondents' levels and dispersion of learning needs, coping, social support and life satisfaction.

According to the descriptive statistics of the formal test questionnaires in Table 4.2, the mean values of joy of life, self-cognition and family life are between 3.838 and 4.042 in terms of life satisfaction, which is at a medium-high degree. The average score of emotion and feelings is 2.663, indicating that the satisfaction of the elderly in this aspect is low. In addition, the questions of emotion and feelings are mostly reverse questions, which also make respondents confused when they fill in the questionnaires. Overall, respondents' life satisfaction is good. The values of standard deviation of life satisfaction are between 0.460 and 0.869, and these values are not big, indicating that the sample dispersion is not large. The variances of life satisfaction range from 0.594 to 0.832, so the discrimination is valid. The absolute values of the skewness coefficient are less than 2 and the absolute values of the kurtosis coefficient are less than 7, and the data conform to the normality standard. Overall, the life satisfaction of the respondents is roughly consistent with the results of Lin's (2002) study. The respondents have the highest scores in joy of life and the lowest scores in

emotion and feelings, similar to the results of Huang (2011).

In terms of learning needs, the average numbers of living skills, improve health, enrich life and spiritual pursuit are between 3.504 and 3.986. The scores of the elderly's learning needs are higher than 3, which is at a medium-high level. Among them, the learning needs for living skills are the highest, and the needs for spiritual pursuit are the lowest. Since the classification of learning needs is in an exploratory stage, further research is needed. In addition, the values of standard deviation are between 0.538 and 0.869, and they are not big, indicating that the sample dispersion is not at a high level. The values of variance are between 0.353 and 0.693, so the discrimination is valid. The absolute values of the skewness coefficient are less than 2 and the absolute values of the kurtosis coefficient are less than 7, and the data conform to the normality standard. This conclusion is the same as that of Huang, Lin and Liang (2008). The aspect with the highest score is learning needs for living skills, which is inconsistent with the conclusion that the highest score was in the aspect of the exploration for meaning of life proposed by Joung (2011).

In terms of social support, all the average numbers in the aspects of information support, friend support, emotional support and tool support range from 3.474 to 4.008, indicating that the social support of the elderly has reached the medium-high level. Among them, the scores of information support are the highest. In addition, the values of standard deviation are between 0.209 and 0.501, and they are not big, indicating that the sample dispersion is not at a high level. The values of variance are between 0.458 and 0.708, so the discrimination is valid. The absolute values of the skewness coefficient are less than 2 and the absolute values of the kurtosis coefficient are less than 7, and the data conform to the normality standard.

This result is consistent with the result in Chiu's (2011) study.

In terms of coping, the average numbers in the aspects of specific solution strategies and establishing supportive systems range from 3.805 to 3.973, and the average numbers in the aspects of cognitive evasion and repressed emotion range from 2.877 to 2.977, indicating that the coping of the elderly is proactive. Among them, the scores of specific solution strategies are the highest, which illustrates that aged people prefer to proactive and problem-focused ways of coping. In addition, the values of standard deviation are between 0.258 and 0.831, and they are bigger than other variables, indicating that the sample dispersion is at a high level. The values of variance are between 0.508 and 0.912, so the discrimination is valid. The absolute values of the skewness coefficient are less than 2 and the absolute values of the kurtosis coefficient are less than 7, and the data conform to the normality standard. The result is consistent with the findings of Blanchard-Fields (2007) and Chiu (2011), indicating that in the face of ageing problems, the aged prefer to seek ways to solve problems or seek different types of support from others. When the problem cannot be handled, cognitive evasion and repressed emotion will be adopted.

Table 4.2 Descriptive statistics of the formal test questionnaires

Variable	Aspect	Average value	Standard deviation	Variance value	Skewness	Kurtosis
Life satisfaction	Joy of life	4.042	.290	.538	-.999	2.396
	Emotion and feeling	2.663	.755	.869	-.852	-.634
	Self-cognition	3.836	.212	.460	-.642	.689
Learning needs	Family life	3.941	.342	.585	-.531	2.314
	Learning needs for living skills	3.986	.482	.694	-.781	1.558
	Improve health	3.981	.353	.594	.189	1.229
	Needs to enrich life	3.519	.693	.832	-.375	-.025
	Spiritual pursuit	3.504	.363	.602	-.884	.047
Social support	Information support	4.008	.209	.458	-.422	1.255
	Friend support	3.868	.332	.576	-.581	1.147
	Tool support	3.474	.501	.708	-.717	.471
Coping	Emotional support	3.805	.372	.610	-.728	1.343
	Specific solution strategies	3.973	.258	.508	-1.036	6.028
	Establish supportive systems	3.805	.371	.609	-.661	.885
	Cognitive evasion	2.977	.831	.912	.201	-.629
	Repressed emotion	2.887	.735	.857	.111	-.549

4.2 Difference analysis results between respondents partaking in the study and those not in learning needs, social support, coping and life satisfaction

This section explores the differences in learning needs, coping, social support and life satisfaction of seniors partaking in the study and those not. the author has used one-way ANOVA to analyze these variables and their aspects.

4.2.1 Difference analysis results of the elderly participating in the study and those not in life satisfaction

ANOVA test shows that the statistical significance by variable coefficient of homogeneity test is .012, indicating that these data are not suitable for ANOVA. By reciprocal transformation of the coefficient, the statistical significance of homogeneity test is .067, which is suitable for ANOVA analysis.

Using ANOVA to test each aspect, the statistical significance of family life is $<.05$, indicating that the data are not suitable for ANOVA. The square root, logarithm and inverse sine conversion of the original scores still cannot meet homogeneity assumption. Therefore, the following analysis of family life is inconsistent with the analysis results under the assumption of homogeneity, so it is possible to increase the errors of type one and type two, so the interpretation of the following results should be more conservative and cautious. Other aspects, such as joy of life, emotion and feelings and self-cognition, have been tested by ANOVA, and the significance is in line with the requirements, which is suitable for one-way ANOVA analysis.

After teasing out the differences of the life satisfaction of the elderly partaking in the study and those not as well as other aspects' situations, the results are shown in Table 4.3 and Table 4.4.

The results show that the respondents who have participated in the elderly university and those who have not have significant differences in life satisfaction and emotion and feelings of life satisfaction. The elderly taking courses have higher life satisfaction than those who not. There are no significant differences in the aspects of joy of life, self-cognition and family life. In the focus group interview section,

respondents' views on this issue have validated this conclusion.

"I have not thought seriously about what I need to learn. If think about it seriously, I suppose it should be something I like and am interested in. What can enrich my retirement life can be the options. The courses may be related to arts and has a function of social interaction. In the Internet age, it is necessary to learn new technologies, smart phones or something, otherwise it is difficult to cope with social life. (N1)

At the moment, my life has changed very little. Maybe it's because my old job. You see that most of the people in banks now are old men and old ladies, and young people are using mobile banking. The aged should have opportunities to learn, and it is necessary." (N7)

This result, which is consistent with the result of the survey on the life satisfaction of the elderly by Huang (2011), Lin (2002) and Jian (2004), shows that the elderly with participation in learning activities have higher life satisfaction.

Table 4.3 Descriptive statistical analysis results about life satisfaction of respondents participating in the elderly university and those not

Dependent Variable: Learning or not	Life satisfaction		
	Mean	Std. Deviation	N
The elderly not partaking in the study	.282	.027	444
The elderly partaking in the study	.289	.025	308
Total	.285	.026	752

Table 4.4 ANOVA analysis of respondents participating in the elderly university and those not in life satisfaction

	Source of variation	SS	df	MS	F	<i>p</i>	η_p^2
Life satisfaction	Learning or not	.009	1	.009	12.019	.001	.016
	Error	.531	750	.001			
	Total	.539	752				
Joy of life	Learning or not	.200	1.000	.200	.690	.406	.001
	Error	217.262	750.000	.290			
	Total	566.712					
Emotion and feeling	Learning or not	20.504	1	20.504	28.155	.000	.036
	Error	546.207	750	.728			
	Total	566.712	751				
Self-cognition	Learning or not	.063	1	.063	.296	.586	.000
	Error	159.145	750	.212			
	Total	159.208					
Family life	Learning or not	.063	1	.063	.183	.586	.000
	Error	256.896	750	.343			
	Total	256.959	751				

4.2.2 Difference analysis results of the elderly participating in the study and those not in learning needs

Using ANOVA to test each aspect, the statistical significance is $<.001$, indicating that the data are not suitable for ANOVA. The square root, logarithm and inverse sine conversion of the original scores still cannot meet homogeneity assumption. Therefore, the following analysis is inconsistent with the analysis results under the assumption of homogeneity, so it is possible to increase the errors of type one and type two, so the interpretation of the following results should be more

conservative and cautious. By ANOVA to test each aspect, the data of learning needs for living skills and learning needs to improve health are suitable to be tested. The statistical significance of learning needs to enrich life and spiritual learning needs are $<.05$, indicating that the data are not suitable for ANOVA. The square root, logarithm and inverse sine conversion of the original scores still cannot meet homogeneity assumption. Therefore, the following analysis of learning needs to enrich life and spiritual learning needs is inconsistent with the analysis results under the assumption of homogeneity, so it is possible to increase the errors of type one and type two, so the interpretation of the following results should be more conservative and cautious. After teasing out the differences of the learning needs of the elderly partaking in the study and those not as well as other aspects' situations, the results are shown in Table 4.5 and Table 4.6. The results show that the respondents who have participated in the elderly university and those who have not have significant differences in learning needs. The elderly taking courses have higher scores than those who not in this aspect, but there are no significant differences in the aspects of living skills, improve health, enrich life and spiritual pursuit. In the focus group interview section, the respondents' views have proved this conclusion. This conclusion is consistent with Joung's (2011) survey of the learning needs of the elderly, that is, the elderly who have participated in the study have higher levels of learning needs and higher perception.

“The people in the elderly university are very delighted, so it is impossible to suffer from depression.” (L6)

“It is not difficult to take lessons. Actually, it is quite easy, and every course is fine and acceptable. Our teachers will make teaching plans according to our ages. The tutoring will also be conducted according to different groups of

the elderly with similar individual situations. The school takes care of us very much. If it is raining, it will inform us in APP's chat group then students will not need to attend classes. If students feel unfit, they may not to come.” (LA)

Table 4.5 Descriptive statistical analysis about learning needs of respondents participating in the elderly university and those not

Dependent Variable:	Learning needs		
	Mean	Std. Deviation	N
Learning or not			
The elderly not partaking in the study	3.595	.400	444
The elderly partaking in the study	3.800	.337	308
Total	3.679	.389	752

Table 4.6 ANOVA analysis of respondents participating in the elderly university and those not in learning needs

	Source of variation	SS	df	MS	F	p	η_p^2
Learning needs	Learning or not	7.686	1	7.686	54.355	.000	.068
	Error	106.051	750	.141			
	Total	113.736	752				
Living skills	Learning or not	10.864	1	10.864	23.210	.000	.030
	Error	351.059	750	.468			
	Total	265.220					
Improve health	Learning or not	5.264	1	5.264	15.186	.000	.020
	Error	259.957	750	.347			
	Total	265.220	751				
Enrich life	Learning or not	15.598	1	15.598	23.187	.000	.030
	Error	504.552	750	0.673			
	Total	520.151					
Spiritual pursuit	Learning or not	6.218	1	6.218	17.517	.000	.030
	Error	266.250	750	.355			
	Total	272.468	751				

4.2.3 Difference analysis of the elderly participating in the study and those not in social support

ANOVA test shows that the statistical significance of homogeneity test for variance is .594, which is suitable for ANOVA analysis. The results are shown in Table 4.7 and Table 4.8.

The results show that the respondents who have participated in the elderly university have significant differences in social support, and the social support of those who have not taken part in the study is higher than those who have. The significant differences have shown in the aspect of information support, tool support and emotional support, but there are no significant differences in the aspects of friend support. In the focus group interview section, respondents' views on this issue have supported this conclusion, some example are as follows.

“Learning in the elderly university is helpful and makes me in a good mood. With the support of my family, I can learn new things which help improve memory, and it is also good to know more people here.” (L3)

“When I went back and chatted with a woman in my community, I was asked how I had learnt to send messages through WeChat. She looked at my 198 contacts in WeChat and was very surprised. I opened WeChat and let her see our singing and dancing.” (L3)

This conclusion is inconsistent with the results of Chiu (2011) and Lin (2002). The levels of social support for the elderly who have not participated in learning activities is high.

Table 4.7 Descriptive statistical analysis about social support of respondents participating in the elderly university and those not

Dependent Variable: Learning or not	Social support		
	Mean	Std. Deviation	N
The elderly not partaking in the study	3.806	.381	444
The elderly partaking in the study	3.713	.390	308
Total	3.768	.387	752

Table 4.8 ANOVA analysis of respondents participating in social support in the elderly university and those not

	Source variation of	SS	df	MS	F	<i>p</i>	η_p^2
Social support	Learning or not	1.593	1	1.593	10.717	.001	.014
	Error	111.459	750	.149			
	Total	113.052	752				
Information support	Learning or not	2.962	1	2.962	14.390	.000	.019
	Error	154.365	750	.206			
	Total	249.585					
Friend support	Learning or not	0.522	1	.522	1.573	.210	.002
	Error	249.062	750	.332			
	Total	249.585	751				
Tool support	Learning or not	2.346	1	2.346	4.704	.030	.006
	Error	374.034	750	.499			
	Total	376.380	751				
Emotional support	Learning or not	0.846	1	.846	2.276	.030	.006
	Error	278.587	750	.371			
	Total	279.433	751				

4.2.4 Difference analysis results of the elderly participating in coping in the study and those not

ANOVA test shows that the statistical significance of homogeneity test for variance is .353, which is suitable for ANOVA analysis. By ANOVA to test each aspect, the statistical significance of specific solution strategies, establishing supportive systems and cognitive evasion are $<.05$, indicating that the data are not suitable for ANOVA. The square root, logarithm and inverse sine conversion of the original scores of these three aspects still cannot meet homogeneity assumption. Therefore, the following analysis of specific solution strategies, establishing supportive systems and cognitive evasion is inconsistent with the analysis results under the assumption of homogeneity. It is possible to increase the errors of type one and type two, so the interpretation of the following results should be more conservative and cautious.

The significance of repressed emotion is $>.05$, so ANOVA analysis can be performed. After teasing out the differences of the coping of the elderly partaking in the study and those not as well as other aspects' situations, the results are shown in Table 4.9 and Table 4.10. The results show that the respondents who have participated in the elderly university and those who have not have no significant difference in coping, specific solution strategies, establishing supportive systems, cognitive evasion and repressed emotion. In the focus group interview section, respondents' views on this issue are different. The data show that the elderly who are studying in the elderly university are more proactive in solving problems. Examples are as follows.

"I think it definitely helps enrich life and there should be many ways, such as the elderly universities, online courses, TV courses and other ways. Of course,

mutual help between people is necessary. The university are a kind of social organization, while other forms of learning are self-organized. So, the elderly should participate in learning in multiple ways and have a more positive attitude towards life.” (N5)

“I don’t go to work now. For those who do not come to school, some stay at home and some engage in pyramid selling. It’s not good to stay at home all the time. Sometimes taking some activities is good for people themselves. The consecutive singing and dancing courses of four or five days make me feel good. In school holidays, I can’t get used to staying at home for a long time. Although the meals are good, people will still be ill with no exercise. (L4)

In summary, the interviewees who have participated in the study tend to choose proactive ways of coping. After analysis, the reason why there is a difference from the questionnaire survey is that the results may be due to the setting of the questions. The larger of the difference of coping between the elder partaking in the study and those not, the survey results is better.

This conclusion is different from the research of Chiu (2011) and Chen (2011). Their research indicated that the longer the education, the better the educational background and the more proactive the ways of coping. In the results of this study, whether to participate in the study of the elderly university has no significant difference in coping. In addition to the limitation of the research tools mentioned above, this conclusion may also be due to the particularity of the respondents. The elderly have different experience and psychological characteristics, and have formed mature and stable ways of coping. Consequently, there is little influence by taking the university courses on the ways of coping.

Table 4.9 ANOVA analysis of respondents participating in the elderly university and those not in coping

Dependent Variable:	Coping			
	Learning or not	Mean	Std. Deviation	N
The elderly not partaking in the study		3.471	.433	444
The elderly partaking in the study		3.432	.406	308
Total		3.455	.422	752

Table 4.10 Descriptive statistical analysis about coping of respondents participating in the elderly university and those not

	Source of variation	SS	df	MS	F	<i>p</i>	η_p^2
Coping	Learning or not	.266	1	.266	1.491	.222	.002
	Error	134.060	750	.179			
	Total	134.327	752				
Specific solution strategies	Learning or not	.246	1	.246	.953	.329	.001
	Error	193.722	750	.258			
	Total	278.509					
Establish supportive systems	Learning or not	.675	1	.675	1.821	.178	.002
	Error	277.835	750	.370			
	Total	278.509	751				
Cognitive evasion	Learning or not	.024	1	.024	.029	.865	.000
	Error	624.125	750	.832			
	Total	624.149					
Repressed emotion	Learning or not	14.595	1	14.595	20.376	.865	.000
	Error	537.227	750	.716			
	Total	551.823	751				

4.3 Regression analysis results

This section mainly analyzes the relationships among respondents' learning needs, social support, coping and life satisfaction, discussing the correlations of the four aspects of learning needs, the four aspects of coping, the four aspects of social support and the four aspects of life satisfaction. The analysis of Pearson correlation coefficient has been used to test the relations between those variables. This study referred to Wu's (2007) degrees of correlation: the absolute value of the correlation coefficient below .39 is low correlation; the absolute value of the correlation coefficient between .40 and .69 is moderate correlation; the absolute value of the correlation coefficient over .70 is high correlated. After the correlation analysis, a general linear regression test was performed to verify the influence of the respondents' learning needs, social support, and coping on life satisfaction.

4.3.1 Correlation analysis results

4.3.1.1 Correlation analysis results of learning needs and life satisfaction

The data of the relationship between respondents' learning needs and life satisfaction are summarized in Table 4.11.

Table 4.11 Correlation analysis of respondents' learning needs and life satisfaction

		Life satisfaction				
		In general	Joy of life	Emotion and feeling	Self-cognition	Family life
Learning needs	In general	.351***	.237**	.113**	.322**	.139**
	Living skills	.124**	.162**	-.088*	.207**	.142**
	Improve health	.177**	.170**	-.111**	.292**	.217**
	Enrich life	.229**	.203**	.017	.266**	.094**
	Spiritual pursuit	.403**	.269**	.228**	.267**	.108**

** $p < .01$ *** $p < .001$

From Table 4.11, there is a significant correlation between respondents' learning needs and life satisfaction ($r=.351, p<.001$). This conclusion is consistent with Mackowicz and Wnek-Gozdek's (2016) findings. They believed that the elderly's learning needs were related to life satisfaction, and learning to meet the self-development needs of the elderly could help them achieve higher satisfaction. According to the analysis, there is no significant correlation in spite of learning needs of enriching life and emotion and feeling of life satisfaction. The correlation between the respondents' learning needs and life satisfaction has reached a significant level. The description of each aspect are as follows.

1. The correlations between the aspect of living skills in learning needs and the four aspects of life satisfaction are joy of life ($r=.162, p<.01$), emotion and feelings ($r=-.088, p<.05$), self-cognition ($r=.207, p<.01$), family life ($r=.142, p<.01$), among which self-cognition is the most relevant one, showing that there is a close relationship between the respondents' learning needs of living skills and the self-cognition of life satisfaction; it is negatively correlated with emotion and feelings, indicating that the higher the needs for living skills, the lower the ageing feelings; in other words, once the respondents' learning needs for living skills are met, the aspects of joy of life, self-cognition and family life are more positive.

2. The correlations between the aspect of needs for improving health in learning needs and the four aspects of life satisfaction are joy of life ($r=.170, p<.01$), emotion and feelings ($r=-.088, p<.05$), self-cognition ($r=.292, p<.01$), family life ($r=.217, p<.01$), among which self-cognition is the most relevant one, showing that there is a close relationship between the respondents' learning needs for improving health and the self-cognition of life satisfaction; it is negatively correlated with

emotion and feelings, indicating that the higher the needs for improving health, the lower the negative ageing feelings; in other words, once the respondents' learning needs for improving health are met, the aspects of joy of life, self-cognition and family life are more positive.

3. The correlations between the aspect of needs for enriching life in learning needs and the four aspects of life satisfaction are joy of life ($r=.203, p<.01$), no correlation with emotion and feelings, self-cognition ($r=.266, p<.01$), family life ($r=.094, p<.01$), among which self-cognition is the most relevant one, showing that there is a close relationship between the respondents' learning needs for enriching life and the self-cognition of life satisfaction; there is no correlation with emotion and feelings, indicating once the respondents' learning needs for enriching life are met, the aspects of joy of life, self-cognition and family life are more positive.

4. The correlations between the aspect of needs for spiritual pursuit in learning needs and the four aspects of life satisfaction are joy of life ($r=.269, p<.01$), emotion and feelings ($r=.228, p<.01$), self-cognition ($r=.267, p<.01$), family life ($r=.108, p<.01$), among which self-cognition is the most relevant one, showing that there is a close relationship between the respondents' learning needs for spiritual pursuit and the self-cognition of life satisfaction; the next is the degree of correlation of emotion and feelings, indicating that the higher the needs for spiritual pursuit, the better the self-cognition and the lower the ageing feelings; in other words, once the respondents' learning needs for spiritual pursuit are met, the aspects of joy of life, self-cognition and family life are more positive.

4.3.1.2 Analysis results of the relationship between respondents' social support and life satisfaction

The data of the relationship between respondents' social support and life satisfaction are summarized in Table 4.12.

Table 4.12 Correlation analysis of respondents' social support and life satisfaction

		Life satisfaction				
		In general	Joy of life	Emotion and feeling	Self-cognition	Family life
Social support	In general	.312**	.164**	.065	.267**	.285**
	Information support	.206**	.168**	.015	.175**	.224**
	Friend support	.217**	.118**	-.015	.251**	.225**
	Tool support	.187**	.026	.146**	.085*	.088*
	Emotional support	.218**	.189**	-.057	.249**	.290**

* $p < .05$ ** $p < .01$

From Table 4.12, there is a significant correlation between the social support and life satisfaction of the respondents ($r = .312$, $p < .01$), which supports the study of Zheng et al. (2015) who conducted a survey on 350 elderly people using the Internet to understand the key factors for the elderly using the Internet for social support: social connections, information collection and self-efficacy. The study found that there is a correlation between the Internet use of the elderly and life satisfaction. There are 12 significant correlations between the two's aspects, which are described as follows.

1. The correlations between the aspect of information support in social support and the four aspects of life satisfaction are joy of life ($r = .168$, $p < .01$), self-cognition ($r = .175$, $p < .01$), family life ($r = .224$, $p < .01$), and there is no significant correlation with emotion and feelings. Among them, family life is the most relevant

one, showing that there is a close relationship between the respondents' information support of social support and family life of life satisfaction; there is no correlation with emotion and feelings, in other words, the better the respondents' information support of social support, the more positive their joy of life, self-cognition and family life.

2. The correlations between the aspect of friend support in social support and the four aspects of life satisfaction are joy of life ($r=.118$, $p<.01$), self-cognition ($r=.251$, $p<.01$), family life ($r=.225$, $p<.01$), and there is no significant correlation with emotion and feelings. Among them, self-cognition is the most relevant one, showing that there is a close relationship between the respondents' friend support of social support and self-cognition of life satisfaction.

3. The correlations between the aspect of tool support in social support and the four aspects of life satisfaction are emotion and feelings ($r=.146$, $p<.01$), self-cognition ($r=.085$, $p<.05$), family life ($r=.088$, $p<.05$), and there is no significant correlation with joy of life. Among them, family life is the most relevant one, showing that there is a close relationship between the respondents' tool support of social support and family life of life satisfaction. The less correlated one is self-cognition, indicating that the better the tool support, the better the self-cognition and family life.

4. The correlations between the aspect of emotional support in social support and the four aspects of life satisfaction are joy of life ($r=.189$, $p<.01$), self-cognition ($r=.249$, $p<.01$), family life ($r=.290$, $p<.01$), and there is no significant correlation with emotion and feelings. Among them, family life is the most relevant one, showing that there is a close relationship between the respondents' emotional support and the family life of life satisfaction; there is no correlation with joy of life

and emotion and feelings, indicating that the higher the level of respondents' emotional support, the better their joy of life, self-cognition and family life.

4.3.1.3 Analysis results of the relationship between respondents' coping and life satisfaction

The data of the relationship between respondents' coping and life satisfaction are summarized in Table 4.13.

Table 4.13 Correlation analysis of respondents' coping and life satisfaction

		Life satisfaction				
		In general	Joy of life	Emotion and feeling	Self-cognition	Family life
In general		.573**	.215**	.414**	.322**	.149**
Specific solution strategies		.065	.054	-.061	.100**	.151**
Coping	Establish supportive systems	.290**	.258**	-.143**	.442**	.340**
	Cognitive evasion	.417**	.084*	.471**	.098**	-.013
	Repressed emotion	.381**	-.035	.604**	-0.043	-.126**

** $p < .01$

From Table 4.13, there is a significant correlation between coping and life satisfaction ($r = .573$, $p < .01$). This conclusion is consistent with Gurjot's (2017) study, which conducted a survey on 928 elderly people in terms of coping and life satisfaction in Phoenix and Sun City, and it was found that coping was significantly related to life satisfaction. In this study, there are 10 significant correlations between the respondents' coping and life-satisfaction. The data are described as follows.

1. The correlations between the aspect of specific solution strategies in coping and the four aspects of life satisfaction are self-cognition ($r = .100$, $p < .01$), family life ($r = .151$, $p < .01$), and there is no significant correlation with joy of life and emotion and feelings. Among them, family life is the most relevant one, showing that

there is a close relationship between the respondents' specific solution strategies of coping and family life of life satisfaction; it is less correlated with self-cognition, indicating that the better the respondents' specific solution strategies, the better the family life.

2. The correlations between the aspect of establishing supportive systems in coping and the four aspects of life satisfaction are joy of life ($r=.258, p<.01$), emotion and feelings ($r=-.143, p<.01$), self-cognition ($r=.442, p<.01$), family life ($r=.340, p<.01$). Among them, self-cognition is the most relevant one, showing that there is a close relationship between the respondents' establishing supportive systems of coping and self-cognition of life satisfaction; it is negatively correlated with emotion and feelings, indicating that the stronger the desire to establishing supportive systems, the less the emotion and feelings of negative ageing.

3. The correlations between the aspect of cognitive evasion in coping and the four aspects of life satisfaction are joy of life ($r=.084, p<.05$), emotion and feelings ($r=.471, p<.01$) and self-cognition ($r=.098, p<.01$), and there is no significant correlation with family life. Among them, emotion and feelings is the most relevant one, showing that there is a close relationship between the respondents' cognitive evasion of coping and the emotion and feelings of life satisfaction; there is no significant correlation with family life, indicating that the more preferable the respondents' cognitive evasion of coping, the stronger their emotion and feelings.

4. The correlations between the aspect of repressed emotion in coping and the four aspects of life satisfaction are emotion and feelings ($r=.604, p<.01$), family life ($r=-.126, p<.01$), and there is no significant correlation with joy of life and self-cognition. Among them, emotion and feelings is the most relevant one, showing

that there is a close relationship between the respondents' repressed emotion of negative coping and the emotion and feelings of life satisfaction; it is negatively correlated with family life, indicating that the more respondents adopt the coping ways of repressed emotion, the stronger their emotion and feelings of life satisfaction and the more negative their family life.

4.3.2 Regression analysis result

This section is mainly about the general linear regression tests to verify the Hypothesis H_{2a}: there is a significant influence of respondents' learning needs on life satisfaction; Hypothesis H_{2b}: there is a significant influence of respondents' social support on life satisfaction; Hypothesis H_{2c}: there is a significant influence of respondents' coping on life satisfaction.

4.3.2.1 Regression test of respondents' learning needs on life satisfaction

The regression analysis is used to test the relationship between life satisfaction and the learning needs of spiritual pursuit, living skills, improving health, and enriching life. The results are shown in Table 4.14, illustrating that the value of the overall explanatory power of learning needs for life satisfaction is $R^2=.175$, $p<.001$, so the Hypothesis H_{2a} is valid.

This is consistent with Chae & Gusup's (2018) study. Their study on older Koreans found that by meeting the learning needs of the aged, life satisfaction in older adults could be significantly improved. Considering other variables, the spiritual pursuit of learning needs has a significant impact on life satisfaction, $\beta=.414$, $p<.001$, so the higher the score of spiritual pursuit, the better the performance of life satisfaction; the learning needs of improving health have a significant impact on life satisfaction, $\beta=.096$, $p<.05$, so the higher the score of improving health, the better the

performance of life satisfaction. Besides, there is no significant impact of living skills and enrich life on life satisfaction.

Table 4.14 Regression analysis of respondents' learning needs and life satisfaction

	Life satisfaction		
	B	SE B	β
Learning needs in general	.308***	.030	.351***
Learning needs for living skills	.020	.018	.041
Learning needs to improve health	.055*	.021	.096*
Learning needs to enrich life	-.025	.018	-.062
Learning needs for spiritual pursuit	.235***	.024	.414***
R ²	.175		
Adj R ²	.170		
F	39.512***		
df	(4,747)		

Note: N = 752. * $p < .05$ *** $p < .001$

4.3.2.2 Regression test of respondents' social support on life satisfaction

The regression analysis is used to test the relationships between the four aspects of social support, including information support, friend support, tool support and emotional support, and life satisfaction. The results are shown in Table 4.15, illustrating that the value of the overall explanatory power of learning needs for life satisfaction is $R^2=.101$, $p<.001$, so the Hypothesis H_{2b} is valid. This conclusion is consistent with Boz's (2018) study, which aimed to understand how older people communicated to each other and built social support in order to meet the needs of individuals building relationships and gaining a sense of belonging. The research believed that social support would have an impact on the elderly's life satisfaction.

Considering other variables, tool support has a significant impact on life

satisfaction, $\beta=.132$, $p<.001$; information support has a significant impact on life satisfaction, $\beta=.131$, $p<.01$, and the higher the score of tool support and information support, the better the performance of life satisfaction; emotional support has a significant impact on life satisfaction, $\beta=.118$, $p<.01$, and the higher the score of emotional support, the better the life satisfaction performance; friend support has a significant impact on life satisfaction, $\beta=.109$, $p<.01$, and the higher the score of friend support, the better the performance of life satisfaction.

Table 4.15 Regression analysis of respondents' social support and life satisfaction

	Life satisfaction		
	B	SE B	β
Social support overall	.275***	.031	.312***
Information support	.098**	.028	.131**
Friend support	.065**	.023	.109**
Tool support	.064***	.017	.132***
Emotional support	.066**	.021	.118**
R ²	.101		
Adj R ²	.096		
F	20.996***		
df	(4,747)		

Note: N = 752. ** $p < .01$ *** $p < .001$

4.3.2.3 Regression test of respondents' coping on life satisfaction

The regression analysis is used to test the relationships between the four aspects of coping, including specific solution strategies, establishing supportive systems, cognitive evasion and repressed emotion, and life satisfaction. The results are shown in Table 4-3-6, illustrating that the value of the overall explanatory power of coping for life satisfaction is $R^2=.303$, $p<.001$, so the Hypothesis H_{2c} is valid.

This conclusion is consistent with Sougleris et al.'s (2011) study, which conducted a survey on 224 residents in the Australian communities in terms of coping, life satisfaction of life goals, and the results indicated that positive coping was an important factor, so the elderly should be intervened to improve the ways of coping, which would help to improve the quality of life in older people. Considering other variables, repressed emotion has a significant impact on life satisfaction, $\beta=.289$, $p<.001$, and the higher the score of repressed emotion, the better the performance of life satisfaction; establishing supportive systems has a significant impact on life satisfaction, $\beta =.285$, $p <.001$, and the higher the score of establishing supportive systems, the better the performance of life satisfaction; cognitive evasion has a significant impact on life satisfaction, $\beta =.257$, $p <.001$, and the higher the score of cognitive evasion, the better the performance of life satisfaction; specific solution strategies has no significant impact on life satisfaction.

Table 4.16 Regression analysis of respondents' coping and life satisfaction

	Life satisfaction		
	B	SE B	β
Coping overall	.463***	.024	.573***
Specific solution strategies	.037	.021	.055
Establish supportive systems	.160***	.017	.285***
Cognitive evasion	.097***	.013	.257***
Repressed emotion	.115***	.014	.289***
R ²	.304		
Adj R ²	.300		
F	81.512***		
df	(4,746)		

Note: N = 752. *** $p < .001$

4.3.3 The data analysis results of focus group interviews --- Hypothesis H₂

In the focus group interview section, respondents' views on this issue have validated this conclusion, and examples are as follows.

“The school offers a variety of innovative courses that make the elderly not lonely and cultivate their sentiment. I will be here as soon as I am available.”

(L8)

“Most importantly, for people like us, each knows something about high technologies, such as the APP WeChat and the function of ‘sending red envelopes.’ By communication, I have learnt most of them. Now I am not afraid searching information on the Internet and using facial recognition function anymore.” (L5)

“These courses can also cultivate the elderly in different aspects and help them play special roles. Many people are willing to take such courses, which can be seen as the further study.” (L1)

In summary, a number of respondents believe that through the participation of learning their learning needs after ageing have been met. More social relationships have been established and life satisfaction has been improved effectively, which is consistent with the findings of the questionnaire survey.

4.4 Analysis results of the mediating effect of respondents' social support and coping on learning needs and life satisfaction

This section is mainly about the tests of mediating effect for verifying Hypothesis H₃: coping and social support have mediating effect on the relationship between learning needs and life satisfaction. Hypothesis H₃ includes four parts. Hypothesis H_{3a}: social support for the elderly in Jinan, Shandong has the mediating effect between learning needs and life satisfaction. Hypothesis H_{3b}: coping of the

elderly in Jinan, Shandong has the mediating effect between learning needs and life satisfaction. Hypothesis H_{3c}: social support for the elderly in Jinan, Shandong has the mediating effect between learning needs and coping. Hypothesis H_{3d}: coping of the elderly in Jinan, Shandong has the mediating effect between social support and life satisfaction. The verification of the four hypotheses are as follows.

4.4.1 Test of the mediating effect of respondents' social support on learning needs and life satisfaction

The four-step regression analysis is used to verify the mediating effect of social support on learning needs and life satisfaction, the results are shown in Table 4.17 that learning needs have significant explanatory power on social support ($\beta=.087$, $p<.05$); and learning needs have significant explanatory power on life satisfaction ($\beta=.351$, $p<.001$); social support has significant explanatory power on life satisfaction ($\beta=.312$, $p<.001$). When considering the explanatory power of learning needs and social support together on life satisfaction, the explanatory power of learning needs is still significant, but there is a slight decrease ($\beta=.326$, $p<.001$); the explanatory power of social support is still significant but there is a decrease ($\beta=.283$, $p<.001$). According to Baron and Kenny (1986), the mediating effect is valid, and social support has partly mediated the relationship between learning needs and life satisfaction. So, the Hypothesis H_{3a} is valid.

This is consistent with the findings of Dumitrache, Rubio and Rubio-Herrera (2018) and Raina, Wolfson and Kirkland (2018). They conducted a questionnaire survey on 406 elderly people in southern Spain to explore whether social support had the mediating effect on extroverted personality and life satisfaction. Its conclusion indicated that social support was vital to life satisfaction, and social

support formed an important interpreting mechanism for the influence of extroverted personality on life satisfaction. Raina et al.'s (2018) study is consistent with this conclusion. Their study on older Canadians pointed out that social support played a significant mediating role in social network structure and life satisfaction.

Table 4.17 Analysis of the mediating effect of social support on learning needs and life satisfaction

	Social support M		Life satisfaction Y	
	Model 1	Model 2	Model 3	Model 4
Learning needs	.087*	.351***		.326***
Social support			.312***	.283***
R ²	.008	.123	.097	.203
Adj R ²	.006	.122	.096	.201
F	5.774*	105.393***	80.748***	95.286***
Df	(1,750)	(1,750)	(1,750)	(2,749)

Note: Note: The values in the table are standardized regression coefficients (β)

* $p < .05$ ** $p < .01$ *** $p < .001$

4.4.2 Test of the mediating effect of respondents' coping on learning needs and life satisfaction

The four-step regression analysis is used to verify the mediating effect of coping on learning needs and life satisfaction, the results are shown in Table 4.18 that learning needs have significant explanatory power on coping ($\beta = .301$, $p < .001$); and learning needs have significant explanatory power on life satisfaction ($\beta = .351$, $p < .001$); coping has significant explanatory power on life satisfaction ($\beta = .573$, $p < .001$).

This result is consistent with the conclusion of Oznur (2019). Oznur (2019) selected 586 college students as the research objects to test the mediating effect of

coping on the relationship between motivation and life satisfaction. The hypothesis was verified and the structural equation model of coping and motivation and the model of coping and life satisfaction were built. When considering the explanatory power of both coping and learning needs on life satisfaction, the explanatory power of learning needs is still significant but has a decrease ($\beta=.196$, $p<.001$), and the explanatory power of coping is still significant but has a decrease ($\beta=.513$, $p<.001$). According to the discrimination criteria of Baron and Kenny (1986), the mediating effect is valid, and coping has partly mediated the relationship between learning needs and life satisfaction. So, the Hypothesis H_{3b} is valid.

This conclusion has validated the findings of Ozgur (2019), which used structural equations to test the mediating effect of coping in the relationship between motivation and life satisfaction. The mediating effect had been verified.

Table 4.18 Analysis of the mediating effect of coping on learning needs and life satisfaction

	Coping M	Life satisfaction Y		
	Model 1	Model 2	Model 3	Model 4
Learning needs	.301***	.351***		.196***
Coping			.573***	.513***
R ²	.091	.123	.328	.363
Adj R ²	.090	.122	.327	.361
F	74.822***	105.393***	365.747***	213.296***
Df	(1,750)	(1,750)	(1,750)	(2,749)

Note: Note: The values in the table are standardized regression coefficients (β)

* $p<.05$ ** $p<.01$ *** $p<.001$

4.4.3 Test of the mediating effect of respondents' social support on learning needs and coping

The four-step regression analysis is used to verify the mediating effect of

social support on learning needs and coping, the results are shown in Table 4.19 that learning needs have significant explanatory power on social support ($\beta=.087, p<.05$); and learning needs have significant explanatory power on coping ($\beta=.301, p<.001$); social support has significant explanatory power on coping ($\beta=.292, p<.001$). When considering the explanatory power of both learning needs and social support on coping, the explanatory power of learning needs is still significant ($\beta=.278, p<.001$), and the explanatory power of social support is still significant ($\beta=.267, p<.001$). According to Baron and Kenny (1986), the mediating effect is valid, and coping has partly mediated the relationship between learning needs and social support, so Hypothesis H_{3c} is valid. This conclusion is consistent with the findings of Mackowicz and Wnek-Gozdek (2016), a qualitative case study conducted for the elderly in the University of Third Age in Poland. This study pointed out that learning had a positive impact on participating in social activities, adapting to change, and gaining and providing more support.

Table 4.19 Analysis of the mediating effect of social support on learning needs and coping

	Social support M		Coping Y	
	Model 1	Model 2	Model 3	Model 4
Learning needs	.087*	.301***		.287***
Social support			.292***	.267***
R ²	.008	.091	.085	.162
Adj R ²	.006	.090	.084	.159
F	5.774*	74.822***	69.760***	72.231***
Df	(1,750)	(1,750)	(1,750)	(2,749)

Note: The values in the table are standardized regression coefficients (β)

* $p<.05$ ** $p<.01$ *** $p<.001$

4.4.4 Test of the mediating effect of respondents' coping on social support and life satisfaction

The four-step regression analysis is used to verify the mediating effect of coping on social support and life satisfaction, the results are shown in Table 4.20 that social support has significant explanatory power on coping ($\beta=.292$, $p<.001$); and social support has significant explanatory power on life satisfaction ($\beta=.312$, $p<.001$); coping has significant explanatory power on life satisfaction ($\beta=.573$, $p<.001$). When considering the explanatory power of both coping and social support on life satisfaction, the explanatory power of social support is still significant but has a decrease ($\beta=.158$, $p<.001$), and the explanatory power of coping is still significant but has a decrease ($\beta=.526$, $p<.001$). The mediating effect is valid, and social support has partly mediated the relationship between coping and life satisfaction. So, the H_{3d} is valid. This conclusion is consistent with Seib et al.'s (2018) findings on 278 women with cancer. It pointed out that stress assessment and coping played a mediating role in the relationship between stress and feeling in women's life after getting cancer.

Table 4.20 Analysis of the mediating effect of coping on social support and life satisfaction

	Coping M		Life satisfaction Y	
	Model 1	Model 2	Model 3	Model 4
Social support	.292***	.312***		.158***
Coping			.573***	.526***
R ²	.085	.097	.328	.351
Adj R ²	.084	.096	.327	.349
F	69.760***	80.748***	365.747***	202.280***
Degree of freedom	(1,750)	(1,750)	(1,750)	(2,749)

Note: The values in the table are standardized regression coefficients (β)

* $p<.05$ ** $p<.01$ *** $p<.001$

4.4.5 The data analysis results of focus group interviews --- Hypothesis H₃

In the focus group interview section, respondents' views on this issue have validated this conclusion. Examples are as follows.

“My social relations have changed. Previously, my friends and acquaintances were all from the work unit. Now I have had a wider range of friends. For those who live in the same community with me and who I am not familiar with, now we have all become good friends. I have friends everywhere. It makes me feel good.” (L8)

“The elderly university has improved the harmony of my family. If I did not go to the university, most of the time I would quarrel with my partner. Once getting out of the house, there is no chance to do so.” (L5)

“Getting old means less opportunities to do social activities. Older people singing and dancing together can alleviate loneliness. Thanks to the university for the elderly there will be someone there to talk things. It illustrates that there are a great number of older people who are willing to participate in these activities. However, because of the limited quota, some of the elderly are required to graduate or leave. More quota should be offered to the aged.” (N1)

In summary, respondents believe that social support and coping have a positive impact on the relationship between learning needs and life satisfaction. They can improve the elderly's social support and help them use positive ways of coping, which contribute to advance the elderly's life satisfaction. The respondents' opinions are consistent with the quantitative research results.

4.5 Analysis results of the predictive power of respondents' social support and coping on learning needs and life satisfaction

According to the design of the research framework, the mediating analysis program proposed by Zhao (2010), and the test method of multi-step mediating variables proposed by Hayes (2013), Bootstrap mediating variable test are carried out. The sample size is 5000, and the confidence interval is set to 95%. Using the PROCESS Hayes Model 6 for data analysis, Table 4-5-1 are formed.

Table 4.21 Model of the impact of learning needs, coping and social support on life satisfaction

Total effect of learning needs on life satisfaction					
Effect	se	t	<i>p</i>	LLCI	ULCI
.3082	.0300	10.2661	.0000	.2493	.3672
Direct effect of learning needs on life satisfaction					
Effect	se	t	<i>p</i>	LLCI	ULCI
.1725	.0264	6.5379	.0000	.1207	.2243
Indirect effect(s) of learning needs on life satisfaction					
	Effect	Boot SE	Boot LLCI	Boot ULCI	
TOTAL	.1357	.0189	.1007	.1740	
Ind1	.0122	.0060	.0020	.0254	
Ind2	.1140	.0165	.0836	.1470	
Ind3	.0096	.0044	.0018	.0192	

Indirect effect key:

Ind1 Learning needs -> Social support -> Life satisfaction

Ind2 Learning needs -> Coping -> Life satisfaction

Ind3 Learning needs -> Social support -> Coping -> Life satisfaction

Table 4.21 shows the direct and indirect effects of learning needs on life satisfaction. The data show that the mediating test results of learning needs->social support-coping->life satisfaction do not include 0 (LLCI=.0018, ULCI=.0192), indicating that the mediating effect is significant and its value is .0096; the mediating path of learning needs -> social support -> life satisfaction is significant (.0020, .0254), the value is .0122; the mediating path of learning needs -> coping -> life satisfaction is significant (.0836, .1470), and the value of mediating effect is .1140. After controlling the three mediating paths, the impact of learning needs on life satisfaction is still significant, and the interval (LLCI=.1207, ULCI=.2243) does not contain 0. The effect of learning needs on life satisfaction has been reduced from .3082 to .1725. Therefore, social support and coping have partially played a mediating role in the impact of learning needs on life satisfaction. Learning needs, social support and coping have an impact on life satisfaction, so H₄ is valid.

In the focus interview section, the respondents' views have improved this conclusion, and they are listed as follows.

“Like those popular smartphones, there are several popular chat groups established by the school, such as vocal class group, chorus class group and so on. Through these groups, we can communicate with each other.” (L1)

“It is very helpful to attend the class. If something happened, everyone can contribute ideas.” (L7)

In summary, respondents believe that learning needs, social support, and coping have a positive impact on life satisfaction. Meeting the learning needs of the elderly, improving social support and coping are conducive to improve the elderly's life satisfaction, which is consistent with the quantitative research results.

CHAPTER 5

DISCUSSION

This study selects the elderly, who have participated in the study at the university for the aged and who have not in Jinan, Shandong Province as subjects, conducting the research on their learning needs, social support, coping and life satisfaction. This study aims to explore the relationships among learning needs, social support, coping and life satisfaction of the elderly in China. In order to achieve this goal, this study has adopted questionnaire survey and focus group interviews to collect data from the questionnaire on the relationships among learning needs, social support, coping and life satisfaction of the elderly in Jinan, Shandong. The data after statistically analyzed have been summarized into the results in Chapter 4, and the focus group interviews have been conducted accordingly to verify the results from the quantitative research. This chapter will present research findings and research conclusions. Consequently, it is divided into two sections: the first section is research findings, the second is research conclusions, They will be in turn discussed as follows.

5.1 Research findings

This study aims to explore the relationships among learning needs, social support, coping and life satisfaction of the elderly in China. After the literature review, the scales made by Joung (2011), Huang (2011) and Chiu (2011) have been used as research tools. The analysis has been conducted to ensure the scales' reliability and validity, so that formal questionnaires can be used for collecting research data. The

subjects have been divided into the elderly people who have participated in the study of the senior university in Jinan, Shandong Province and those who have not. By contacting the elderly university and the communities, questionnaires have been sent to the elderly in a random manner. A total of 1080 questionnaires have been given out and 886 copies have been collected, and the collection rate is 82.0%. After eliminating the questionnaires with incomplete or the unqualified ones, the total number of valid questionnaires is 752. The survey data have been tested by the statistical methods, including project description, testing for normality, Pearson correlation coefficient, regression analysis, mediation analysis, multiple mediation process, and one-way ANOVA, and the research results have been obtained through the testes. The main research findings are as follows.

1. The analysis of differences in learning needs, social support, coping and life satisfaction of the elderly who have participated in the study of the elderly university and those who have not.

- 1) The life satisfaction of the elderly who have participated in the study of the elderly university is higher than that of those who have not.

- 2) The scores of learning needs of the elderly who have participated in the study of the elderly university is higher than that of those who have not.

- 3) The social support of the elderly who have not participated in the study of the elderly university is higher than that of those who have.

- 4) There is no significant difference in the ways of coping between the elderly who have participated in the study of the elderly university and those who have not.

2. The analysis of the relationships among learning needs, social support,

coping and life satisfaction of the elderly in China and their significant influence.

1) After analyzing learning needs and life satisfaction of the elderly in Jinan, Shandong, it is known that there has been a significant correlation between learning needs and life satisfaction ($r=.351, p<.001$). Further, regression analysis has been used to test the relationship between learning needs and life satisfaction, and the result shows that the overall explanatory power of learning needs is significant for life satisfaction, $B=.308, p<.001$. The Hypothesis H_{2a} is valid.

2) After analyzing the social support and life satisfaction of the elderly in Jinan, Shandong, there has been a significant correlation between social support and life satisfaction ($r=.312, p<.01$). By regression analysis to test the relationship between social support and life satisfaction, the result shows that the overall explanatory power of life satisfaction is significant, $B=.275, p<.001$. Hypothesis H_{2b} is valid.

3) According to the analysis of coping and life satisfaction of the elderly in Jinan, Shandong, there has been a significant correlation between the two factors ($r=.573, p<.01$). Using regression analysis to test the relationship between coping and life satisfaction, it shows that the overall explanatory power of coping for life satisfaction is significant, $B=.463, p<.001$. Hypothesis H_{2c} is valid.

3. The analysis that social support and coping of Chinese elderly people have the mediating effect on learning needs and life satisfaction.

1) The four-step regression analysis has been used to verify the mediating effect of social support on learning needs and life satisfaction. Learning needs have significant explanatory power on social support ($\beta=.087, p<.05$); and learning needs have significant explanatory power on life satisfaction ($\beta=.351, p<.001$); social

support has a significant explanatory power on life satisfaction ($\beta=.312, p<.001$). When considering the explanatory power of learning needs and social support together on life satisfaction, the explanatory power of learning needs is still significant ($p<.001$), but β has decreased from .351 to .326; the explanatory power of social support is still significant ($p<.001$), but β has reduced from .312 to .283. The mediating effect has been effective, and social support has partly mediated the relationship between learning needs and life satisfaction. So, the Hypothesis H_{3a} is valid: social support for the elderly in Jinan, Shandong has the mediating effect on the relationship between learning needs and life satisfaction.

2) Regression analysis has been used to check the mediating effect of coping on learning needs and life satisfaction and the learning needs have a significant explanatory power on the ways of coping ($\beta=.301, p<.001$); learning needs have a significant explanatory power on life satisfaction ($\beta=.351, p<.001$); the ways of coping have a significant explanatory power for life satisfaction ($\beta=.573, p<.001$). When considering the explanatory power of learning needs and coping together on life satisfaction, the explanatory power of learning needs is still significant ($p<.001$), but β has reduced from .351 to .196; the explanatory power of coping is still significant ($p<.001$), but β has reduced from .573 to .513. The mediation has been effective, and coping has partly mediated the relationship between learning needs and life satisfaction. So, the Hypothesis H_{3b} is valid.

3) The four-step regression analysis has been used to verify the mediating effect of social support on learning needs and coping. Learning needs have significant explanatory power on social support ($\beta=.087, p<.05$); learning needs have significant explanatory power on coping ($\beta=.301, p<.001$); social support has a significant

explanatory power on coping ($\beta=.292, p<.001$). When considering the explanatory power of learning needs and social support together on coping, the explanatory power of learning needs is still significant ($p<.001$), but β has slightly declined ($\beta=.278$); the explanatory power of social support is still significant ($p<.001$), but β has reduced from .292 to .267. Coping has partly mediated the relationship between learning needs and life satisfaction. So, Hypothesis H_{3c} is valid: the social support of the elderly in Jinan, Shandong Province has the mediating effect on the relationship between learning needs and coping.

4) The four-step regression analysis has been used to verify the mediating effect of coping on social support and life satisfaction. Social support has significant explanatory power on coping ($\beta=.292, p<.001$); social support has significant explanatory power on life satisfaction ($\beta=.312, p<.001$); the ways of coping have significant explanatory power on life satisfaction ($\beta=.573, p<.001$). When considering the explanatory power of coping and social support together on life satisfaction, the explanatory power of social support is still significant while β has slightly declined ($\beta=.158, p<.001$); the explanatory power of coping is still significant, but β has reduced slightly ($\beta=.526, p<.001$). Social support has partly mediated the relationship between coping and life satisfaction. So, the Hypothesis H_{3d} is valid: the coping of the elderly in Jinan, Shandong Province has the mediating effect on the relationship between social support and life satisfaction.

4. The analysis that the learning needs, social support and coping of Chinese elderly people have significant predictive power on life satisfaction.

According to the design of the research framework and the test method of multiple mediation process proposed by Hayes (2011) and Hayes (2013), the test of

Bootstrap mediating variables has been carried out and the data has been analyzed by PROCESS Hayes Model 6. The data show the test result: “learning needs-> social support-> coping-> life satisfaction” (LLCI=.0018, ULCI=.0192), which indicates that the mediating effect is significant, and its value is .0096; The mediating path of “learning needs->social support->life” is significant (LLCI=.0020, ULCI=.0254), and the value of its mediating effect is .0122; the mediating path of “learning needs->coping->life satisfaction” is significant (LLCI=.0836, ULCI= .1470), and its value of mediating effect is .1140; After controlling the three mediating paths, the impact of learning needs on life satisfaction is still significant (LLCI=.1207, ULCI=.2243), and the effect of learning needs on life satisfaction has decreased from .3082 to .1725. As a result, social support and coping have partially mediated the impact of learning needs on life satisfaction, and the mediating effect is multiple. Learning needs, social support and coping have an influence on life satisfaction, so Hypothesis H₄ is valid.

5.2 Conclusions

Based on the above research findings, the study has the following conclusions.

1. The difference analysis between subjects who have participated in learning and those who have not in the aspects of learning needs, social support, coping and life satisfaction.

According to the research findings, the life satisfaction of the elderly in Jinan, Shandong Province is good. Since life satisfaction is an important issue in the field of ageing research and one of the important indicators for active ageing, relevant government departments and senior education institutions should continue to pay

attention to this issue, thereby further enhancing the life satisfaction of the elderly. In addition, the study has also found that there is a significant difference between subjects who have participated in learning and those who have not in the aspects of learning needs, social support and life satisfaction. Those who have participated in the senior university have higher life satisfaction and stronger learning needs, and they feel slightly less social support than those who have not participated in the study of the senior university. There is no significant difference between the two groups in the ways of coping. The reason is due to the fact that the elderly partaking in learning activities need the support and understanding from their family members, and family relationships are an important factor in social support; at present, there is no guiding classes about the ways of coping in the old-age education, and both the elderly education organizers and the aged are not aware of the importance of coping.

The results of this study are similar to those of Lin (2002), Jian (2004) and Chiu (2011) for the elderly. There is significant difference between the elderly who have participated in learning and those who have not in terms of life satisfaction, learning needs, and social support. As far as the current situation of the elderly students studying in the university for the aged, it is necessary for the elderly education institutions to understand the learning needs of the elderly, providing diversified courses as well as improving the social support. The elderly should be guided to adopt a proactive approach to solve problems, so that their lives in later years could be enriched and their life satisfaction could be improved.

2. Learning needs, social support, and coping of the elderly in China have a significant impact on their life satisfaction.

According to the research results, learning needs, social support and coping

all have positive influence on life satisfaction: the stronger the learning needs of the elderly, the higher the level of social support; the more positive the ways of coping, the higher the life satisfaction will be. In addition, both learning needs and social support have a positive influence on coping: the higher the learning needs of the elderly and the higher the level of social support, the more positive the ways of coping will be; learning needs have a positive impact on social support: the stronger the learning needs, the better the social support.

The results of this study are consistent with the findings of Chae & Gusup (2018), Reed & Hadad (2016), Boz (2018), and Ouwthand et al. (2008), and have found that learning needs, social support and coping have positive influence on life satisfaction. Chae & Gusup's (2018) study on older Koreans found that meeting the learning needs of older people could significantly improve their life satisfaction. Reed & Hadad's (2016) study on the older people over the age of 50 found that learning could provide more social participation and social support for the elderly, and reduced their loneliness and improved life satisfaction. Boz (2018) used interviews to understand how older people built social support and pointed out that social support affected older people's life satisfaction. The study by Ouwthand et al. (2008) showed that using ways of coping could help improve self-efficacy, and older people could overcome stressors through education to better cope with future life. Therefore, government units should pay attention to old-age education and the implementation of education, analyzing learning needs of the elderly. The social support for the elderly should be strengthened, and the elderly also need to be helped and guided to adopt positive ways of coping.

3. The social support and coping of the elderly in China have the mediating

effect on learning needs and life satisfaction.

The four-step regression analysis has been used to verify the mediating effect of social support and coping on learning needs and life satisfaction, and the mediating effect is valid and both social support and coping have partly mediated the relationship between learning needs and life satisfaction. So, Hypothesis H_{3a} and Hypothesis H_{3b} are valid. The four-step regression analysis has been used to verify the mediating effect of social support on learning needs and coping and the mediating effect of coping on social support and learning needs. As a result, both of the mediating effect are valid. Social support has partly mediated the relationship between learning needs and coping, and coping have partly mediated the relationship between social support and life satisfaction. So, Hypothesis H_{3c} and Hypothesis H_{3d} are valid.

The results of this study are consistent with the findings of Reed & Hadad (2016), Ouwthand et al. (2008), and Oznur (2019), and have found that individuals' learning needs, social support and coping have a positive impact on life satisfaction. Reed & Hadad's (2016) study on older people over the age of 50 found that learning could reduce the sense of loneliness and improve the life satisfaction of older people by providing more social participation and social support. Oznur (2019) selected 586 college students as research objects and tested the mediating effect of coping in the relationship between motivation and life satisfaction. The hypothesis was verified and a structural equation model was established. Therefore, government units should pay attention to old-age education and the implementation of education, analyzing learning needs of the elderly. The social support for the elderly should be strengthened, and the elderly also need to be helped and guided to adopt positive ways of coping. As a result, social support and coping have the mediating effect on learning needs and

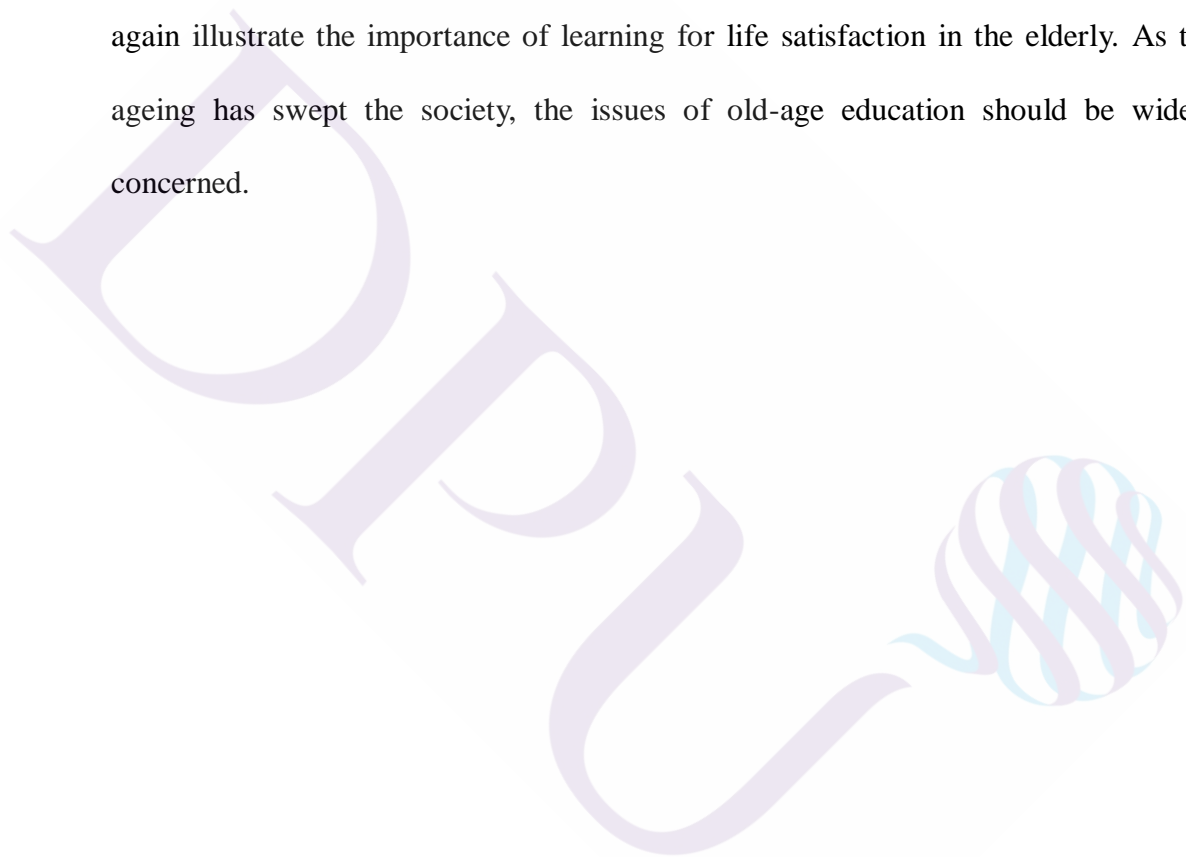
life satisfaction. In view of this, the governments and the elderly education organizers should be aware of the importance of social support and coping, and consciously raise the levels of social support for the elderly, so that the elderly could be guided to choose positive ways of coping for improving life satisfaction.

4. Learning needs, social support and coping of the elderly in China have significant predictive power on life satisfaction.

According to the research, in the aspects of learning needs, social support and coping, the most important predictive variable affecting the elderly's life satisfaction is learning needs. Its path is "learning needs->life satisfaction," and the interval (LLCI=.1207, ULCI=.2243) does not contain 0. The effect is significant, and its explanatory power is .1725. In addition, it has been found that the mediating test result of "learning needs->social support->coping->life satisfaction" does not include 0 (LLCI=.0018, ULCI=.0192), which indicates that the mediating effect is significant, and its value is .0096. The mediating path of "learning needs->social support->life satisfaction" is significant (.0020, .0254), and the value is .0122; the mediating path of "learning needs->coping->life satisfaction" is significant (.0836, .1470), and the value is .1140.

In the focus interview section, the respondents' views support this conclusion. The results of this study are consistent with Joung's (2011) results. The learning needs of the elderly have a positive and significant influence on life satisfaction, which also conforms to the results of Oznur (2019). Individuals' ways of coping have an impact on life satisfaction, which is in accordance with Parisien et al.'s (2016) study confirming that the better the individuals' social support, the higher the life satisfaction; the research of Adams et al. (2016) and Gurjot (2017) as well as

the research in this article all have found that positive ways of coping can bring about higher life satisfaction, and social support has a partly significant positive correlation with life satisfaction. Therefore, learning needs, social support and coping have predictive power on life satisfaction. In light of this, the elderly education institutions should consider the learning needs and the ways of coping concerned with the elderly when conducting curriculum design and development. The results of this study once again illustrate the importance of learning for life satisfaction in the elderly. As the ageing has swept the society, the issues of old-age education should be widely concerned.



CHATER 6

CONCLUSIONS

This study aims to explore the relationships among learning needs, social support, coping and life satisfaction of the elderly in China as a reference for the future planning of old-age education. Based on the research results and discussions, This chapter will present theoretical contribution, research limitations, implications of study and directions for future research. Consequently, it is divided into four sections: the first section is theoretical contribution, the second is limitations of study, the third is implications of study and the fourth is directions for future research. They will be in turn discussed as follows.

6.1 Theoretical contribution

This study aims to explore the relationships among learning needs, social support, coping and life satisfaction of the elderly in China as a reference for the future planning of old-age education. Based on literature review, this study use the revised scales and interview as research tools, adopt the method of combining qualitative study with quantitative study.

As the first research to explore the relationship between learning needs, social support, coping styles and life satisfaction of the elderly, this paper constructs a research model of learning needs, social support, coping styles and life satisfaction, and finds the dual mediating effects of social support and coping styles on learning needs and life satisfaction. At the same time, the quantitative and qualitative research

on the learning needs, social support, coping style and life satisfaction of the elderly in mainland China has expanded the research objects of the past research on elderly education, and provided Suggestions for Chinese government agencies, organizers of elderly education and follow-up research.

6.2 Research limitations

6.2.1 Limitations of research tools

This study has adopted the questionnaire survey and focus group interviews. The research tools of the questionnaire survey are the questionnaires on learning needs, social support, coping and life satisfaction of the elderly in Jinan, Shandong Province. The data collected are mainly based on the questionnaires, supplemented by focus group interview data, which were used for data analysis.

The scales adopted are internationally widely used in the questionnaire survey, and are verified and studied by Taiwanese scholars in Taiwan. But the elderly people of mainland China has special historical and cultural background, and special current aging characteristics, such as huge base, fast aging degree, low starting point, getting old before getting rich, There exist some problems in the process of questionnaire survey, such as questionnaire item build way of expression, dimensions is inappropriate. The survey may be more conducive if questionnaire can adjust based on characteristics of China's elderly.

6.2.2 Limitations of research subjects

The subjects are senior people aged 60 years, and older Half of the subjects are students enrolled in Shandong University for the Aged, another half are the elderly in the communities who have not participated in the university. They have special physiological and psychological characteristics, and their ability of understanding and

expression is very different. The data obtained from the questionnaire survey may be affected by personal subjective judgment or the answers may not be true or accurate. The data obtained from the interview may be affected by the limitations: the language expression ability of respondents, the lack of interaction with the author, the author's own understanding for the respondents' expression, the ways and techniques to ask questions. Consequently, these limitations have caused the lack of data and errors, which have led to the limitation of research.

6.3 Implications of study

Based on the above findings and conclusions, and considering the actual situations of China's old-age education, the author has proposed suggestions for government agencies and old-age education organizers for the departments of educational administration to formulate educational policies for the elderly. These suggestions can also be used to study elderly education programs and promote old-age education as well as revising the curriculum of old-age education, organizing educational activities for the elderly and improving the basis and reference of teaching methods.

6.3.1 Suggestions for government agencies

This study has proposed four recommendations to government agencies: to attach importance to the implementation of education for the elderly, and to promote the education and welfare policies for the elderly; to integrate social forces to enrich the resources for the elderly; to encourage older people to actively participate in learning activities, and to analyze and meet their own learning needs to establish a lifelong learning concept; to stimulate older people to participate in learning activities, and to strengthen social support and the ways of coping to improve their life

satisfaction.

1. Paying attention to the implementation of education for the elderly and promoting the education and welfare policies for the elderly

The purpose of this study is to explore the relationships among the learning needs, social support, coping and life satisfaction in the elderly. The conclusions of the study are that the life satisfaction of the elderly is related to learning needs, social support and the ways of coping, and the life satisfaction of the elderly who have participated in the study is significantly higher than that of those who have not. In view of this, this study suggests that government agencies concerned should pay attention to the implementation of old-age education, and encourage older people to participate in learning and consciously improve social support and coping of the elderly. Specific approaches are as follows.

1) Inspiring older people to participate in learning by publicizing the meaning and effectiveness of lifelong learning through a variety of media.

2) Formulating substantive auxiliary measures to encourage the elderly to improve social support by learning; choosing positive ways of coping to take the implementation of old-age education as a part of governments' governance.

3) Strengthening the management of old-age education; providing more policies and financial support to units that are responsible for managing old-age education in order to implement the old-age education as a whole.

4) Promoting the education and welfare policies for the elderly; separately preparing the financial budget for the elderly; enabling the elderly to participate more in learning activities with education subsidies.

5) Referring to the welfare policies for the elderly in developed countries in

Europe and North America; developing the education for the elderly.

2. Integrating social forces and enriching the resources of old people's education

At present, the major type of institutions for China's old-age education is the universities for the elderly. In recent years, social forces have also begun to provide opportunities and platforms for the study of the elderly. Private educational institutions for older persons are gradually developing. From the perspectives of the advanced experience and development trends of other developed countries, social forces play an important role in promoting elderly education activities. Because social forces are more flexible in running schools and meet learning needs of the elderly better, this study suggests that the government units concerned should integrate social forces to enrich the educational resources of the elderly. The specific practices are as follows.

1) Investigating existing social groups, volunteer organizations and other institutions engaged in old-age education to carry out resource planning, integration, and resettlement.

2) Establishing a service network that public and private old-age educational institutions can coordinate and cooperate with each other in order to make better use of government and civil resources.

3) Supporting, regulating and making good use of social forces; implementing the policies of work division and cooperation between governments and social forces; making a reasonable assessment of the educational effects in order to strengthen systems and standards.

3. Encouraging the elderly to actively participate in learning activities,

analyzing and meeting their own learning needs, and establishing a lifelong learning concept

According to the Conclusion I and Conclusion IV of the study, learning needs have a positive impact on life satisfaction, and the life satisfaction of the elderly who have participated in learning activities is higher than that of those who have not. In view of this, this study suggests that the government should promote and publicize lifelong learning to help the elderly recognize the importance of participating in learning activities with a positive attitude, so that the older persons' life satisfaction can be improved. The specific practices are as follows.

1) Helping older people recognize the importance of learning; analyzing individuals' learning needs; taking learning as part of old-age planning.

2) Providing more opportunities for seniors to participate in learning activities; helping the elderly in a positive attitude to invite friends and neighbors to engage in learning together; experiencing the benefits and fun of participation and ensuring the continuous participation.

3) Helping the elderly to establish a lifelong learning philosophy; refuting the theory that learning is useless; maintaining their curiosity and paying attention to the feelings of learning; constantly updating and meeting learning needs in order to improve life satisfaction and establish learning habit.

4. Encouraging older people to participate in learning activities in a variety of ways; strengthening social support and coping to improve their life satisfaction

According to the Conclusion III of the study, it can be found that the elderly's learning intentions, social support and the ways of dealing with the problem have a predictive power for life satisfaction in an all-round way. Due to the low levels

of learning desire and social support, the elderly prefer to use the ways of coping such as cognitive evasion or repressed emotion, so their life satisfaction is also low. On the contrary, for those who have actively participated in learning activities, they tend to use positive ways of coping with the increasing social support. According to this way, they will get higher life satisfaction. Through learning, the elderly can add social support and improve the ways of coping, so their life satisfaction will be elevated. The specific practices are as follows.

1) Those who have already participated in the study of the elderly universities should be encouraged to carry on; those who have not participated in the study of the elderly universities should be encouraged to get involved in the study; At first, they may start the learning in community centers or nearby institutions, and then partake in various learning activities and form a network of social support; learning from others' experiences and taking it as a reference for the ways of coping with problems; maintaining optimism and improving life satisfaction.

2) Encouraging older people to participate in family gatherings or parties with friends or community members; developing good social relationships and then participating in social work or other social activities; expanding social relationships and maintaining good interpersonal interactions; gaining positive self-worth and adding life satisfaction.

3) Keeping engaging in good social activities which could not only maintain good social support but also provide more suggestions and references to solve problems; then choosing the best solution; maintaining good social support and the ways of coping through the learning process; enhancing subjective feelings.

6.3.2 Suggestions for old-age education organizers

According to the conclusions of this study, the author intends to propose suggestions for the elderly education organizers, and they are as follows.

1. Old-age education institutions should provide courses that meet the learning needs of the elderly and hold active and diverse activities to promote the participation of the aged, thereby improving their life satisfaction.

According to the Conclusion I, Conclusion II and Conclusion III of the study, satisfying learning needs has a positive and significant influence on improving the life satisfaction of the elderly. For keeping a higher life satisfaction of the elderly, this study suggests that it is vital for the elderly education organizers to provide high-quality courses that can meet the learning needs of older people. In this way, their passion to take part in the activities could be inspired. The specific instructions are as follows.

1) In-depth understanding the learning needs and characteristics of the elderly through the investigation of their learning needs; providing courses that meet the needs and daily life routine of the elderly; paying attention to the quality of the curriculum in order to promote their participation in activities and thus improve life satisfaction.

2) Adopting diversified teaching methods, heuristic teaching and adult teaching strategies; attaching importance to the elderly's life experience, learning characteristics and practicality; solving their practical problems and giving more positive feedback to them; building their confidence and improving their interests.

3) Taking diversified and appropriate promotion strategies and activities for different objects; using language and methods close to the life experience of the

elderly; reducing costs and relieving the learning burdens; emphasizing practicality; enhancing the confidence of the elderly in learning; encouraging and guiding older people to participate in the study.

2. Older education organizers should set up courses related to social support and coping in order to improve the life satisfaction of the elderly.

According to the Conclusion III in the study, learning needs, social support and coping of the elderly have predictive power on life satisfaction. Therefore, in the process of projecting the curriculum, the elderly education organizers should assist the aged to expand social support and integrate the ways of coping according to their physiological and psychological ageing. The organizers should also incorporate social support and coping into the curriculum design of the old-age education, so that older people can face their lives with a positive attitude, and their life satisfaction will also be added. Specific practices are as follows.

1) Adding courses that can improve social support and coping; guiding older people to face ageing naturally; taking proactive measures to solve problems; consciously expand social support.

2) Diversified curriculum design; incorporating the meaning and topics of social support and ways of coping into the courses, such as explaining the ageing knowledge, guiding the elderly to face up to and prevent the problems of physiological ageing, dealing with dissension with others, and adaptation of life; consciously improving social support of the elderly and helping them find better ways of coping.

3. In the process of learning, educators should consciously enhance the elderly's social support and the ways of coping, promoting their life satisfaction.

According to the Conclusion I and Conclusion III, it is found that the life satisfaction of the elderly is affected by their learning needs, social support and coping. The elderly education organizers are the front-line staff directly facing the elderly, who is critical to the learning of the aged. If life experiences of older people can be considered during the teaching, their coping and social support can be strengthened through communication and ideas sharing, and the subjective feelings and life satisfaction can be further enhanced. The specific approaches are as follows.

1) Older education teachers giving more encouragement and affirmation to the elderly to increase their confidence and sense of accomplishment and to strengthen and maintain their motivation to learn; meeting their learning needs and stimulating their potential of the elderly; increasing the ways of communication between the elderly and the society through learning; improving the relationship with the family to enhance their happiness in an all-round way.

2) Old-age educational institutions can incorporate ageing-related and daily life-related issues of the aged into the curriculum, and make older people feel involved through group discussions. “What should I do if I have a conflict with my family?” “How to adjust my mindset when facing the death of relatives and friends?” Such questions cannot only stimulate the actual needs of the elderly, but also enhance their learning motivation. Consequently, they can consciously improve the cognitive ability of problems, and find better ways of coping to improve life satisfaction.

6.4 Directions for future research

This study has proposed recommendations for future research on research methodology and research tools.

6.4.1 Research methodology

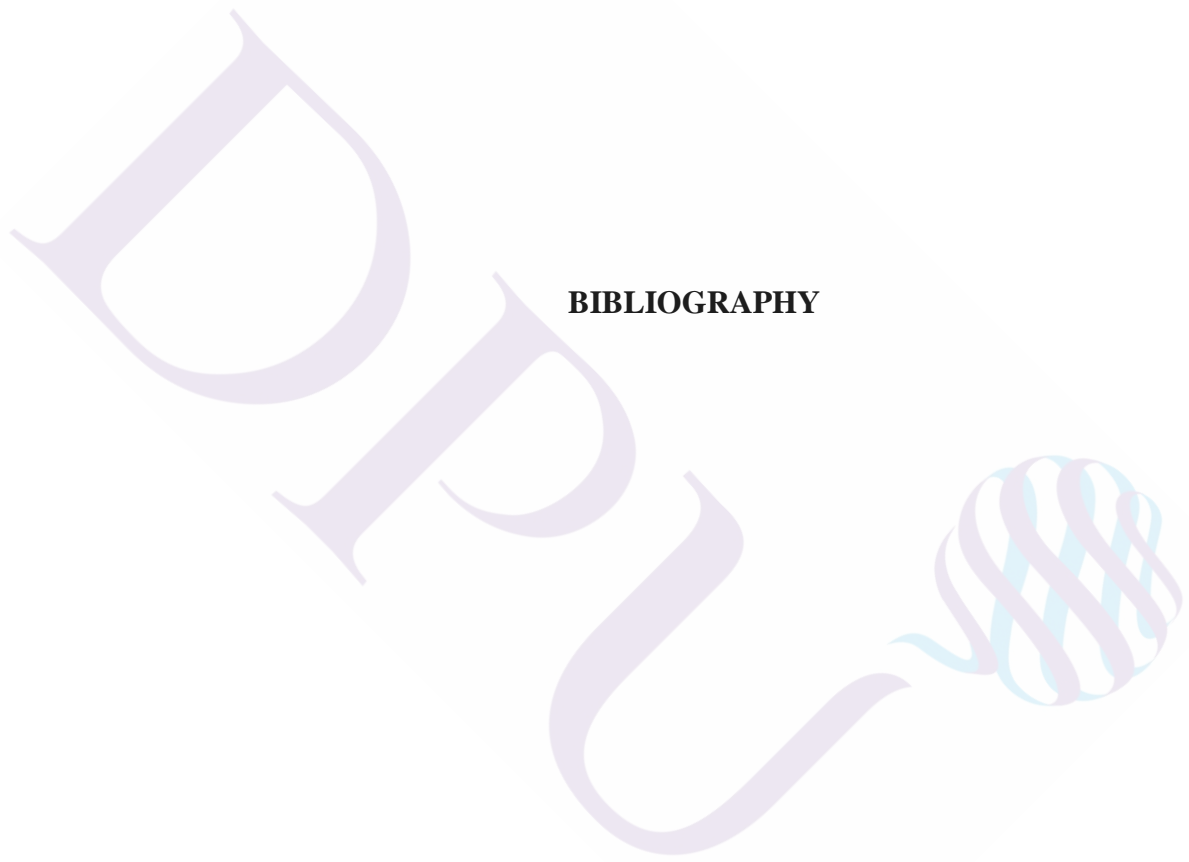
This study has been conducted mainly by questionnaire survey and interviews have been used as a supplementary approach. The research data have been obtained from the questionnaires for statistical analysis, and then the focus group interviews have played a supplementary role in verifying the quantitative research results. However, due to the insufficiency of qualitative research and limited data, it is difficult to find out the deep-seated rules and causes of learning needs, social support and the ways of coping affecting life satisfaction and it is also hard to understand the deep, personalized and true feelings of the elderly. Given this, it is suggested that future research can be conducted based mainly on qualitative research and take quantitative research as supplementary method. A combination of quantitative research and qualitative research can also be adopted to understand the issues related to elderly's learning needs, social support, coping and life satisfaction.

6.4.2 Research tools

This study takes the “questionnaire on the relationships among learning needs, social support, coping and life satisfaction of the elderly in Jinan, Shandong” as a research tool, which contains a total of 79 questions in 4 sub-questionnaires. After the analysis of the reliability and validity, the results show these questionnaires are qualified as research tools. However, during the period of actual questionnaire survey conducted by the author, it has been found that some elderly people are reluctant to carry on when they have answered only a half of the whole questions. This shows that there are too many questions, which is not conducive to carrying on. There are 24 questions in the “life satisfaction sub-questionnaire,” many of which are reverse coded questions or contain ambiguous expressions. For this reason, this study

suggests that follow-up studies can design questionnaires suitable for the elderly in mainland China. In view of this, it is recommended that future research should be more cautious in terms of the number and selection of questions, and avoid causing the subjects' reluctance due to excessive problems.





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APPENDICES

Study questionnaire on the relationship among elderly people's learning needs, social support, coping and life satisfaction

Dear elderly friends:

The following are statements with which you may agree or disagree about your satisfaction and study with life. Please indicate your agreement or disagreement with each of the following items by marking the appropriate box. Please be open and honest with your response. Thank you for your help!

Thanks!

Dhurakij Pundit University
 Professor: Dr Yi-Jian Huang
 Student: Weihong Man
 15 March, 2019

The first Section: "Learning Needs"

	Agree a lot	Kind Of Agree	Unknown	Kind Of Disagree	Disagree a lot
1. I want to learn how to use bank cards, cash machines and mobile payment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. I want to learn knowledge of money management	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. I want to learn how to use modern technologies, such as the Internet and mobile to contact family.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. I want to learn the packaging and instruction manuals of what I have bought.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. I want to know what sports can improve health.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. I want to know more about my own interests.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. I want to learn to make proper arrangement for travel.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. I want to learn to know which diets can improve health.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- | | | | | | | |
|-----|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 9. | I want to know general medical knowledge. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 10. | I want to learn Chinese traditional folklore and culture. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 11. | I want to know the knowledge of organic agriculture. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 12. | I want to learn how to show courtesy when going abroad. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 13. | I want to learn to communicate with children and grandchildren. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 14. | I want to know how to make new friends. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 15. | I want to learn to solve difficulties. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 16. | I want to learn foreign languages. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 17. | I want to develop artistic hobbies, such as painting and pottery. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 18. | I want to learn how to lead a small groups. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 19. | I want to learn to do volunteer social work. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 20. | I want to learn the knowledge of environmental protection. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 21. | I want to know about the relationship between religion and life. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 22. | I want to know the current political and economic situation. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 23. | I want to learn about myself. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

The second section: "Life Satisfaction"

- | | Agree
a lot | Kind
Of
Agree | Unknowr | Kind
Of
Disagree | Disagree
a lot | |
|----|--|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 1. | I can have fun from many things I am doing now. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. | I often participate in some activities. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. | As I grow older, I find that life is better than I originally thought. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

- | | | | | | | |
|-----|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 4. | Most of the things I am doing now are monotonous and boring. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. | I feel as if my life was cut off from the outside world, and there is no pleasure. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. | I have been too lazy to think and to move, and I feel that life is meaningless. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. | Overall, I am satisfied with my current life. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. | I rarely feel bad. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 9. | I am happier now than in my youth. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 10. | I often feel lonely. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 11. | Some things often make me feel very annoyed. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 12. | I am less worried than my friends. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 13. | Although I am physically weak now, I am still very happy. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 14. | I am very important to people around me. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 15. | Compared with people of the same age, I am still lucid. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 16. | It is inevitable that older people have an inconvenience in life, but I have the courage to overcome. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 17. | Others often say that I look good. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 18. | I can handle many things myself without relying on others. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 19. | Although I am older, my mind is still young. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 20. | I feel old and tired of many things. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 21. | No matter what others say, I feel that it's not good to get old. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 22. | Children's attitude towards me makes me feel happy. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 23. | I often play with my kids and grandchildren. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 24. | I often talk to my family about my true feelings. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

- | | | | | | | |
|-----|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 25. | I get along very well with my family most of the time. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 26. | When I am in a bad mood, my family will comfort and support me. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

The third section: "Coping"

- | | Agree
a lot | Kind
Of
Agree | Unknowr | Kind
Of
Disagree | Disagree
a lot |
|-----|---|--------------------------|--------------------------|--------------------------|--------------------------|
| 1. | I try to solve the important problem by various methods. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. | I try to work hard to complete things of my own. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. | When faced with a stressful situation, I take action actively to solve the problem. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. | I always take defensive measures against what may happen. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. | I often share the change of my feelings with other people. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. | I often get together with old friends and share my life experience. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. | I always get emotional support from my relatives and friends. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. | When face with a stressful situation, I always give up. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 9. | I refuse to believe what happens. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 10. | When face with unpleasant things, I always say to myself that this thing is not true. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 11. | I try to make myself feel better by eating. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 12. | I always talk to someone about unpleasant things. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 13. | I always show my state of exhaustion. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 14. | When I sad, I want to be alone. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

The forth section: "Social Support"

	Agree a lot	Kind Of Agree	Unknowr	Kind Of Disagree	Disagree a lot
1. Someone will give me advice about health When I get sick.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Someone will offer advice for me to solve problems when I encounter difficulties.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Someone will give me information to prevent me from being hurt.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Someone will give me information to help learn new things.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Someone will accompany me to do what I want to do when I need.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Someone will accompany me to take part in activities when I need.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Someone will accompany me through a difficult situation when there is an emergency.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. when I feel bad someone will accompany me.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Someone will give me financial support.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Someone can provide transportation to take me to where I want to go.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Someone help me deal with affairs.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Someone help me buy what I need.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Someone can help me handle daily chores when I need.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Someone always care about my health.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Someone can encourage me.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. Someone can relieve my emotion of boredom.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

The End.

Thanks for your help.