Development and Psychometric Testing of the Active Ageing Scale for Thai People (AAS-Thai)

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ชื่อวิทยานิพนธ์ การพัฒนาและทดสอบคุณภาพแบบประเมินการสูงวัยอย่างมีศักยภาพสำหรับประชาชนไทย
ผู้เขียน นายกัตติกา ธนะขว้าง
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บทคัดย่อ

การวิจัยนี้มีวัตถุประสงค์เพื่อศึกษาโครงสร้างแนวคิดของการสูงวัยอย่างมีศักยภาพในประชาชนไทย พัฒนาเครื่องมือที่เฉพาะเจาะจงกับบริบทวัฒนธรรมไทย และทดสอบคุณภาพของแบบประเมินการสูงวัยอย่างมีศักยภาพ โดยได้ดำเนินการ 3 ระยะ รวม 8 ขั้นตอน ระยะที่หนึ่งมี 2 ขั้นตอน ได้แก่ 1) การทบทวนวรรณกรรมอย่างเป็นระบบ และ 2) การสนทนากลุ่มและสัมภาษณ์เชิงลึก ระยะที่สองมี 3 ขั้นตอน ได้แก่ 1) การออกแบบข้อคำถาม 2) การตรวจสอบความตรงเชิงเนื้อหา และ 3) การสัมภาษณ์ความเข้าใจในข้อคำถามของผู้สูงอายุ และระยะที่สามมี 3 ขั้นตอน ได้แก่ 1) การทดสอบคุณภาพเบื้องต้น 2) การเก็บข้อมูลทั่วประเทศ และ 3) การทดสอบคุณสมบัติของเครื่องมือ

การพัฒนาเครื่องมือนี้ใช้แนวคิดการสูงวัยอย่างมีศักยภาพขององค์การอนามัยโลก (2002) ร่วมกับแนวคิดผู้สูงอายุที่มีคุณค่าเชิงบวก (เช่น ผู้สูงอายุที่ สุขภาพดี ประสบความสำเร็จ และยังประโยชน์) มาเป็นฐานในการออกแบบ โดยใช้การทบทวนวรรณกรรมอย่างเป็นระบบเพื่อเป็นข้อมูลพื้นฐานในการออกแบบการศึกษาเชิงคุณภาพโดยเก็บข้อมูลจากการสนทนากลุ่มและการสัมภาษณ์เชิงลึกผู้สูงอายุ 64 คน ผลการศึกษาพบว่าการสูงวัยอย่างมีศักยภาพ ครอบคลุม 3 เสาหลัก ได้แก่ สุขภาพ การมีส่วนร่วม และความมั่นคงในชีวิต ประกอบด้วย 6 มิติ ซึ่งมี 19 องค์ประกอบย่อย และได้นำไปออกแบบข้อคำถามซึ่งถือว่าเป็นข้อความที่พัฒนาจากฐานบริบทผู้สูงอายุไทย ได้ชุดคำถามของแบบวัดฉบับร่าง จำนวน 81 ข้อ แบบวัดการสูงวัยอย่างมีศักยภาพฉบับร่างนี้ได้ผ่านการตรวจสอบความตรงเชิงเนื้อหาโดยผู้เชี่ยวชาญ 7 ท่าน และตรวจสอบความชัดเจน และความเหมาะสมในการนำไปใช้ โดยผู้สูงอายุ จำนวน 10 คน โดยใช้วิธีการสัมภาษณ์ความเข้าใจในข้อคำถาม ทำให้ได้ข้อคำถาม 60 ข้อ ซึ่งผ่านการตรวจสอบมีค่าดัชนีความตรงเชิงเนื้อหาในระดับสูง (CVI = 0.91) การทดสอบคุณภาพเบื้องต้นกับกลุ่มผู้สูงอายุ 30 คน โดยใช้การวิเคราะห์ข้อคำถามและความสอดคล้องภายใน ผลที่ได้ทำให้ข้อคำถามมีจำนวนเพียง 47 ข้อ โดยมีค่าอัลฟาครอนบาซเท่ากับ 0.97 ทั้งนี้แสดงถึงเครื่องมือนี้มีความสอดคล้องภายในดีมาก

แบบประเมินนี้ได้ถูกนำไปใช้ในภาคสนามกับกลุ่มตัวอย่างขนาดใหญ่ โดยการเก็บข้อมูลทั่วประเทศ ในผู้สูงอายุจำนวน 500 คน ครอบคลุมพื้นที่ 4 ภาคของประเทศไทย (ภาคเหนือ ตะวันออกเฉียงเหนือ กลาง และใต้) การวิเคราะห์ข้อมูลโดยใช้วิธีการวิเคราะห์องค์ประกอบหลัก (Principal component analysis) โดยการหมุนแกนด้วยวิธีแวริแมกซ์ (Varimax method) พบว่าเครื่องมือประเมินการสูงวัยอย่างมีศักยภาพฉบับสุดท้ายมีจำนวน 36 ข้อ ประกอบด้วย 7 มิติ ได้แก่ (1) การพึ่งพาตัวเองได้ (2) การร่วมกิจกรรมและทำประโยชน์ให้สังคม (3) การเจริญทางปัญญา (4) การสร้างความมั่นคงด้านการเงิน (5) การมีวิถีชีวิตที่ส่งเสริมสุขภาพ (6) การเรียนรู้อย่างต่อเนื่อง

และ (7) การสร้างความรักความผูกพันในครอบครัวเพื่อมีผู้ดูแลยามชรา โดยองค์ประกอบเหล่านี้สามารถร่วมกันทำนายความแปรปรวนของการสูงวัยอย่างมีศักยภาพ ได้ร้อยละ 69 เครื่องมือประเมินการสูงวัยอย่างมีศักยภาพมีความตรงเชิงโครงสร้างอยู่ในระดับดีมาก นอกจากนี้เครื่องมือนี้ยังมีค่าความเชื่อมั่นภายในเท่ากับ 0.95 และค่าคะแนนจากการทดสอบซ้ำ 2 ครั้งภายใน 2 อาทิตย์ เท่ากับ 0.92 ซึ่งแสดงถึงการเป็นที่ยอมรับในความเที่ยงและความคงที่ของเครื่องมือ

แบบประเมินการสูงวัยอย่างมีศักยภาพที่พัฒนาขึ้นใหม่นี้ ประกอบด้วยข้อความที่สร้างจากพื้นฐานบริบทวัฒนธรรมไทย มีความตรงและความเที่ยงในระดับดีมาก สำหรับการวัดคุณลักษณะและกระบวนการสูงวัยอย่างมีศักยภาพในหลากหลายมิติ เครื่องมือนี้มีความเหมาะสมที่จะนำไปใช้สำหรับการประเมินระดับการสูงวัยอย่างมีศักยภาพในผู้สูงอายุไทยได้

คำสำคัญ: การสูงวัยอย่างมีศักยภาพ การพัฒนาเครื่องมือวิจัย การประเมินคุณสมบัติเครื่องมือวิจัย เครื่องมือวัดที่สอดคล้องกับวัฒนธรรม ผู้สูงอายุไทย

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CHAPTER 1

INTRODUCTION

Background and Significance of the Study

Given the rapid fertility and mortality declines during the past decades in Thailand, the percentage of the older population, defined as persons age 60 years and older, has dramatically increased from 5% or about 1.2 million in 1960 to 9% in 2000 or about 6 million (Knodel & Chayovan, 2009a). Most recently, the number of older people is about 14.7% of total population (Institute for Population and Social Research, 2013), indicating that Thailand is becoming an ageing society. By 2035, it is expected that Thailand will face the challenge of an aged population encompassing 25% of the total population (Institute for Population and Social Research, 2006). The rapid growth of the ageing population along with socio-economic changes poses important challenges for various problems, particularly health and socio-economics (Kespichayawattana & Jitapunkul, 2009; Suwanrada, 2009).

Although the Thai older population has tended to increase, they are rarely considered as a valuable resource for social development. Common societal perceptions are largely negative stereotypes that lead to a subjective and biased image of older persons such as useless, poor health and functioning, weak or dependent (Fernández-Ballesteros et al., 2011; Ory et al., 2003; Yoon & Kolomer, 2007). Along with various problems both health and economics mentioned above, they are therefore viewed as a burden for the family and the society, also perceived as being the receivers rather than the providers of social support. However, at the present, the paradigm has been shifted to accept the values and potentials of older persons with the notion that they can contribute their productive activities to facilitate to the social development (Buys & Miller, 2006; Stenner, McFarguhar, & Bowling, 2011). The older persons themselves can become a force to be reckoned with as they not only have a wealth of experience and talents but they also have the potential to contribute to society and to their own well-being. It is pertinent that the society's views need to

be changed accepting in positive ageing that an older person is a human being who can maintain an active life and contribute their productive activities to society (Davey & Glasgow, 2006).

The extent to which older persons are active or productive in their communities is a central interest in societies with growing numbers of older people and the need for how to age actively or productively is a challenge to all countries (Caro et al., 2009). One of the most important issues related to government plans and the direction for developing the elderly task in the future is "*Active Ageing*" (Mayhew, 2005; Walker, 2006). The policy framework builds upon the premise that the vast majority of people of all ages, specifically older people, want to be active participants and contributors to society (Peng & Fei, 2013; WHO, 2002). Similarly, Thailand has also concerned and formulated strategic policies of active ageing as a national agenda (Jitapunkul, 2001; Jitapunkul & Wiwatvanich, 2009) to promote older people' ability to remain actively and productively engaged in society.

The term "active ageing" was adopted by the World Health Organization in the late 1990s. It is meant to convey a more inclusive message than "healthy ageing" and to recognize the factors in addition to health care that affect how individuals and populations age (Kalache & Kickbusch, 1997). In Thailand, the term "active ageing" is still not defined in Thai words that have been accepted in general. However, it has been widely agreed that active ageing is the capacity of people as they grow older to lead productive and healthy lives in their families, societies and economics.

Promoting the ideas expressed in WHO's framework through the promotion of country or regional action plans means taking a positive approach to population ageing. WHO argues that countries can afford to get ageing quality if governments, international organizations and civil society enact "active ageing" policies and programs that enhance health, participation and security of older citizens (WHO, 2002). Although WHO provided framework and determinants of active ageing, it was quite broad and suggested for policy strategy to all countries in general (Stenner, McFarguhar, & Bowling, 2011). For adopting this concept to older persons in Thailand, it should be applied to be consistent with Thai context.

Despite the increasing interest in active ageing, there is no agreement around a common definition. This inconsistency is reflected in the wide range of models and indicators used in the literature covering different approaches to the study of active ageing. Moreover, many similar concepts such as healthy ageing, productive ageing, and successful ageing have sometimes been used interchangeably with active ageing (Bowling, 2008; Buys & Miller, 2006; Hsu, 2007; Stenner, McFarquhar, & Bowling, 2011). These concept boundaries are not clear and some concepts remain ambiguous and overlapping (Bowling, 2009; Davey & Glasgow, 2006). The lack of consensus around a definition of active ageing has important consequences; for example, communication difficulties between those using the concept, problems in the development and selection of instruments to measure active ageing attributes, and blurred or incomplete social policy efforts. A good understanding of the concept of active ageing and of its determinants might contribute to policy implications for implementing the appropriate interventions.

Research on active ageing has grown over recent decades but the knowledge continues to be based overwhelmingly on Western studies (Ranzijn, 2010). This is regrettable given the substantial Eastern and Western cultural differences, for example, the strong emphasis on independence in the West as contrasted with Thais' acceptance of interdependence (Ingersoll-Dayton et al., 2001). Regarding the literature review in Thailand, it was found that there were very few studies on active ageing. A few exceptions are Yatniyom (2005) and Kespichayawattana and Wiwatvanich (2006) who studied active ageing attribution in healthy and well-known Thai elders, and Nunsupawat (2010) who focused on active ageing in older Thai people living in the northeastern region. However, they were all exploring the meaning of active ageing by using qualitative approaches in the specific elderly group. To our knowledge, studies focusing on positive ageing such as healthy, successful and productive ageing in Thai elderly were also limited. Specifically, there is no study about scale development to measure active ageing attributes. Therefore, the establishment of development and testing active ageing scale for Thai people is needed.

An accurate measure of active ageing may be challenging to the area of ageing researchers because no multidimensional instrument is available for capturing

the positive aspect of the Thai elderly. Currently, one way to measure active ageing is to study each dimension of health, participation, and security, separately. This creates a problem because older adults do not experience being actively engaged one dimension at a time. However, there are a few instruments measuring other surrogate terms related to positive ageing such as healthy ageing (Thiamwong et al., 2008) and successful ageing (Flood, 2010, Troutman et al., 2011). Failure to consider the multiple dimensions in instrument development and measurement creates a methodological quandary, because the older people characterize their active ageing in its entirety, not one aspect at a time.

To measure any aspects of interest, using any measures developed in other parts of the world may be problematic because of differences among cultural contexts. The development of culturally-sensitive measures is challenged for research on ageing in a particular context (Ingersoll-Dayton, 2011). Therefore, a newly developed instrument measuring active ageing that is considered as a culturally-grounded measure for Thai people is needed. Therefore, this study aims to advance the knowledge related to active ageing in older adults by identifying the processes involved with being actively engaged in life, and presents an effort to understand the components of active ageing that are indigenous to older Thai people. The findings will be useful in developing the appropriate instrument to evaluate active ageing attributes of the older persons consistent with Thai context. As the active ageing concept is more fully understood, it may enhance the advancement of healthcare policies for older Thai adults in order to improve their quality life in their later years.

Objectives of the Study

The goal of this study is to develop a valid and reliable instrument for measuring active ageing for the general Thai elderly population. The research process is guided by the following objectives:

1. To explore the conceptual structure of active ageing from the perspective of Thai elderly
2. To develop an instrument to measure active ageing for Thai people (AAS-Thai)

3. To test the psychometric properties of the newly developed instrument measuring active ageing for Thai people (AAS-Thai) with respect to content validity, construct validity, and reliability

Research Questions

1. What is the conceptual structure of active ageing from the perspective of Thai elderly?
2. What are operational components and relevant items composing to the instrument for measuring active ageing for Thai people?
3. Is there sufficient evidence of validity and reliability supporting the newly developed instrument for measuring active ageing for Thai people?

Conceptual Framework

To focus on the Thai elderly, the conceptual framework of active ageing was developed based on four main aspects: (1) active ageing concept proposed by World Health Organization (WHO, 2002) and related positive ageing concepts, (2) a concept of active ageing among Thai elderly, (3) Thai cultural context, and (4) a norm-referenced framework.

1. Active ageing concept and related positive ageing concepts

Active ageing concept was based on three pillars suggested by WHO (2002): health; participation; and security. These three pillars are inextricably and powerfully linked. The building and strengthening of one pillar is both dependent upon, and central to, the building and strengthening of each of the other two. Additionally, it was guided by relevant conceptual models of positive ageing including healthy ageing (Hansen-Kyle, 2005; Marshall & Altpeter, 2005; Thiamwong et al., 2008), productive ageing (Morrow-Howell et al., 2001; Neovakul, 1993), and successful ageing (Crowther et al., 2002; Flood, 2002, 2005; Rowe & Kahn, 1997).

1.1 Active ageing

Active ageing involves three major aspects, health, participation and security, described as follows.

1) Health

According to the World Health Organization (WHO), good health is not merely an absence of illness or infirmity, but a state of complete physical, mental, social and spiritual well-being (Robinson & McCormick, 2005). The WHO definition of health takes into account not only the condition of the body but also the state of the mind and spirit. Thus, health is a general concept that is quite broad and difficult to define (Atchley & Barusch, 2004; Ebersole et al., 2005). The concepts of health are also socially and culturally variables (Lupton, 1994) and as a result that are difficulties in the development of standardized methods of measuring. One area of argument is that the new concept of health both in Thailand and other countries is shifting to "wellness". It is a holistic concept, involving physical, mental, social, and spiritual well-being (Chuengsatiansup, 2003; Robinson & McCormick, 2005; Simnett & Ewles, 1996).

Health is the most important aspect of active ageing (Chong et al., 2006). To achieve good health in later life, it is essential to take advantage of the various opportunities over the life course which contributes to optimum functioning and avoidance of risk factors (Rowe & Kahn, 1997). Gibson (1995) mentioned that healthy aging denotes achieving one's potential and optimizing meaningful health at a level of physical, social, and psychological well-being when ageing. Being healthy is defined as the ability of an older person to maintain or improve his/her optimal health by a health-promoting lifestyle, optimizing mental, cognitive and physical functions, active engaging with life, and positive spirituality (Crowther et al., 2002; Stephens & Flick, 2010; Thanakwang & Soonthorndhada, 2011).

Health is seen as a resource for everyday life, not the objective of living. Most existing studies in older persons have indicated that being healthy is an interactive process of positive changes of individual health throughout the lifespan (Bowling, 2008; Hansen-Kyle, 2005; Marshall & Altpeter, 2005; Peel, Bartlett, & McClure, 2004; Thiamwong et al., 2008). There have been well documented that being healthy encompasses four components: being physically active; being

mentally/cognitively active; promoting health and preventing disease and injury; and growing positive spirituality.

Being physically active is widely found in several studies indicating as an important indicator of healthy and active ageing (Bowling, 2008; Hoglund, Sadovsky, & Classie, 2009; Stenner, McFarquhar, & Bowling, 2011; Terrill & Gullifer, 2010; Thiamwong et al., 2008). Not surprisingly, keeping as physically alive and maintaining physical health and functioning have been indicated as the most common perceptions of active ageing (Bowling, 2008; Rattanamongkolgul et al., 2012; Stenner, McFarquhar, & Bowling, 2011).

Accompanying with physically active, keeping mentally active or keeping their mind alert generates to promote ageing actively and improve memory and physical health (Clarke & Warren, 2007; Laditka et al., 2009; Stenner, McFarquhar, & Bowling, 2011; Thiamwong et al., 2008). Maintaining high cognitive functioning has been well documented that it is one of the crucial indicators of healthy and successful ageing (Hansen-Kyle, 2005; Flood, 2002; Peel, Bartlett, & McClure, 2004; Rowe & Kahn, 1998).

With respect to maintaining health, promoting health and preventing disease and injury are encouraged to adopt positive personal health practices (Adams-Fryatt, 2010; Buys & Miller, 2006; Chong et al., 2006; WHO, 2002). Health promoting behaviors occur during every stage of life in order to maintain or increase the level of well-being, achieve life goals, and attain individual desires (Palank, 1991; Pender, Murdaugh, & Parsons, 2006). Promoting healthy behaviors and preventing diseases facilitate the elderly individuals to achieve being healthy in the late lives (Marshall & Altpeter, 2005; WHO, 2002).

According to the new paradigm of holistic health proposed by the World Health Organization and the health reform movement in Thailand, the traditional definition of health has been reconceived and expanded to include a spiritual dimension of life as an essential component of being healthy (Chuengsatiansup, 2003) and ageing successfully (Hsu, 2007). Currently, several scholars determine that spirituality is a pivotal aspect of healthy and successful aging (Crowther et al., 2002; Flood, 2002; Hsu, 2007; Phelan et al., 2004; Register & Herman, 2010).

2) Participation

According to concepts of active ageing, proposed by World Health Organization (WHO, 2002) and obtained from an extensive literature review, participation considered as active ageing includes engaging in socioeconomic, social, culture and spiritual activities. The Western Australia's Active Ageing Task Force expanded definition of participation include: participation in paid and unpaid work; in creative, cultural and spiritual pursuits; in family growth and interaction; in professional and business development and in both formal and informal learning; in environmental and heritage management, in government, political, and advocacy service; and in the shared envisioning, planning, teaching and nurturing for the future (Davenport, 2003).

Tasks of the elderly meaningful participations have been documented into four critical features. The first is being actively engaged in life. Active engagement with life with respect to engaging social activities or individual leisure activities is one of the important determinants of successful ageing (Rowe & Kahn, 1997) and active ageing (Buys et al., 2008; Stenner, McFarquhar, & Bowling, 2011; Walker, 2009). Engaging actively in life is seen as several meaningful activities that keep the elders busy and actively engaged in their lives such as keeping actively engaged in favorite activities with either family members or friends (Buys & Miller, 2006; Kespichayawattana & Wiwatvanich, 2006; Terrill & Gullifer, 2010), maintaining meaningful leisure activities (Scherger, Nazroo, & Higgs, 2011; Laditka et al., 2009; Thang, 2005) and lifelong learning (Boulton-Lewis, 2010; Buys et al., 2008).

The second aspect of participation concerning for active ageing is maintaining social participation (Cloos, 2010). Social participation activities may be especially important for older persons because they lead to social well-being (Rebecca et al., 2002). Therefore, improving social participation in older adults may increase their capacity for active ageing. Maintaining socially active engagement may be the myriad of meaningful activities performed within the context that the older persons connect or contribute their benefits to others and the whole society.

The third critical aspect of participation is contributing productive activities. Bass and Caro (2001) defined productive activities as any activity by an

older individual that contributes to producing goods or services, or develops the capacity to increase their productivity whether the individual is paid for work or not. This is inner-directed behaviors, personally meaningful and satisfying to the older person, which emphasizes personal or humanistic philosophies and then provides concrete societal contributions made to others (Kaye, Butler & Webster, 2003). Productive engagement in older adults has been implied as an important factor of successful and active ageing that they contribute many capacities including social or economic activities that are of great value to older people themselves, to their families, as well as to society (Hoglund, Sadovsky, & Classie, 2009; Nuntsupawat et al., 2010; Ranzijn, 2010; Thanakwang & Isaramalai, 2013).

3) Security

In security aspect of active ageing defined by WHO (2002), it has been usually addressed on the social, financial and physical security needs and rights of people as they age. Specifically, older people are ensured of protection, dignity and care in the event that they are no longer able to support and protect themselves (Harper, 2009; WHO, 2002). Long-term opportunities for participation in the paid workforce are a fundamental generator of security, as a means of accumulating financial resources, secure housing, and supporting strong family and social networks.

Prior to existing studies in security aspects in older adults, several dimensions of the elderly securities have been addressed. First, being safe from any harm or abuse by significant others and environment surrounding in daily living is considered (Buys et al., 2008; Kespichayawattana & Wiwatvanich, 2006). The second substantial dimension of security is ensuring to be secured for income, housing and caregivers (Buys et al., 2008; Kespichayawattana & Wiwatvanich, 2006). It has been argued that having a sense of security influences many aspects of the older adults' life quality and well-being. The third dimension of security is being supported and having satisfying relationships with family members and significant others surrounding. Being supported by having someone to do activities with and someone with whom they could have a trusting and satisfying relationships makes older adults feel secure (Buys et al., 2008; Chong et al., 2006; Hsu, 2007).

1.2 Healthy ageing

Healthy ageing is described as a lifelong process optimizing opportunities for improving and preserving health and physical, social and mental wellness, independence, quality of life and enhancing successful life-course transitions (Peel, Bartlett, & McClure, 2004). As healthy ageing has been multifaceted and quite broad, its concept has been therefore used in a variety of definitions and with a variety of underlying assumptions (Hansen-Kyle, 2005; Peel, Bartlett, & McClure, 2004). Recently, a number of studies define healthy ageing as a process (Bryant, Corbett, & Kutner, 2001; Hansen-Kyle, 2005; Peel, Bartlett, & McClure, 2004) or look at health as a continued wellness, feeling meaningful and worthwhile, rather than focus on disease or infirmity (Atchley & Barusch, 2004; Ebersole et al., 2005; Marshall & Altpeter, 2005).

In summary, healthy ageing is conceptualized as holistic health and allows people to realize their potential for physical, mental, social and spiritual well-being throughout later life. Healthy ageing is defined as the ability of an older person to maintain or improve his/her optimal health by a health-promoting lifestyle, optimizing mental, cognitive and physical functions, engaging with social life and providing productive activities to society. Thus, healthy ageing has become firmly established as an important concept for health care and health promotion.

1.3 Successful ageing

Two successful ageing concepts that have been best known and widely applied in many studies are the selection-optimisation-compensation model developed by Baltes and Baltes (1990) and the Rowe and Kahn's successful ageing model (Rowe & Kahn, 1998). The principle of selection-optimisation-compensation model (Baltes & Baltes, 1990) focuses on adaptive processes and responses of the elderly individuals to the loss of biological, mental and social reserves. Adaptive competence is viewed as the ability of older persons to adapt to a variety of age-related challenges. Successful ageing can be achieved when people select goals and tasks that they can do, optimize capacities, and compensate by finding new means to achieve functioning (Baltes & Smith, 2003). Rowe and Kahn (1998) have defined that successful ageing has three components: 1) avoiding disease or minimizing illness and disability, 2)

maintaining high cognitive and physical functioning, and 3) active engagement in life. Rowe and Kahn argued that within the category of the normal, non-disabled population, a distinction can be made between 'usual' and 'successful' ageing (Rowe & Kahn, 1998). Moreover, consistent with the new health concept proposed by WHO, spirituality is considered as another important component of health and well-being. Crowther and colleagues (2002) have proposed that successful ageing should include a positive spirituality dimension. They also argue that spirituality is inextricably associated with religiosity and other dimensions of successful ageing. If positive spirituality is incorporated, it will increase the proportion of elders characterized as ageing successfully.

In nursing perspective, Flood (2002) analyzed the concept of successful ageing using Walker and Avant (1995)'s method of concept analysis. Based on the selection-optimisation-compensation model, Roy adaptation model and gerotranscendence, successful ageing was defined as a favorable outcome as perceived by the individual, and his/her ability to adapt to the cumulative changes associated with the passage of time, while experiencing spiritual connectedness and a sense of meaning or purpose in life (Flood, 2002). Thus, successful ageing is multidimensional evolving individual's body, mind, and spirit (Flood, 2005). There are four key dimensions that are interrelated and operating together: 1) functional performance mechanisms (i.e., health promotion activities, physical health, mobility); 2) intrapsychic factors (i.e., creativity, low level negative effectivity, personal control); 3) spirituality (i.e., spiritual perspective and religiosity); and 4) gerotranscendence (i.e., decrease to death anxiety, engagement in meaningful activities, relationships, self-acceptance, and wisdom) (Flood, 2002, 2005).

1.4 Productive Ageing

The idea of 'Productive Ageing' emerged in the early 1980s largely as a reaction against the ageism that devalued older people in the US (Morrow-Howell, Hinterlong, & Sherraden, 2001). Early on, productive activity was narrowed linking to only economic activity or paid work of older persons' participation in the labor market (Herzog et al., 1989). Later on, scholars defined productive activity as the older adult behaviors which produce goods and services whether paid for or not (Bass,

1995), particularly including socially valued roles performed by older adults (Bass & Caro, 2001; Burr et al., 2002; Caro et al., 2009; Dosman et al., 2006). In the productive aging paradigm, older persons make contributions to society through various types of activities. Much of research have shown that many older adults remain productive through contributions in the paid labor force, volunteer activities, family assistance, and/or self-maintenance (Bass & Caro, 2001; Caro et al., 2009; Morrow-Howell, Hinterlong, & Sherraden, 2001).

Kaye, Butler and Webster (2003) argued that productive ageing should include inner-directed behaviors, personally meaningful activities and satisfying to the older person. There include two dimensions of productive ageing that are interrelated: 1) an external utilitarian view that emphasizes concrete societal contributions made to others, whether they be individuals, families, groups, organizations, or communities; and 2) an internal affective view, which emphasizes personal or humanistic philosophies positively impacting one's own well-being and quality of life. However, the meaning and forms of the productivity and the social value of productive ageing accorded to older people may vary greatly across cultures (Neovakul, 1993; Willcox et al., 2007).

2. A concept of active ageing among Thai elderly

A conceptual structure of active ageing among Thai elderly is based on literature review in conjunction with a culturally-grounded approach using focus groups and interviews. For these older Thai adults, six domains of active ageing were identified as 1) being self-reliant; 2) keeping busy with daily living; 3) maintaining healthy lifestyle; 4) being actively engaged with society; 5) growing spiritual wisdom; and 6) managing later life security.

1) Being self-reliant

Being self-reliant was viewed as an important aspect of active ageing as it is the process that facilitates older persons' independence and assures they are not a burden to their families. They can rely on themselves without depending on others and do what they want within their abilities. This includes living independently, having autonomous decision making, and having financial independence.

2) Keeping busy with daily living

Keeping busy with daily living refers to elderly engaging in daily activities to keep themselves busy and active. These tasks range from basic activities related to being independent to more complicated activities associated with social living. It consists of three components: being physically active, staying cognitively active, and engaging in meaningful activities.

3) Maintaining healthy lifestyle

Maintaining healthy lifestyle is viewed as one of the processes that facilitate being healthy and active. It consists of four components: maintaining exercise, eating healthful food, managing stress, and avoiding substance abuse. Specifically, the elderly respondents consistently held the view that exercising and eating healthy food is especially important to promote good health.

4) Being actively engaged with society

Being actively engaged with society refers to engaging in social activities. It is viewed as one of the important domains of active ageing. Leading an active life keeps the elders actively engaged in their lives through such activities as doing favorite activities within the community or society in which they live. It consists of three components: participating in social activities, connecting with friends, and contributing to society.

5) Growing spiritual wisdom

Growing spiritual wisdom is perceived as the crucial aspect of being human and having a meaningful life. It is involving intrapersonal strength and relating to religion or transcendence. It includes four components: making merit, being acceptance and calmness, trusting and practicing religious doctrines.

6) Managing later life security

Managing later life security is also addressed as the important aspect of active ageing. To manage their later-life security, there were three components:

managing living arrangement, building financial security, and strengthening family ties for being cared for in later life.

3. Thai cultural context

With regard to construct a culturally-sensitive measure of active ageing for Thai people, the Thai cultural context that differs from Western context needs to be concerned. Therefore, it is essential to include Thai cultural aspect in developing the tool which is grounded from the views of the Thai elderly. The Thai cultural context in relation to older people included collective society, interdependence, honoring and showing respect toward older persons, filial piety, and belief in religious (Caffrey, 1992; Ingersoll-Dayton & Saengtienchai, 1999; Ingersoll-Dayton et al., 2001; Kespichayawattana, 1999; Komjakraphan et al., 2009). The specific culture of interdependence and reciprocity with regard to the collectivistic nature in the Thai context that differs distinctly from the Western context in which selfhood as independent and autonomous is highly valued (Fox, 2005; Ingersoll-Dayton et al., 2001). Social connectedness, social activities, social support, and contributions to others are commonly seen in collectivistic societies such as Thailand. Thai society has its own very specific way of a hierarchical tradition that people occupy differently ranked social positions and roles (Choowattanapakorn, 1999). The older people are typically honored and respected by younger people. For example, in E-san (northeastern) context, younger people used the terms “phor-yai” (grandpa) and “mae-yai” (grandma) to honor and respect older people (Rattanamongkolgul et al., 2012). Ingersoll-Dayton and Saengtienchai (1999) addressed that respect for the elderly has deep roots in traditional Thai culture. These roots retain their stability but also evidence change due to the alterations in family structures and function, education, income, and modernization (Ingersoll-Dayton & Saengtienchai, 1999).

It is widely accepted that children are the fundamental resources of social support to the older parents in Thailand. Although the coresidence of older parents with at least one child is declining in Thailand, it does not appear to represent an erosion of their support system because most of the elderly have children living nearby and there is frequent daily contact between them (Knodel & Chayovan, 1997). Beliefs, values and cultural traditions from Buddhism contribute to social norms that

involve children providing nurturance to their older parents. The value of filial obligation is still strong and continues to be cultivated through cultural norms and the Buddhist doctrine of karma, *'bunkhun'* (assistance from parents), and merit that involves repayment to parents for their cares and nurtures once (Ingersoll-Dayton & Saengtienchai, 1999; Kespichayawattana, 1999). Taking care of older parents in Thai culture is based on the concept of "katunyu" (the sense of gratitude towards parents) and "katavedi" (the obligatory actions in paying back to parent) (Kespichayawattana, 1999). The Thai cultural and traditional values, particularly the relationship among extended family member, the concept of familial support for older parents, the kinship relationships, and the patronage tradition, all help enhance the possibility of active ageing in Thailand (Nantsupawat et al., 2010).

4. A norm-referenced framework

To construct the active ageing scale for Thai people (AAS-Thai), a norm-referenced framework is used. An assessment designed within the norm-referenced framework is important in guiding the research design and interpretation of the measurement, yielding results that are primarily understood as measuring an active ageing relative to the performance of a well-defined reference group that has taken the same assessment. Thus, this framework is widely used when the interest is in evaluating the performance of a subject relative to the performance of other subjects in some well-defined comparison or norm group. Moreover, the reference group might be the same sample, or it might be subjects nationwide to whom the same measure was administered. This framework is normally utilized to construct a tool or a method to measure a specific characteristic which can maximally discriminate among subjects possessing different amounts of the characteristic (Waltz, Strickland, & Lenz, 1991). Therefore, the scores of Thai older people from taking the AAS-Thai are compared with other elderly subjects.

The conceptual framework of the Active Ageing Scale for Thai people (AAS-Thai) is demonstrated in Figure 1.

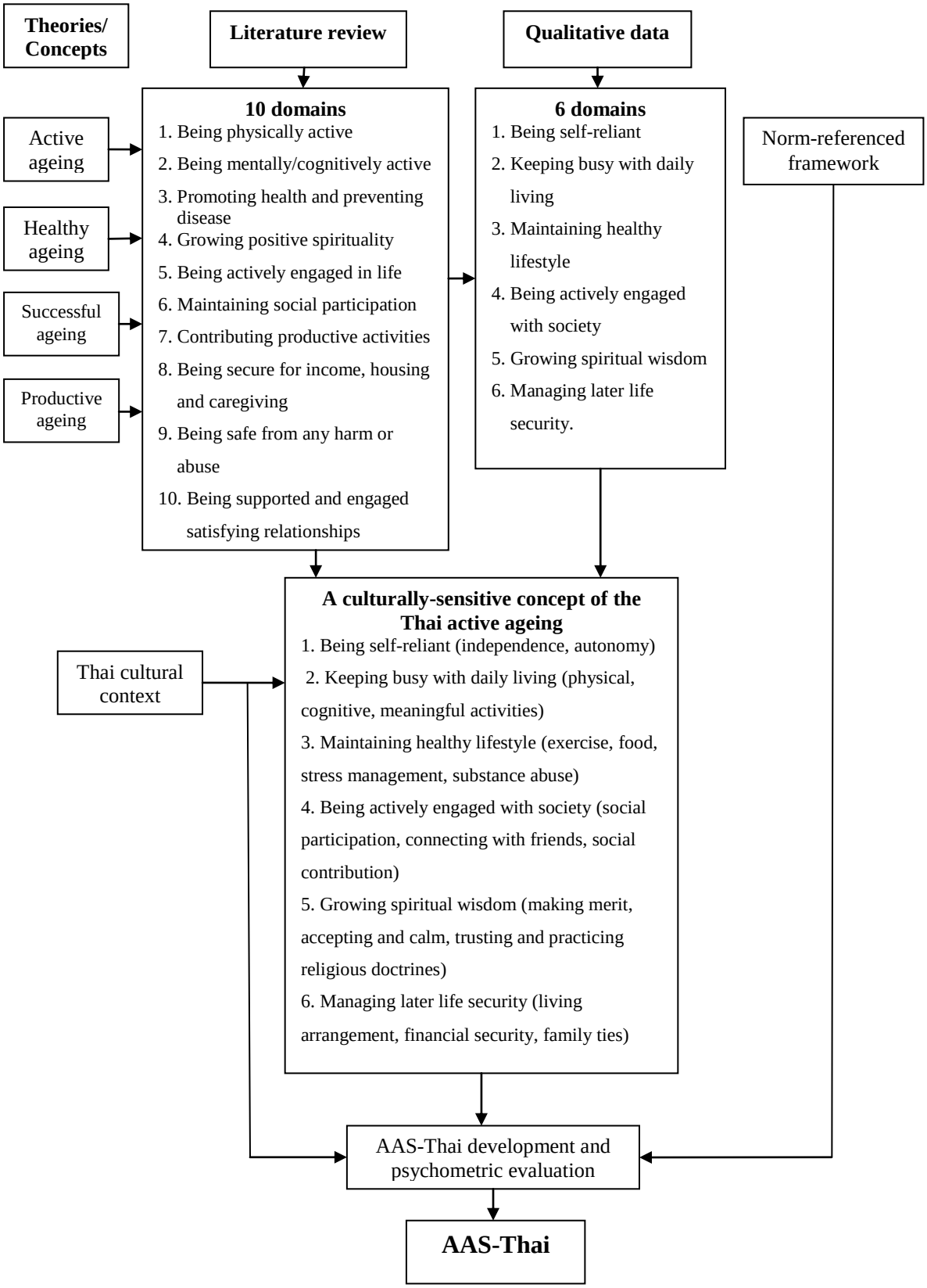

Figure 1 Conceptual framework of the AAS-Thai

Definition of Terms

Active ageing refers to a lifelong process accompanied by continuing opportunities for a variety of health, participation and security in terms of being proactive in promoting health, staying actively engaged in life and maintaining social and productive engagements, and being ensured of security in late life.

Health refers to a process optimizing opportunities for improving and preserving being healthy in late life. It is viewed as holistic involving physical, mental, social and spiritual aspects, composing of four major dimensions: 1) being physically active, 2) being mentally/cognitively active, 3) promoting health and preventing disease and injury, and 4) growing positive spirituality.

Participation refers to a process of active, social and productive engagements within the lives of older persons, participating with family, friends, and society and contributing their meaningful productivities to others. Active participation includes three main dimensions: 1) being actively engaged in life, 2) maintaining social participation, and 3) contributing productive activities.

Security refers to the process to be secured in social, financial and physical needs and rights of people as they age. Specifically, older people are ensured of protection, dignity and care in the event that they are no longer able to support and protect themselves. This security domain of active ageing consists of the three key dimensions: 1) being safe from any harm or abuse, 2) ensuring to be secured for income, housing and caregivers, and 3) being supported and satisfying relationships.

Significance of the Study

The explicit research in active ageing is needed to improve understanding of the active ageing as a culturally-specific measure of Thailand. This study represents an effort to understand the feature of active ageing among Thai people within a Thai context. The outcomes of this present study are expected as follows:

1. Develop the Active Ageing Scale, a culturally-grounded measure, for Thai elderly which is validated and reliable and can be used to measure active ageing of the general Thai elderly.

2. Provide the knowledge base of active ageing model for policy implications and nursing interventions to promote the appropriate strategies enhancing active life and enhancing the quality of life among the Thai elderly.

3. Benefit for nurses by providing an assessment tool to assess the level of active ageing in older adults both in clinical practice and in community settings.

4. Serve as a reliable resource to enhance nursing knowledge development through testing a middle range theory relative to active ageing, specifically in Asian context.

5. Provide the background for nursing researchers to use the existing data from the nationwide survey to explore the correlates of active ageing and ultimately better understand the comprehensive reality of active ageing in relation to active ageing among the Thai elderly.

CHAPTER 2

LITERATURE REVIEW

This chapter presents a review of the selected relevant literature that provides empirical evidence to identify the present knowledge as well as gaps in the knowledge about active ageing concepts and the methods to measure active ageing. The organizational framework of the literature review is composing the main contents of (1) conceptualization of active ageing, (2) determinants of active ageing, and (3) measurement of active ageing.

1. Conceptualization of active ageing

1.1 Historical perspectives of active ageing

Indeed, active ageing is not a new concept, yet efforts to embed and generally use the term in operation have been influenced by both emerging evidence from extensive ageing research and different political agendas. Walker (2006) has traced the history of the concept of 'active ageing', from its emergence in the United States during the early 1960s as the antithesis of the theory of disengagement when people get old. This was related to 'successful ageing' in term of active and financial success (Walker, 2002). In the 1980s, a new strategy for ageing was promoted 'productive ageing' that incorporated a life course perspective in which communities, workplaces, and older people themselves have much to gain from older people being active well beyond the usual retirement age. According to the contemporary usage definition, it emphasizes the vital connection between activity and health (Walker, 2002, 2006).

The well-known concept of "Active Ageing" was adopted by the World Health Organization (WHO) since the late 1990s. The rationale behind the policy framework for active ageing was first developed during the International Year for Older Persons 1999 when the World Health Organization (WHO) celebrated its

annual World Health Day with the slogan "*Active Ageing Makes the Difference*" (Kalache & Keller, 1999; WHO, 1999). This was a broader approach to active ageing, extending the emphasis to include health, and active participation and the inclusion of older citizens in all areas of family, community and national life.

Furthermore, the World Health Organization's Policy Framework for Active Ageing was launched in April 2002 on the occasion of the Second United Nations World Assembly on Ageing in Madrid, Spain (Fernandez-Ballesteros et al., 2013; WHO, 2002). One of its main goals was to foster a better understanding among policy-makers of both the challenge and the potential promise of active ageing. This policy framework builds upon the premise that the vast majority of people of all ages, including older people, want to be active participants and contributors to society and to the well-being of their families and communities. They want to remain in good health and enjoy a good quality of life for as long as possible, and they want the security of knowing that, if and when they become frail and vulnerable, they will enjoy the protection and the security they need (Davenport, 2003).

The term 'active ageing' has become the catch word among international agencies, such as the United Nations (UN), the World Health Organization (WHO), the Organization for Economic Cooperation and Development (OECD), and the European Union (EU), to provide ageing policy development (Davey, 2002; Fernandez-Ballesteros et al., 2013; Hutchison, Morrison, & Mikhailovich, 2006; Walker, 2009). Many European and OECD countries have adopted WHO's policy framework of active ageing to formulate active ageing policies. However, their definitions of active ageing typically highlight economic aspects and productive activities (Avramov & Maskova, 2003; Davey, 2002; Ney, 2005). The European Commission has addressed active ageing in lifelong learning, working longer, retiring later and more gradually, being active after retirement and engaging in capacity enhancing and health sustaining activities. Likewise, the OECD has defined active ageing as the capacity of people, as they grow older, to lead productive lives in society and the economy at large (Davey, 2002). Thus, the main emphasis of the active ageing definition in European countries is prolonged economic activity achieved by increasing the number of years in employment and inclusion in

socially productive activities such as voluntary work or providing postretirement care (Avramov & Maskova, 2003).

Most recently, the WHO has defined active ageing as “the process of optimizing opportunities for health, participation and security in order to enhance quality of life as people age” (WHO, 2002, p. 12). The core meaning of the word ‘active’ refers to the notion that an individual performs to continue participating in social, economic, cultural, spiritual and civic affairs, and not just only to be physically active or to participate in the labour force. Thus, active ageing is viewed as a positive image of ageing (Martin, 2011). This concept is intended to enable older people to realize their potentials for health and actively engaging throughout the life course, to continuously participate in society, to contribute their productivities to society, including to be secured with adequate protection and care if needed (Davenport, 2003; Fernandez-Ballesteros et al., 2008; WHO, 2002).

Promoting the ideas expressed in WHO’s policy framework through the promotion of country or regional action plans means taking a positive approach to population ageing (Walker, 2009). WHO argues that countries can afford to get old if governments, international organizations and civil society enact “active ageing” policies and programmes that enhance the health, participation and security of older citizens (Fernandez-Ballesteros et al., 2013; WHO, 2002).

In Thailand, the term “active ageing” is still not defined in a Thai phrase that is accepted in general. However, Professor Dr. Sutthichai Jitapunkul has defined this term corresponding with the concept of the World Health Organization and semantic meaning in Thai as “Pleutta palang” (พฤฒพลัง). Actually, active ageing is not only for the elderly but also for all ages in societies to enhance quality of life in the later years. It is the capacity of people, as they grow older, to lead productive and healthy lives in their families, societies and economies. Therefore, concepts and strategies for social preparation to elderly society in Thailand are intensified to develop by holistic systems initiated in all age groups since neonates to elders (National Economic and Social Development Board, 2005). In national policies of older people, various policies, plans or laws related the elderly were concerned in ageing actively such as the 2003 Elderly Act, The First National Plan for Older Persons (1986-2001), and The Second National Plan for Older Persons (2002-2021)

the long plan that emphasized to enhance quality of life in the later life (Jitapunkul et al., 2001; National Economic and Social Development Board, 2005). Particularly, The Second National Plan for Older Persons is developed as a set of integrated strategies and actions to promote active ageing covering 5 sections: 1) strategies in the preparation for quality ageing, 2) strategies for promoting well-being in older persons, 3) strategies of social security for older persons, 4) strategies on management systems and personnel development at the national level, and 5) strategies on conducting research for policy and program development support, monitoring and evaluation of this plan (Jitapunkul et al., 2001).

In conclusion, active ageing is a broad and internally complex notion that plays a key part in a global strategy for the management of ageing populations (Clarke & Warren, 2007; Davey, 2002; Fernandez-Ballesteros et al., 2013; Kalachea & Kickbusch, 1997; Walker, 2009; WHO, 2002). It is part of a policy vision in which guaranteeing of human rights will enable the expanding older population to remain healthy, productive, socially engaged and secured. The historical perspectives on active ageing concept have been related to healthy, successful, and productive ageing. Not surprisingly, these positive ageing terms are overlapped and have been used interchangeably in ageing research.

1.2 Conceptual foundations of the study

The theoretical and conceptual foundations underpinning the study of active ageing is based on the ecological model of ageing, activity and continuity theories, and active ageing and related positive ageing concepts (i.e., healthy ageing, successful ageing, and productive ageing). Lawton and Nahemow (1973) presented the Ecological Model of Ageing (EMA), which is concerned with person-environment fit. It attempts to explore the effects of the synergistic interactions of the elderly individuals and their environment that are inextricably interrelated. The interrelationship between personal competence and environment resulting in some adaptation/behaviors has been considered (Lawton, Windley, & Byerts, 1982). An ecological model is significant to explain the active ageing attribute among older persons because, in fact, the elderly individuals are not actually living alone but staying with others surrounding in socio-cultural and environment systems. Active

ageing represents a complex blending of physiological, psychological, social, spiritual and economic aspects of the individual (Paul, Ribeiro, & Teixeira, 2012) that is influenced by a dynamic interplay among behavioral, and environmental factors, an interplay that unfolds throughout the life course of individuals, families, and communities.

McLeroy et al. (1988) proposed the social ecological model focusing attention on the environmental causes of behavior. Behaviors are influenced on five different levels including intrapersonal and interpersonal factors, institutional and community factors, and public policies. WHO's Policy Framework interrelates four important societal structures which play a critical role in facilitating active ageing. These are: 1) Individual (self-care) that all adults, regardless of age, need to take an active part in achieving their own well-being; 2) Family and friends: the relationship safety net of family and friends is still an important source of support for people; 3) The community and its services; and 4) The state that will impact on active ageing through its policy on seniors. These are the systems of supports associated with active ageing (Davenport, 2003).

Activity theory is applicable to explain the ways to achieve active ageing. Activity theory (Havinghurst, 1953, 1961) was developed to primarily define the concept of successful ageing. This theory describes adapting to the loss of roles or activities of individuals when they age, and proposes that people age most successfully when they participate in a full round of daily activities, that is, keep busy (Katz, 2000; Lemon, Bengtson, & Peterson, 1972) and remain involved in the social context, e.g., to maintain social roles and relationships (Atchley & Barusch, 2004). Activity theory is useful for this study in that it suggests that individuals desire to be involved and active after retirement, and that they will shift their time and energies into new roles when old roles are lost, whether paid or voluntary, formal or informal (Fry, 1992). Based on activity theory, active ageing discourse highlights encouraging the continued involvement in social and productive activities of older adults (Boudiny & Mortelmans, 2011). Activity theory indicates that actively aged individuals continue being engaged in activities within society. The active elders and with regular duty will be satisfied with their life and better adjust themselves than those doing

nothing or being inactive (Havighurst, 1961; Stenner, MaFarguhar, & Bowling, 2011).

Likewise, the continuity theory tries to explain the impact of personality on the need to remain active or disengaged to be happy and fulfilled in old age (Atchley, 1989). This theory emphasizes individual's previously established coping abilities and personality as a basis for predicting how the person will adjust to the changes of ageing. The continuity perspective of old age implies a variety of meanings, such as stability, persistence, lifestyle, or personality patterns reflecting a greater or lesser degree of relatedness of individuals to some previous points in their lives (Havighurt, Neugarten, & Tobin, 1968; Lemon, Bengtson, & Peterson, 1972). Their past experiences, decisions and behaviors are grounded to form the foundation for their present and future decisions and behaviors. Change is linked to the person's perceived past, producing continuity in inner psychological characteristics as well as in social behavior and social circumstances (Atchley, 1989). A person who enjoys the company of others and an active social life will continue to enjoy this lifestyle into old age. Activity theory also confirms that if the elderly can maintain social interaction, they are considered as active and productive ageing, directing to happiness, good life satisfaction, and positive self-image. Whereas, the continuity theory postulates that older people remain socially and psychologically fit if they remain continuously actively engaged in life.

In positive ageing concepts, much of existing studies indicated that several concepts of positive ageing are overlapped and interchangeable (Bowling, 2008; Buys & Miller, 2006; Fernandez-Ballesteros et al., 2013; Hsu, 2007; Stenner, McFarquhar, & Bowling, 2011). Healthy ageing, successful ageing, productive ageing, and active ageing are key concepts of positive old age that are related to each other. These contemporary theoretical frameworks share basic similarities with respect to fostering aspects of physical, emotional, social, spiritual and economic well-being. Active ageing has been conceptualized to convey more comprehensive and multidimensional dimensions than healthy ageing, successful ageing, and productive ageing (Avramov & Maskova, 2003; Chong et al., 2006; Hutchison, Morrison, & Mikhailovich, 2006; Kalache & Kickbusch, 1997; Kespichayawattana & Wivatwanich, 2006; Walker, 2002; Walker, 2009). Therefore, active ageing is

involving physical, mental/cognitive, social, spiritual, economic, and secured aspects. This is related to the active ageing concept proposed by WHO (2002), based on three broad pillars: health; participation; and security.

In conclusion, the theoretical framework of the study of active ageing is presented in Figure 2. The theoretical and conceptual frameworks are linking the extent to which the ecological environment generates individual behaviors/activities relevant to active ageing that is conceptualized using active ageing and related positive ageing concepts. Taken together with integrated systematic review from the existing literature, the pre-specified domains of active ageing are identified. However, because this study focuses on scale development to measure active ageing that is a culturally-grounded measurement of active ageing attributes for Thai elderly, the specified domains will be further undertaken in the Thai context. Then, the process of scale development and psychometric evaluation will be performed.

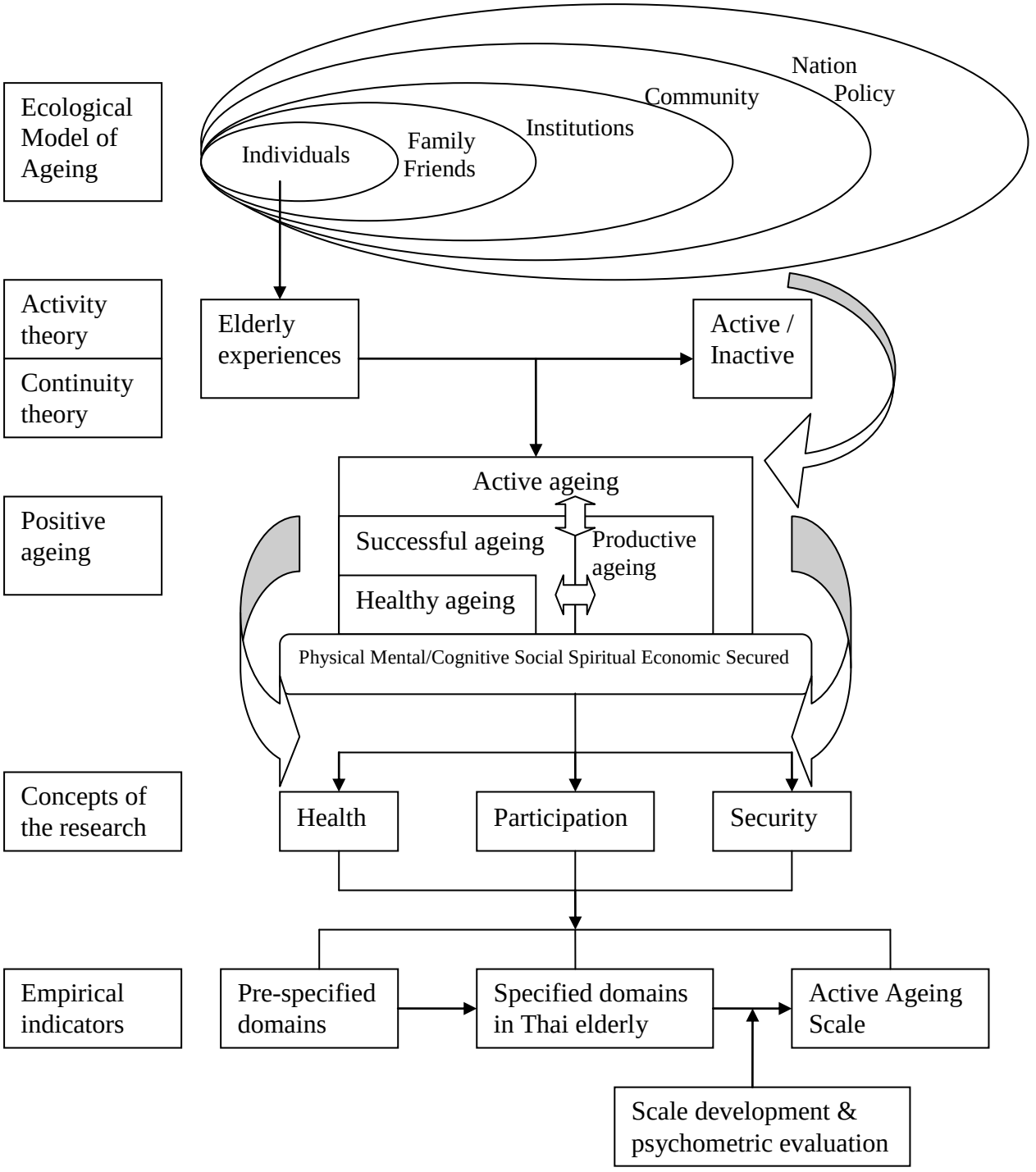

Figure 2 Conceptual foundations of active ageing and measurement developed for Thai elderly

1.3 Attributes of active ageing

The World Health Organization has proposed the broad concept of active ageing with respect to three major pillars involving health, participation and security that are inextricably and powerfully linked to each other (Paul, Ribeiro, & Teixeira, 2012; WHO, 2002). However, a problem that has plagued the literature on active ageing is the lack of consistency in its definition and measurement (Boudiny & Mortelmans, 2011; Fernandez-Ballesteros et al., 2013; Ranzijn, 2010). This may come from the multidimensional attributes of active ageing and it depends upon a variety of influences or determinants surrounding the elderly individuals, families and nations.

Walker (2002) outlined seven key principles that should be embodied in the concept of active ageing. Firstly, activities should not be concerned only with paid employment or production, but should also consist of all meaningful pursuits which contribute to the well-being of the elderly individual and others surrounding. Secondly, active ageing must encompass all older people, even those who are very old, frail or dependent. Thirdly, it should be primarily a preventive concept, involving all age groups in the process of ageing actively across the whole life course. The fourth is the preservation of intergenerational solidarity, an important aspect of contemporary approaches to active ageing. The fifth is that active ageing concept should exemplify both rights and obligations, such as the rights to social protection, lifelong education and training that should be accompanied by obligations to take advantage of those opportunities simultaneously. The sixth is strategy on active ageing should focus on participation and empowerment combining both top-down and bottom up policy actions. The last is active ageing needs to be valued on national and cultural diversities into its account, and be viewed as a culturally sensitive concept.

There are a variety of models and indicators used in the literature and the studies of active ageing. Avramov and Maskova (2003) stated that the concept of active ageing refers to the realization of an active life of older people in the different domains of their personal, family social and professional life. It relates to what people do in later phases of their life course. At the European Union level, the concept of active ageing is interpreted as prolonged economic activity to be achieved by working longer years, retiring later in life, and engaging in socially productive activities after

retirement, as well as practicing healthy life styles (Avramov & Maskova, 2003). Active ageing is understood to encompass a socially and individually designed mix of: continuous labour market participation; active contribution to domestic tasks, including housework and provision of care for others; active participation in community life, also by means of voluntary or unpaid activities; and active leisure through hobbies, sport, travel and creative activities. Therefore, active ageing conceptual models have consisted of all meaningful activities provided by older person, which contribute to individual well-being, his or her family, the local community or society at large (Kinsella & Phillips, 2005; Walker, 2002).

In addition, not only do the attributes of active ageing emerge from the experts' point of view (i.e., active ageing framework by WHO, UN, and EU), but perspectives on active ageing among older adults are also explored for many existing studies. For example, in the study of perceptions of active ageing in Britain (Bowling, 2008), older adults perceived active ageing variously, such as having/maintaining physical health and functioning; leisure and social activities; mental functioning and activity; and social relationships and contacts. This perception is closely related to the successful ageing concept (Bowling, 2008). Furthermore, Buys and Miller (2006) explored the perceptions of active ageing in relation to health, participation, and security aspects in Australian elders. Active ageing or being engaged in life was predominantly reported on participation with respect to social interaction, involvement, personal development, giving back, and work. Following by health aspect, physical health was conceptualized into two themes: staying fit and active through exercise and healthy lifestyles. Mental health was also reported as an essential element of health and closely linked with physical ability. Lastly, for security aspect, four key themes in terms of maintaining their homes, living independently, not being restricted by finances, and coping with negative life events emerged. Similarly, Buys et al. (2008) studied the meaning of active ageing perceived by older people with lifelong intellectual disability. Eight themes of being active ageing were identified: 1) being empowered, 2) being actively involved, 3) having a sense of security, 4) maintaining skills and learning, 5) having congenial living arrangements, 6) having optimal health and fitness, 7) being safe and feeling safe, and 8) having satisfying relationships and support.

For perspectives of active ageing in Asian elders, active ageing has been viewed as multidimensional involving healthy being, social engagement and security. Hong Kong Chinese elders viewed active ageing as comprised of good health, having a positive life attitude, active engagement with life, feeling supported by family and friends, being financially secure, and living in a place with emotional ties (Chong et al., 2006). In Thailand, active ageing as perceived by healthy and well-known elders consists of three attributes. First, being continually active: it means that the elderly perform their favorite activities and participate in activities of the organizations of which they are members. Second, being healthy means that the elderly are able to appropriately care for themselves in physical, mental, social, and spiritual aspects. Lastly, having security: this means that the elderly have feelings of being safe and free from worry about income, housing and being cared for (Kespischayawattana & Wiwatvanich, 2006; Yatniyom, 2004). Using a grounded theory approach to explore the concept of volunteering as active ageing viewed by Thai elders who are members of the Brain Bank, Sakulkoo (2009) found that they view active ageing with respect to being healthy, being productive and living with dignity. Nantsupawat (2010) used ethnographic approach to explore active ageing in northeastern elders living in Khon Kean province. It was found that active ageing meant elders made contributions and achieved happiness by doing things beneficial for themselves, family and society. The positive circumstances that resulted in active ageing are that the elders have both economic stability, have good health, and good children who are grateful to them even in the period of dependency or independency.

There are several positive ageing concepts related to active ageing. These concepts include healthy ageing, successful ageing, and productive ageing. However, they are slightly different in their own unique focus and theoretical bases (Bowling, 2009; Buys & Miller, 2006). Active ageing concept is covering and going beyond these positive ageing concepts, extending focused on security aspects in older adults. Much of existing studies have indicated that active ageing was meant to convey a more inclusive message than ‘healthy ageing’ and to recognize other factors than health that affect the ageing process (Flick et al., 2003; Kalache & Kickbusch, 1997; Thiamwong et al.,, 2008). Furthermore, many researchers have identified that active ageing is going beyond ‘productive ageing and successful ageing’ (Avramov &

Maskova, 2003; Chong et al., 2006; Hutchison, Morrison, & Mikhailovich, 2006; Walker, 2002). Healthy ageing has been usually focused on health-oriented as multidimensional and holistic (Hansen-Kyle, 2005; Peel, Bartlett, & McClure, 2004) whereas successful ageing has included health and functional components, social engagement, including positive spirituality (Crowther et al., 2002; Flood, 2002; Register & Herman, & Tavakoli, 2011; Rowe & Kahn, 1997), and productive ageing usually focused narrowly on production of goods or services, or productive activities contributed to others and society whether paid for or not (Bass & Caro, 2001; Walker, 2006). Specifically, Walker (2009) argued that healthy ageing is a broad view of health, successful ageing is somewhat idealistic and typically grounded in U.S. culture, and productive ageing lacks emphasizing on the life course and well-being.

In summary, active ageing attributes have been identified as multidimensional aspects. It conveys more than a concern with activities related to health; however, it includes social participation and productive activities ageing people can contribute to society, and security both social and economic aspects ageing people are ensured to be protected and cared (Chong et al., 2006; Stenner, McFarquhar, & Bowling, 2011). Therefore, the essence of the emerging modern concept of active ageing combines the core element of healthy, successful and productive ageing with a strong emphasis on optimal physical health, personal growth and spirituality, social engagement, productive activities, and security in life. It may be concluded that the concept of active ageing covers healthy, successful and productive ageing. Active ageing allows people to realize their potential for physical, social, and mental well-being throughout the life course and to participate in society according to their needs, desires and capacities, while providing them with adequate protection, security and care when they require assistance.

1.4 Dimensions of active ageing

According to the conceptual model of active ageing that has been documented as multidimensional domains guided by World Health Organization (WHO, 2002), its key elements consist of three basic pillars: health, participation and security. From literature review, active ageing dimensions can be specified into 10 dimensions involving health, participation and security aspects.

1.4.1 Health

Healthiness is very important as the World Health Organization contends in the active ageing policy framework, emphasizing heath as the central pillar that influences both participation and security (Paul, Ribeiro, & Teixeira, 2012; WHO, 2002). If the elderly are unhealthy, this greatly affects individuals, families, and nations in the burdens of curative expenditures and long-term care costs (Jacobzone, Cambois, & Robine, 2000). Thus, the need for healthy ageing is a challenge to all countries (Andrews, 2003; Kendig et al., 2001; O'Shea, 2006) since being healthy has been widely accepted as the core aspect of active ageing (Chong et al., 2006; WHO, 2002).

Being healthy is described as a lifelong process optimizing opportunities for improving and preserving health and physical, social and mental wellness, independence, and enhancing quality of life (Flick et al., 2003; Peel, Bartlett, & McClure, 2004). To achieve healthy being and ageing actively, the elderly individuals need to practice four major components: being physically active; being mentally/cognitively active; promoting health and preventing disease and injury; and growing positive spirituality, described as follows.

1) Being physically active

Physical functioning refers to the ability to take care of personal needs in daily living. These tasks range from basic activities related to independence to more complicated activities associated with social living. Rowe and Kahn (1997, 1998) have defined maintaining high physical functioning as one of the attributes of successful ageing. Several researchers have used physical functioning measures to assess healthy ageing (Chou & Chi, 2002; Guralnix & Kaplan, 1989; Lamp & Myers, 1999; Li et al., 2006; Michael et al., 1999; Strawbridge et al., 1996; Strawbridge, Wallhagen, & Cohen, 2002). The study done by Thiamwong et al. (2008) demonstrated that staying physically active is one of the nine indicators of healthy ageing among the Thai elderly. Difficulty with physical functioning represented by an inability to perform the usual activities of everyday life can be a serious problem among older persons and can lead to negative consequence for health in older age.

Maintaining physically activity and preserving optimal physical health and functioning have been indicated by several studies as the most common perceptions of ageing actively (Bowling, 2008; Clarke & Warren, 2007; Clarke et al., 2005; Kespichayawattana & Wiwatvanich, 2006; Stenner, McFarquhar, & Bowling, 2011). Much of the existing studies have indicated that active ageing means having good physical health with respect to having good mobility, ability for self-care, continued independence, and the delay of deterioration (Chong et al., 2006). Being physically active is conceived as a central notion in older adult's life, fostering several forms of fitness such as physical, intellectual, social, and life purposeful (Terrill & Gullifer, 2010). Bowling (2008) indicated that the active ageing attribute was for the most part associated with physical health and functioning.

2) Being mentally/cognitively active

In addition to physical factors, Hansen-Kyle argued that "healthy ageing is also dependent on cognitive and mental factors" (Hansen-Kyle, 2005, p. 49). Cognitive functioning among older persons is associated with memory or intellect that can promote the life quality of individuals to maintain independence (Seeman, Rodin, & Albert, 1993; Satariano, 2006). Rowe and Kahn (1997, 1998) have stated that cognitive functioning is necessary for successful ageing. Similar to physical functioning, good cognitive functioning among the elderly results in increased opportunity for successful old age. Also, cognitive functioning is positively related to physical performance (Moritz, Kasl, & Berkman, 1995; Wang et al., 2002; Wang et al., 2006) and self-efficacy (Seeman, Rodin, & Albert, 1993). Therefore, cognitive functioning is an important indicator of successful or healthy ageing in various studies (Baltes & Baltes, 1990; Chou & Chi, 2002; Li et al., 2006; Moore et al., 2007; von Faber et al., 2001).

Staying mentally active or keeping their mind alert have also been found in several studies, indicating that it plays an important role to promote ageing actively and improve memory and physical health (Clarke & Warren, 2007; Laditka et al., 2009; Stenner, McFarquhar, & Bowling, 2011; Thiamwong et al., 2008). The healthy community-dwelling older women also dealt with getting older by staying mentally active (Wendy et al., 2002). The study done by Thiamwong et al. (2008) in

Thai elderly indicated that staying cognitively active includes staying interested in following news, planning to do something, and calculating such as addition and subtraction of money. Healthy older people benefit from practicing and demonstrate an increase in performance in the specific abilities that are trained. Several scholars have indicated that learning is an important aspect of active ageing (Boulton-Lewis, 2010; Buys et al., 2008; Davey, 2002; Tam, 2011). Cognitive ability is positively related to socioeconomic status, e.g. education and income (Seeman, Rodin, & Albert, 1993) and positively related to self-rated successful ageing, but negatively related to chronological age (Moore et al., 2007).

3) Promoting health and preventing disease and injury

Health promotion is the process of enabling people to increase control over the determinants of health by building their capacity to make and act upon informed choices for healthy living (Gochman, 1988; Laverack, 2004). Health-promoting behaviors (Pender, Murdaugh, & Parsons, 2006) and self-care (Orem, 1995) have been defined as the practice of activities that individuals personally initiate and perform on their own behalf in maintaining a better life, health, and well-being. Moreover, because it focuses on not only avoiding disease, but also enhancing optimal health of individuals, many researchers have included it into a successful or healthy ageing model (KPMG Consulting, 2002; Marshall & Altpeter, 2005).

It is well-recognized that lifestyle behaviors are strongly associated with healthy conditions. Numerous studies have shown that adopting a healthy lifestyle can significantly improve one's health (Berkman et al., 2000; Peel, McClure, & Bartlett, 2005; Prus & Gee, 2001). The healthy lifestyles of older persons are positively related to a reduced mortality risk (Berkman et al., 2000), morbidity or injury risk (Peel, McClure, & Hendrikz, 2006), prevention of functional limitations (Schuit, 2006), and deterioration in health status (Haveman-Nies, Groot, & Staveren, 2003). Physiologically-focused research has publicized that physical ability, sufficient nutrition, and suitable lifestyles with respect to health promotion and disease prevention are essential for achieving healthy ageing (Bryant et al., 2001; Haveman-Nies, Groot, & Staveren, 2003; Micheal et al., 1999; Prus & Gee 2001), suggesting that lifestyle may influence quality as well as length of life. In the active ageing

model, healthy behaviors including regular exercise, hobbies, relaxing, sufficient nutrition, stress relieving activities, avoiding health risk behaviors such as tobacco exposure and alcohol consumption, and preventing disease and injury are associated with better health, functioning, and longevity across the lifespan (Van Malderen, Mets, & Vriendt, 2012; WHO, 2002).

4) Growing positive spirituality

Experiencing spiritual growth is a crucial aspect of being human and having a meaningful life, which includes a meaningful relationship with others relating to God, religion, or transcendence (Dalby, 2006). Engagement in spiritually-productive activities is related to both inner-connectedness and other-connectedness (Register & Herman, 2010). Therefore, productive engagement with respect to a developing and internalized personal relation with religion or transcendent to provide the meaningful productivities is inextricably related to spiritual growth of the elderly individuals. Experiencing spiritual growth may help one to be considered as productive ageing. As Kaye, Butler & Webster (2003) suggest, productive engagement should include inner-directed behaviors, personally meaningful and satisfying to the older person, which emphasizes personal or humanistic philosophies and then provides concrete societal contributions made to others. Several studies in Thailand have indicated that spirituality is an important aspect of healthy ageing (Danyuthasilpe et al., 2009; Thanakwang et al., 2012; Thiamwong, McManus, & Suwanno, 2013), successful ageing (Rattakorn, 2009), productive ageing (Neovakul, 1993), and active ageing (Rattanamongkolgul et al., 2012). The spiritual aspect among the Thai elderly is related to both intra- and inter-personal relationships and ingrained with religion, particularly Buddhism.

1.4.2. Participation

Participation is active, and promotes healthy, secure and positive ageing (Buys & Miller, 2006; Hoglund, Sadovsky, & Classie, 2009; WHO, 2002). Engagement in social and productive activities appears to be particularly beneficial to older adults. In participation aspect of active ageing emerged from literature review,

the major specified dimensions are being actively engaged in life, maintaining social participation, and contributing productive activities.

1) Being actively engaged in life

Active engagement with life has been documented as one of the aspects of successful ageing (Rowe & Kahn, 1997, 1998) and active ageing (Buys & Miller, 2006; Kespichayawattana & Wiwatvanich, 2006; Terrill & Gullifer, 2010). Being actively engaged in life means that older persons continuously engage in social activities or individual leisure activities (Buys et al., 2008; Stenner, McFarquhar, & Bowling, 2011; Walker, 2009). The more people are involved in participating and contributing, the more they experience their lives that are rewarding, and continue to have meaning and value and positive health outcomes (Hoglund, Sadovsky, & Classie, 2009; Register & Herman, 2010; Richard et al., 2008). Being able to do or choose something meaningful and keeping actively engaged in any favorite activities have been indicated as the crucial indicator of healthy and active ageing (Bryant et al., 2001; Buys & Miller, 2006; Kespichayawattana & Wiwatvanich, 2006; Thiamwong et al., 2008).

2) Maintaining social participation

Activity theory asserts that if the elderly maintain social interactions, they are more likely to experience happiness and life satisfaction (Atchley & Barusch, 2004). Research supports the notion that healthy persons, who keep active tasks and roles or contribute to their family and community, have higher life satisfaction, happiness, and better health than those who are inactive (Moen, Mc-Clain, & Williams, 1992).

Maintaining socially active engagement may be the myriad of meaningful activities performed within the context that the older persons connect or contribute their benefits to others and the whole society. Engaging in social activities has been well-documented in several activities such as staying connected (Register & Herman, 2010; Richard et al., 2008), civic engagement (Burr, Caro, & Moorhead, 2002), and being involved in religious activities (Cnaan et al., 2008; Taylor et al., 2009). Levasseur *et al.* (2010) classified the social engagement activities into six

types ranging from proximal to distal levels of involvement with others: 1) doing an activity in preparation for connecting with others, 2) being with others, 3) interacting with others without doing a specific activity, 4) doing an activity with others, 5) helping others, and 6) contributing to society. In Thailand, staying socially active among Thai elderly included continue participating in community activities, and having a good relations with family and neighbors (Thiamwong et al., 2008).

Civic engagement is a multifaceted concept including the participation in social or public services and political processes relative to community and national involvement. It is a meaningful and responsible duty of citizenship. Moreover, in the late life, older adults and particularly older women have generally connected to a high level of religious involvement and spent more time with a variety of religious activities (Krause, 2002; Taylor et al., 2009). Activities related to social value in nature can promote greater social connectedness and social integration, resulting in successful ageing (Register & Herman, 2010).

3) Contributing productive activities

It is well-documented that engagement in meaningful and productive roles may be a crucial factor associated with greater health and well-being in later life to achieve ageing successfully (Hinterlong, 2008; Morrow-Howell et al., 2005; Rowe & Kahn, 1997). Being engaged in socially productive activities is one of the important determinants of productive ageing (Burr, Caro, & Moorhead, 2002; Morrow-Howell, Hinterlong, & Sherraden, 2001). There is mostly focused on the sense of community contributions and the older person's involvement in productive activities providing interactions with others in society or the community.

Older adults usually receive social support given by family members or significant others; however, they also provide various kinds of support to others. Caregiving to others mostly is an unpaid productive role (Fernández-Ballesteros et al., 2011). Various productive roles of caregiving provided by older persons within the family include; for example, child care (grand children or great grandchildren), spousal care, and care for the sick (Dosman et al., 2006; Fernández-Ballesteros et al., 2011; Hank & Stuck, 2008). Providing substantial support to others varies by gender role (Van der Meer, 2006). Moreover, older parents provide their productive activities

in household works such as housekeeping, cooking, household chores, gardening, or yard work (Fast et al., 2006; Menec, 2003). In addition, productive roles within the community have been found in terms of informal social assistance to neighbors and friends outside the household (Hank & Stuck, 2008), specifically helping with care to someone who has any problems or stressful life events (Herzog & Morgan, 1992; Hinterlong, 2008). Caregiving to others with respect to several activities given by older adults seem to be important evidence of their productive role values in the late life (Thanakwang & Soonthorndhada, 2013).

1.4.3 Security

Security is the critical aspect of active ageing that goes beyond healthy, successful, and productive ageing in order that the actively aged people are secure in their physical, social, and economic well-being, including obtaining protection and assistance by others if needed.

1) Being safe from any harm or abuse

Being safe from any harm or abuse in daily living is considered an important aspect of the elderly securities (WHO, 2002). Personal and domestic security for the older people has been the subject of wide spread community concerns following highly publicized attacks on older people, particularly in their own homes. Whilst statistically older people are least at risk of such crimes, perceptions of risk and vulnerability are high, and may be particularly high among individuals living alone, or in other isolating circumstances. Living in current situation along with rapid changes of socioeconomics and family structure, the older adults need to live without abuse or threatening situations, leading them to highly value safety including being safe and feeling safe (Buys et al., 2008).

2) Ensuring to be secured for income, housing and caregivers

It has been argued that ensuring a secure income, housing and caregiving are significant indicators of active ageing (Buys et al., 2008; Kespichayawattana & Wiwatvanich, 2006). Buys and colleagues (2008) identified that sense of security of the Australian elders include three major aspects: financial,

emotional and future care. Likewise, the study done by Kespichayawattana and Wiwatvanich (2006) indicated that having a sense of security among the Thai elders is also found in feeling free from worry of the three important aspects in terms of income, housing and caregiving. Living in one's own home and being financially secure maximize one's sense to security and autonomy (Chong et al., 2006; Soodeen, Gregory, Bond, 2007).

There is widespread agreement that social and economic securities are the vital aspect, created to provide older people with a foundation of security that people can count on in old age (Cloos et al., 2010; Harper, 2009; Kespichayawattana & Wiwatvanich, 2006; Kim & Torres-Gil, 2011). Long-term opportunities for participation in the paid workforce are a fundamental generator of security, as a means of accumulating financial resources, secure housing, and supporting strong family and social networks.

3) Being supported and satisfying relationships

Being supported by family members and significant others has also been documented as an important factor facilitating older persons feeling secure (Buys et al., 2008; Chong et al., 2006; Hsu, 2007). In Thailand, family has been indicated as the fundamental sources of support to older parents (Knodel & Chayovan, 1997; Nantsupawat et al., 2010). Beliefs, values and cultural traditions from Buddhism contribute to social norms that involve children providing nurturance to their older parents (Choowattanapakorn, 1999; Kespichayawattana, 1999). However, not only does social support provided by family members, but friends or neighbors also give a variety of supports to older adults (Cloos et al., 2010; Thanakwang & Soonthorndhada, 2011). Moreover, the quality of social relationships, particularly social support, within a cultural context has generally been found to have a positive impact on sense of well-being of ageing individuals (Chen & Silverstein, 2000; Fiori, Antonucci, & Cortina, 2006; Takahashi, Tamura, & Tokoro, 1997).

In addition, satisfaction with sources of support, adequacy, quality and time period of support also influences the elderly's sense of well-being (Chipperfield, 1996; Jacobson, 1986; Krause, 1987; Reinhardt, 2001). A study by Antonucci and Akiyama (1987) showed that quality of support is more valuable than quantity of

support, also it has significantly greater consequences on psychological well-being, especially in older women. This is consistent with the perceived social support among the Thai elderly that family support is significantly associated with their psychological well-being (Thanakwang & Soonthorndhada, 2008). Better satisfaction with support has been associated with higher levels of mental well-being, leading to enhanced feelings of self-identity, personal control, and social integration (Cornman et al., 2003; Melchior et al., 2003).

In conclusion, the concept of active ageing encompasses the three broad dimensions: health, participation, and security. From the existing literatures, it is found that ten sub-dimensions of active ageing can be specified, including: 1) being physically active, 2) being mentally/ cognitively active, 3) promoting health and preventing disease and injury, 4) growing positive spirituality, 5) being actively engaged in life, 6) maintaining social participation, 7) contributing productive activities, 8) being safe from any harm or abuse, 9) ensuring secure for income, housing and caregiving, and 10) being supported and engaged satisfying relationships. Therefore, it is not the 'state' but the 'process' or capability of older people to realize their potential for physical, mental, social and spiritual well-being and to participate and contribute their productivities to others and society at large, including having adequate protection, security, and care if needed. This is consistent with the concept of healthy ageing that is considered as a process of healthy being, not health status per se (Thiamwong et al., 2008).

2. Determinants of active ageing

2.1 General perspectives on active ageing determinants

The ways to achieve active ageing depends upon a variety of determinants that surround individuals, families, communities and nations. In a policy framework of active ageing, the World Health Organization (WHO, 2002) identified the broad determinants influencing the process of active ageing as follows:

1) Culture and Gender

Culture is considered as an important cross-cutting determinant within the framework for understanding the process of experiencing active ageing. Culture, which surrounds all individuals and populations, shapes the way in which we age because it influences other determinants of active ageing. Cultural and traditional values of a particular society determine a large extent to which society views older people and the ageing process. It may substantially differ in meaning and values between Eastern and Western cultures, for example, the strong emphasis on independence or individualistic in the West in contrast to the East that accept dependency and reciprocity (Fox, 2005; Ingersoll-Dayton et al., 2004; Kendig, 2004; Willcox et al., 2007). Therefore, active ageing perspectives may be different across cultures.

Gender has been considered the discrepancy in various aspects. Most experts argue that gender differences affect health and well-being due to: 1) differentials in gender roles, associations, and resources and 2) the gendered context in which they are experienced (Moen, 2001). Martin (2011) argued that the experience of active ageing is mediated by gender in which men were predominantly viewed as being active more than women. The study by Lamp and Myers (1999) in three Asian countries illustrated that being male increases the odds of ageing successfully. Similarly, studies in Thai elders (Thanakwang & Soonthorndhada, 2006) and German elders (Pavlova & Silbereisen, 2012) indicated that an active ageing attribution was more likely to be reported among males than females.

2) Health and social service systems

To promote active ageing, government and related agencies established health systems by focusing on health promotion, disease prevention, including equitable accessibility to qualified primary health care and long-term care (Mayhew, 2005; WHO, 2002). Importantly, there must be no age discrimination in the provision of social services (Walker, 2006). Health and social services need to be integrated and coordinated to promote the effective health promotion strategies to increase control over the determinants of health by building their capacity to make and act upon informed choices for healthy living (Gochman, 1988; Laverack, 2004; Marshall &

Altpeter, 2005). It is not surprising that health promotion has received more attention and set as a national agenda in numerous countries to promote active ageing (Walker, 2009).

3) Behavioral determinants

Practicing healthy lifestyles that individuals personally initiate and perform on their own behalf is crucial for maintaining a better life, health, and well-being. Promoting healthy behaviors occurs during every stage of life in order to maintain or increase the level of well-being, achieve life goals, and attain individual desires (Pender, Murdaugh, & Parsons, 2006). Therefore, it is not too late to adopt such healthy lifestyles in the later life. Healthy behaviors include regular exercise, hobbies, relaxing, sufficient nutrition, stress relieving activities, avoiding health risk behaviors such as smoking and alcohol consumption, and preventing disease and injury. All are associated with better health, functioning, and longevity across the lifespan (WHO, 2002). There is widespread agreement that engaging in promoting health and preventing disease and injury is the important predictor of healthy (Mores, & Souza, 2005; Thanakwang & Soonthorndhada, 2011), and active ageing (Marshall & Altpeter, 2005; Van Malderen, Mets, & De Vriendt, 2012)

4) Personal factors

The important personal factors influencing ageing actively are biology and genetics and psychological factors (WHO, 2002). It is widely accepted that ageing is a set of biological processes that are genetically determined. Ageing is a progressive of changes in both physical and mental capacities, which lead to generalized impairment of function resulting in a loss of adaptative response to a stress and in a growing risk of many inevitable health problems and age-associated disease (Kirkwood, 1996; Van Malderen, Mets, & De Vriendt, 2012). While genes may be involved in the causation of disease, such as diabetes, heart disease, and Alzheimer's disease, for many diseases environmental and external factors have been found as the main cause greater than genetics. There is general agreement that the lifelong trajectory of health and disease for an individual is the result of a combination of genetics, environment, lifestyle, and health-related behaviors (Kirkwood, 1996). In

psychological factors, intelligence and cognitive capacities are also considered as the significant predictors of active ageing (WHO, 2002). Specifically, coping and adaptation in the change of life course are noted as important determinants of successful ageing (Flood, 2002).

5) Physical environment

Physical environments that are age friendly have been documented as a strong influence on the elderly health and well-being (Cunningham & Michael, 2004; Lui et al., 2009). Hazards in the physical environment can lead to debilitating and painful injuries among older people, such as injuries from falls, fires and traffic collisions. In ecological perspective, Lawton and Nahemow (1973) stated that the dynamic interplay between individual adaptation and environmental alteration facilitates to maintain optimal functioning in older age. As there is an increasing trend for older persons to live alone, providing safety environment and ensuring equality and equity in social services are needed to promote active ageing. Building and maintaining an age-friendly environment is widely considered as a core component of a positive approach to addressing the challenge of population ageing as well as empowering older people themselves to create the conditions for active ageing (Lui et al., 2009; Van Malderen, Mets, & De Vriendt, 2012).

6) Social environment

There are various aspects in the social environment, such as social support, opportunities for education and lifelong learning, peace, and protection from violence and abuse that enhance health, participation and security as people age (WHO, 2002; Van Malderen, Mets, & De Vriendt, 2012). Boulton-Lewis and colleagues (Boulton-Lewis, 2010; Boulton-Lewis, Buys, & Lovie-Kitchin, 2006) argued that lifelong learning plays an important role in productive and active ageing. Low level of education and illiteracy are associated with increased risks for health problem and disability among older people (Ross & Wu, 1996).

Moreover, inadequate social support is associated not only with an increase in mortality, morbidity and psychological distress but a decrease in overall general health and well-being (Berkman et al., 2000). A substantial body of research

has shown that social support is a main determinant of healthy and successful ageing (Danyuthasilpe et al., 2008; Strawbridge et al., 1996; Thanakwang & Soonthorndhada, 2011), as well as active ageing (Nantsupawat et al., 2010) because social support yields the opportunity to enhance physical and psychological well-being (Stansfeld, 2000; Uchino, 2004). In social relations, disruption of personal ties, loneliness and conflictual interactions are major sources of negative mental health and well-being (WHO, 2002).

7) Economic determinants

For economic security, there are three aspects of the economic environment that have a particularly significant effect on active ageing: income, work and social protection. Several studies indicate that income and social status are factors that affect health status of individuals. Older men and women who obtain high incomes are more likely to report good or excellent health than those getting lower incomes (Litwin, 2006; Prus & Gee, 2001).

Working has been initially documented that it is an important productive role related to economic activity or paid work among older persons (Herzog et al., 1989; Hinterlong, 2008). In labor force participation, it is widely known that most older people stop formal employment at the age 60 years. However, it is not meant that they are not productive because, at present, the compass of working is extended to unpaid work, specifically voluntary work (Fernández-Ballesteros et al., 2011; Van der Meer, 2006). Hence, older adults who are actively working have been acknowledged whether or not this work is paid or unpaid. Staying to paid work either regular employment or irregular employment, as well as unpaid work as formal or informal volunteers has been determined to be the important characteristic of productive engagement among older people (Hinterlong, 2008; Thanakwang & Isaramalai, 2013).

In social protection, family is a fundamental resource providing the majority of support for older adults. However, as societies develop and the tradition of generations living together begins to decline, several countries are increasingly concerned about developing mechanisms and various insurance programs that provide social protection and security for older people, particularly who are vulnerable and

need assistance (Harper, 2009; Mason, Lee, & Lee, 2010; WHO, 2002). Development for social protection schemes will ensure that older people are protected, cared, and dignified.

In summary, the determinants of active ageing include social factors, physical environment, economic factors, health and social services, personal factors, and behavioral factors. These determinants vary by gender and culture (Paul, Ribeiro, & Teixeira, 2012; WHO, 2002). An understanding of how the determinants of active ageing influence the way that individuals and populations age is important for decision making.

2.2 Thai perspectives on active ageing determinants

Based on the global determinants of active ageing suggested by World Health Organization (WHO, 2002), Thai perspectives on active ageing determinants are found from literature review in the existing studies. They are described as follows.

1) Culture and Gender

Several cultural values in Thai context are found as the important macro structure influencing on active ageing. Thai society has mainly ingrained with Buddhist doctrines and reciprocal relationships (Fox, 2005; Ingersoll-Dayton et al., 2004). These cultural factors generate individuals growing in spirituality. This motivates an individual to altruism and service beyond one's self, to love, give and sacrifice for others (Stranahan, 2008). Viewed by Thai healthy, highly educated elders in the concepts of volunteering as active ageing, giving or helping others and society without expecting anything in return is based on applying the Buddhist principle of making merits and applying "Bunkhun" concept to repay significant others or homeland that individuals will feel gratitude and a sense of obligation when receiving help and nurturance (Sakulkoo, 2009). Based on collectivistic nature, Thai people are fundamentally interconnected and mutually relationships (Ingersoll-Dayton, 2001). There are many studies in Thailand which found that cultural contexts with respect to interdependent nature and Buddhist values play as the important role to promote

healthy and successful ageing (Danyuthasilpe, 2008; Rattakorn, 2008), including active ageing (Nantsupawat et al., 2010; Sakulkoo, 2009).

With regard to gender, it has been indicated that Thai female elders are less likely to achieve healthy and active ageing than male elders (Thanakwang & Soonthorndhada, 2006; Thanakwang & Soonthorndhada, 2012). The reasons may be that there are disparities and inequities between sexes, leading to differences between genders in societies, especially for women who generally have lower socioeconomic or health status when compared to elderly men (Knodel & Ofstedal, 2003; Sobieszczyk, Knodel, & Chayovan, 2003).

2) Health and social service systems

To promote healthy and active ageing, the Thai government has established health and social service systems by focusing on health promotion, disease prevention, including equitable accessibility to qualified primary health care and long-term care (Jitapunkul & Wiwatvanich, 2009; Kespichayawattana & Jitapunkul, 2009; Sasat & Bowers, 2013). In ecological model perspectives related to active ageing promotion, institutional and community levels play a crucial role in facilitating active ageing (Davenport, 2003).

The global and Thailand health care policies related to older persons have been evidently undertaken since the organization of a National Elderly Council and the development of a national plan for older persons was founded in 1982 (Jitapunkul & Wiwatvanich, 2009). Currently, the global and national policies related to Thai elderly are based on the Second National Plan for Older Person (2002–2021) and the Elderly Act, 2003. This plan focused on the development of policies and programs to support older persons. In healthcare policies, they are focusing on advancing health and well-being into old age, ensuring quality of life at all ages including independent living. Health and well-being are carried out by the Ministry of Public Health with respect to several implementations as follows: proclamation of "Healthy Thailand" as a national agenda, promotion and support of the elderly integration and participation, and providing quality health services and long-term care (Jitapunkul & Wiwatvanich, 2009; Kespichayawattana & Jitapunkul, 2009; Sasat & Bowers, 2013).

3) Behavioral determinants

The concept of active ageing emphasizes that elderly people still can retain their functional capabilities, both physically and mentally. Behavioral factors, particularly health behaviors, of an individual are widely documented as the powerful predictor of healthy and active ageing. The views toward active ageing among the elderly in Bangkok, Thailand (Satjumrean, 2006), included various behaviors, such as, taking care themselves and independent, satisfying with their current health status, being engaged in activities in keeping with their potentials, participating in the elderly club's activities regularly, and using their talents creativity. Likewise, promoting physiological, mental and social well-being is the starting point toward active ageing process (Satjumrean, 2006). The ways of contributing to healthy ageing include practices of physical and psychological health promotion and active engagement in social activities (Thanakwang, Soonthorndhada, & Mongkolprasoet, 2012). Similarly, Rattanapan (2008) used an ethnographic study to explain the ways to being healthy in Southern elders in Thasala sub-district, Nakhon Si Thamarat province. The participants practiced daily living toward healthy ageing in six domains including eating nutritious and sufficient food, exercising to the point of perspiration, getting sufficient quality sleep, seeking folk care, keeping a peaceful mind, and being valued as an elderly person. The qualitative research method with ethnography by Danyuthasilpe et al. (2008) in Phitsanulok province, northern Thailand also found that ways of healthy ageing were classified as 1) engaging in culture and religious activities, 2) maintaining self-care activities, and 3) promoting interdependence. Therefore, health-promoting behavior is indicated as the most important determinant of healthy ageing (Thanakwang & Soonthorndhada, 2011), as well as a significant indicator of active ageing in older Thai adults (Kespichayawattana & Wiwatvanich, 2006; Rattanamongkolgul et al., 2012).

4) Personal factors

Much of the existing studies in Thai elders have identified that various personal factors both demographic and social factors are significantly associated with healthy and active ageing. Using data from the 2002 National Elderly Survey, the findings indicated that active ageing measures were higher among males than females,

the young old than among the older and oldest old and among the married elderly than unmarried ones, those widowed, divorced or separated. Moreover, the level of activity was somewhat greater for older persons who had completed higher education and had been engaged in a higher status occupation (such as civil servants, professionals and technicians), and those who suffered from no chronic illnesses (Thanakwang & Soonthorndhada, 2006). Thus, it is not surprising that the Thai healthy, highly educated elders have been found to be an active ageing more likely than the lay elderly (Kespichayawattana & Wiwatvanich, 2006; Sakulkoo, 2009). From literature review, it was found that the important personal factors influencing ageing actively are not biology and genetics but psychosocial factors of the elderly individuals.

5) Physical environment

Although physical environments are globally documented as a strong influence on health and well-being (Cunningham & Michael, 2004; Lui et al., 2009), in Thailand, it is clear that Thai elderly focus on socio-cultural environment (i.e., soul, culture, and religion) influencing their well-being more than on the physical environment (Hoontrakul et al., 2008). This may be that hazards in the physical environment facilitating to painful injuries among older people are not the serious problems in Thailand. However, the study in nonagenarians aged 90-99 years living in Mae Hong Son Province, northern Thailand by Viwatpanich (2008) indicated that freedom from accidental risk or environmental hazard is one of the indicators of active ageing. Recently, building an age-friendly environment to promote health and prevent injuries for older Thai people has been a central concern (Hoontrakul et al., 2008).

6) Social environment

In Thailand, the social environment, particularly social relations are significantly related to active ageing and other related positive ageing. Specifically, social networks and social support are documented as the vital determinants of healthy, successful and active ageing (Danyuthasilpe, 2008; Rattakorn, 2008; Thanakwang, 2008; Thanakwang & Soonthorndhada, 2011). The study done by Nantsupawat et al. (2010) indicated that not families of one or two generation categories but families of three or four generation categories could promote active

ageing because the older persons did not feel secure about having someone take care of them in the future. Family support networks are predominantly related to health and well-being in Thai elders (Thanakwang & Soonthorndhada, 2008). However, not only do family members influence healthy ageing, but friends and neighbors also are an important determinant facilitating healthy ageing (Danyuthasilpe, 2008; Thanakwang & Soonthorndhada, 2011). Rattakorn (2008) states that social relations with respect to social acceptance and social sphere create self-value of older persons and provide perceived self-capacity, leading to ageing successfully.

7) Economic determinants

Recently, the problems of poverty and economic security in older Thai adults are a challenge for policy makers (Suwanrada 2009; Thanakwang & Soonthorndhada, 2007). Among prior studies on economics in Thai elders, Chayovan (2005) found that one-fourth (25 percent) of them have an average income less than 10,000 Baht per year considered as lower than the poverty line, and approximately 14 percent of those face poverty or possess insufficient income. Children are still the most common source of income for older Thais (Zimmer & Amornsirisomboon, 2001). Knodel and Chayovan (2009a) reported that 52.3 percent of the elderly income comes from their children, and 28.9 percent comes from their paid work. Financial dependence on children increases for the older persons aged 70 years and over and for female elderly, whereas income from work decreases with age because labor force participation and income generating activity decline with increased age.

With regard to economic determinants of active ageing, income and working are found related to active ageing (Kespichayawattana & Wiwatvanich, 2006; Nantsupawat et al., 2010; Thanakwang & Soonthorndhada, 2006). Perhaps economic status is a crucial factor facilitating the elderly to achieve healthy, successful, productive and active ageing. Generally, the rich are healthier than the poor (Ross & Wu, 1996) because higher income is associated with greater education and the prestigious working status. This reflects the importance of economic adequacy in the maintenance of healthy and active ageing. This is consistent with the study done by Thanakwang and Soonthorndhada (2006) that older persons who had a higher education or had completed secondary school had higher attributes of active ageing

than those with no schooling or those with only primary-level education. Older persons who had been civil servants or professionals had higher active ageing attributes than those working in other sectors. The elderly who had no occupation or who were unemployed had the lowest percentage of active ageing attributes.

In summary for the Thai perspective on active ageing determinants, it was found that several determinants are significantly related to active ageing, including 1) cultural factors and gender; 2) socio-demographic determinants such as age, marital status, education, and residential areas; 3) social support networks i.e. family networks, friend networks, family support and friendship support; 4) health status/condition i.e. number of chronic diseases, disabilities, 5) behavioral determinants; 6) physical environment; and 7) economic determinants such as income and working. However, some of these determinants are also considered as the indicator of active ageing. They are overlapped and sometimes used interchangeably.

3. Measurement of active ageing

3.1 Existing tools related to active ageing

Active ageing is an understudied phenomenon that lacks a valid reliable measure to capture its multi-dimensionality. Seven positive ageing scales related to active ageing including healthy ageing, successful ageing, and productive ageing scales, developed in the context of different countries including Thailand are used as references. The following section will briefly explained each of these instruments and their strengths, weaknesses as well as measurement and cultural-specific issues (For more details see Table 19 in Appendix A).

1) Healthy Ageing Instrument (HAI)

The HAI was developed by Thiamwong et al. (2008) for Thai elderly. The conceptual framework of her study is based on the concept of healthy and successful ageing. Mixed method design with three steps for development and testing psychometric properties of HAI was used. In the first step, qualitative approach with focus groups and in-depth interview was employed to obtain information grounded in

the experience of older Thai adults about their perspectives to healthy ageing. This qualitative approach step yielded the constructing definition and content domains of healthy ageing in Thai elderly. Then, generating and judging measurement items were performed based on the qualitative data obtained from step 1. Lastly, psychometric properties of the developed HAI were tested for its validity and reliability. The final HAI consists of 35 items and 4-point rating scale (1-4). This scale focuses on being healthy involving physical, mental/cognitive, social and spiritual aspects.

Although the HAI is developed by a comprehensive scale development to measure healthy ageing among Thai elders and showed acceptable validity and reliability, it is limited of generalizability for overall Thai older people because it is developed based on only one province (Songkla) in southern Thailand. Therefore, it may also be limited to use as a national tool.

2) Successful Ageing Inventory (SAI)

The SAI was developed by Troutman (formerly Flood) and colleagues (Troutman et al., 2011). The conceptual definition of successful ageing based on a concept analysis (Flood, 2002) and a mid-ranged theory of successful ageing derived directly from an extensive and comprehensive review of nursing, medical, gerontological, psychological, and sociological researches and theoretical literatures (Flood, 2005). Troutman initially developed a 20-item SAI to test the emerging theory of successful ageing (Flood, 2006) since she studied Ph.D. program in nursing at The University of North Carolina at Charlotte (Flood, 2008). Then, she developed and tested this instrument in the American elders to refine scale dimensionality, scale reliability and validity (Troutman et al., 2011). The newly developed SAI consists of 20 items in the five factors for the 5-point Likert version (0-4).

The strength of this scale is that it is developed based on the middle-range theory related to nursing science and its validity and reliability are accepted. This scale may be applicable to worldwide use to assess successful ageing. However, its weakness is that it is not a contextual-based but theoretical- and expertise-based perspective.

3) Global Activity Motivation Measure

This scale is developed by Caro et al. (2009). Based on the 13-item global activity motivation measure (Caro et al., 2005) to retest with 193 American elders using factor analysis, the new global activity motivation measure is reduced to 4 items involving the questions to assess productive ageing that the older persons remain physically, socially, and productively active. The strength of this scale is that it can be used as the predictor of productive ageing, and adequate for conducting research to measure productive ageing. However, it has weaknesses in that the scale brevity (4 items) can lower internal consistency. Actually, a conceptual definition of global activity motivation may be having dimensions more than this work that potential dimensions and plausible clusters of activity and further empirical work is needed to develop the measures.

4) Change in Activity and Interest Index (CAII)

This scale is developed based on social work by Adams and Sanders (2010), focusing on successful and productive ageing. The scale is developed based on socio-emotional selectivity and gerotranscendence theories and extended from a 30-item retrospective measure that examines self-perceived change in investment and attitudes about social and leisure pastimes among older adults (Adams, 2004). Factor analysis with principle component analysis (PCA) yielded four domains of CAII, and the newly developed CAII is reduced to 24 items. The strength of this scale development is that factor analysis revisits construct validity for the original index in ways that are more methodologically sound. Likewise, the scale can be used as an indicator of successful and productive ageing.

5) Social Values of Older People (SVOP)

This scale is developed to use in gerontological social work by Yoon and Kolomer (2007), focusing on productive ageing. The SVOP was developed based on the 13-item ageing opinion instrument (Kafer et al., 1980) and modified by changing linguistic expression and adding some important items, resulting in a 20-item scale. The internal consistency was tested and 4 items were deleted due to lower correlation to the overall scale. Then, exploratory factor analysis was used and

produced the five domains of the SVOP. The 5-component model was also confirmed using CFA, resulting in an acceptable model fit.

The strength of this scale is that it is beneficial for developing gerontological curriculum for students and it is suitable to apply for a large survey because it is easy to administer (16 items). However, this scale is based upon students' views that may be different with the actual characteristic of positive ageing viewed by older persons.

6) Scale for Older Adults' Routine (SOAR)

The SOAR is developed by Zisberg and colleagues (Zisberg, Young, & Schepp, 2009). The conceptual definition of routine in older adults derived from a concept analysis done by Zisberg (Zisberg et al., 2007) since she was a Ph.D. nursing student in Oregon Health and Sciences University, USA. The procedure of this scale development included 3 steps. First, item generation and content validity based on existing tools and literature review was conducted yielding a list of 65 items. Second, instrument feasibility testing and additional content validation were performed, resulting in an instrument comprised of 42 items in five dimensions (basic, instrumental, social, leisure and rest activities). Third, psychometric evaluation was implemented with 80 participants, and the scale's validity and reliability were acceptable. The strength of this scale is that it is valid and reliable and is suitable to use for measuring healthy ageing. However, for its weakness, the number of the samples (N=80) for psychometric testing of the scale is quite small and homogenous in high socioeconomic status. This may have biases the sample and limited the generalizability of the measurement.

7) Register-Connectedness Scale for Older Adults

This scale is also developed by nursing scholar, namely Elizabeth Register. She has focused on connectedness in older adults since she was a Ph.D. nursing student in the University of South Carolina, USA (Register, 2008). She started from concept analysis and developed the middle-range theory (Register & Herman, 2006), then developed a connectedness scale to test her theory (Register, 2008; Register, Herman, & Tavakoli, 2011). For this scale development, instrument

items were generated using a grounded theory approach to explore the meanings of connectedness in older adults (Register & Scharer, 2010), resulting in a 166-item instrument to measure elderly connectedness. Then, an expert panel reviewed the items and retained 72 items. Exploratory factor analysis yielded five dimensions of connectedness, and reduced the scale's items to 45. This scale development is prominent in that it uses mixed method design to explore connectedness grounded from American elderly perspective and then develops and evaluates the scale psychometric properties using standard procedures.

However, its weakness is found that, for psychometric testing, samples are not concerned for their maximized variation. Most participants were ostensibly more connectedness (Register, Herman, & Tavakoli, 2011) that may be affecting for the bias in instrument development. Social desirability testing to determine the degree to which the participants answer questions in a socially desirable manner may be needed.

3.2 Issues of developing processes of active ageing related tools

There are several issues of the developing processes of active ageing related tools, described and critiqued as follows:

1) Most existing scales are developed based on Western countries (five scales for American elder, and one scale for Thai elders). They are similar focusing on the elderly respondents as the unit of analysis, except Yoon and Kolomer (2007) who are focusing on social work students' perspective.

2) No existing scale is directly measuring active ageing attributes. There is one scale measuring healthy ageing (Thiamwong et al., 2008), two scales measuring successful ageing (Troutman et al., 2011; Register, Herman, & Tavakoli, 2011), two scales measuring productive ageing (Caro et al., 2009; Yoon & Kolomer, 2007), one scale measuring healthy and successful ageing (Zisberg, Young, & Schepp, 2009), and one scale measuring successful and productive ageing (Adams & Sanders, 2010). All related existing active ageing scales show multidimensional aspects involving active physical and mental/cognitive health promotion, social participation/activities, social relationships, spiritual aspect, and social support received or given.

3) All studies used exploratory factor analysis by principle component analysis to find a way to summarize a number of original items contained in the scale into a smaller set, composite dimension or factor of a set of items with a minimum loss of information (DeVellis, 2003; Hair et al., 2006; Nunnally & Bernstain, 1994). Factor analysis is used to disentangle the complex interrelationships among items and identify items that seem the same groups as unified concepts (Pedhazur & Schmelkin, 1991). However, only Yoon & Kolomer (2007)'s study further used confirmatory factor analysis to test the theoretical model. All development scales used the criteria that an eigenvalue ≥ 1.0 is used to extract the number of components, and factor loading ≥ 0.40 is considered to have practical significance.

4) In scale development stage, the Thai HAI (Thiamwong et al, 2008) used qualitative approach with focus groups and in-depth interviews to explore the domains of healthy ageing in Thai context, and subsequently utilized these data to generate quantitative measurement items. This is similar to the scale development done by Register and colleagues (Register, Herman, & Tavakoli, 2011). However, most of these existing scales in Western counties are developed based on the original scales that are constructed for the prior studies (e.g., Adams & Sanders, 2010; Caro et al., 2009; Troutman et al., 2011) or applied the existing scales developed by others (e.g. Yoon & Kolomer, 2007; Zisberg, Young, & Schepp, 2009).

5) For the stage of psychometric evaluation of the new scale, all existing scales demonstrate construct validity with factor analysis and the internal reliability using Cronbach's alpha coefficients (see Table 20, in Appendix A). The Thai HAI (Thiamwong et al, 2008) also presents content validity by expert panel, concurrent criterion-related validity, and test-retest reliability, similarly for the SOAR (Zisberg, Young, & Schepp, 2009). This is because the two scales are culturally-grounded developed. Moreover, no scales identify known group comparison and social desirability.

6) All studies are similarly focusing on local or regional settings. No studies test their newly developed scale with a nationwide survey that can result in a generalizable national tool. However, some authors extend their psychometric properties of the scale to other groups or settings. For example, the SAI (Troutman et al., 2011) was initially tested with a sample of predominantly White elders (90%),

then Troutman extended to assess its psychometric properties in a sample of Black elders to determine its adequacy for this population (Troutman, Nies, & Bentley, 2011). There has never been done in Thailand for further testing the psychometric properties of the developed scale in other groups or settings.

Summary

Active ageing is a multidimensional concept involving health, participation, and security aspects. There are several positive ageing concepts related to active ageing, i.e., healthy, successful, and productive ageing. The literature review revealed that the essence of active ageing concept combines the core element of healthy, successful and productive ageing with a strong emphasis on optimal health, personal growth and spirituality, social engagement, productive activities, and security in life. The theoretical foundations underpinning the study of active ageing is based on the ecological model of ageing, activity and continuity theories, and active ageing and related positive ageing concepts. The existing scales measuring positive ageing have mostly found scales to measure healthy ageing, successful ageing, and productive ageing. However, a review of the literature revealed that no active ageing instrument is currently available. Developing an active ageing scale is appropriate to obtain a culturally-grounded measure for older Thai people.

CHAPTER 3

METHODOLOGY

To construct an active ageing scale for Thai people (AAS-Thai), this study uses three main phases: 1) exploring the conceptual structure of active ageing for Thai elderly; 2) development of an active ageing scale for Thai people (AAS-Thai); and 3) psychometric testing of the AAS-Thai. Specifically, the procedure of the AAS-Thai, a comprehensive measurement development, is based on multi-step strategy for developing a culturally-sensitive measure on Thai elders guided by Ingersoll-Dayton (2011). In each step, the research design, population and sampling technique, setting, instrumentation, data collection, and data analysis, including protection of human subjects are described. To do so, the process of the construction of a culturally-grounded measure of the AAS-Thai is undertaken including the following eight steps, detailed in the next section.

Phase I: *Exploring the conceptual structure of active ageing for Thai elderly*

Step 1 Conducting integrated systematic review

Step 2 Using focus groups and in-depth interviews

Phase II: Development of an active ageing scale for Thai people (AAS-Thai)

Step 3 Developing preliminary quantitative measures

Step 4 Reviewing the preliminary measure by an expert panel

Step 5 Conducting cognitive interviews

Phase III: Psychometric testing of AAS-Thai

Step 6 Pre-testing

Step 7 Performing a nationwide survey

Step 8 Testing psychometric properties

Phase I: *Exploring the conceptual structure of active ageing for Thai elderly*

Initially, for instrument development, researchers need to find an idea and make clear what they wish to measure. The researchers have to focus on the importance of the substantive theories or concepts related to the phenomenon of interest to be measured. Clarifying a concept for which an instrument will be developed includes three basic approaches: concept analysis, concept synthesis, and concept derivation. Concept analysis is a useful method for defining a concept when a body of theoretical literature exists. Whereas, concept synthesis is a method for developing or clarifying a concept based on observation in the clinic or the field; thus it is data based. Concept derivation consists of moving a concept from one field of interest to another. In the process of borrowing a concept, the concept must be redefined when move to a new area of study (Walker & Avant, 2005).

In this study, because it is targeted to develop a culturally-sensitive measure of active ageing for Thai elderly, concept synthesis was undertaken using literature review integrated with qualitative approach in the field study to synthesize the Thai active ageing concept. The researcher reviewed the existing studies relevant to active ageing and related positive ageing (i.e., healthy ageing, successful ageing, and productive ageing) in step 1 to formulate the conceptual framework guiding the scale development, particularly to use as a guide for designing a semi-structure questions used for focus groups and in-depth interviews in step 2. Moreover, this is beneficial to elaborate any specific domains obtained from the steps of focus groups and in-depth interviews and to develop conceptual definitions of each domain. Taken together, gathering input from the existing studies together with data findings from inductive qualitative study may provide comprehensive insight of active ageing domains experienced by the Thai elderly that will facilitate further development of close-ended items, consistent with the Thai context.

Step 1 Conducting integrated systematic review

The purpose of this review was to summarize the literature about the concepts of active ageing and to identify influencing factors on active ageing in older adults. To address these objectives, the present study answered the following three

questions: (a) what are the essential elements in a definition of active ageing? (b) how has active ageing been operational defined in the existing literature? and (d) what are factors influencing active ageing?

Design: An integrated systematic review was performed. This approach is chosen because it allows the inclusion of studies with diverse methodologies (i.e., quantitative, qualitative research) in the same review (Cooper 1998).

Search methods: The search began with a computerized library database search. The lists of the research articles were manually searched. The electronic data bases including CINAHL, Medline, Social Science Index, PubMed, Web of Science and PsychINFO were searched. In addition, nursing textbooks, nursing journals, non-nursing journals, and research reports were also reviewed. These publications presented commonalities as well as differences among the active ageing attributes. The key words for searching included "active ageing", "healthy ageing", "successful ageing", "productive ageing", "health-promoting lifestyle", "self-care", "participation", "social engagement", "security", and "ways of life". The inclusion criteria for the sample were articles that: (1) studies focusing on both Western and Eastern elders, (2) studies published between 1990 and 2012, (3) sample focused on older persons aged 60 years and over, (4) works written either Thai or English language, (5) published articles, research articles, or dissertations, and (6) studies designed either quantitative or qualitative.

Data analysis: Concept synthesis to specify domains of active ageing was conducted. Also, summarizing the findings of each study, a list of the factors influencing active ageing was compiled. Ultimately, the pre-specified domains of active ageing were synthesized from the common constructs of the existing knowledge related to the WHO's active ageing framework (WHO, 2002) and other positive ageing concepts.

Step 2 Using focus groups and in-depth interviews

To identify culturally-meaningful domains of active ageing of Thai elderly, qualitative approaches using focus groups and in-depth interviews were performed. Owing to the original measurement development strategy guided by

Krause (2002), collecting data were undertaken first from focus groups and subsequently from in-depth interviews. However, to save time and make it feasible for collecting data in various settings of Thailand as Ingersoll-Dayton (2011)'s suggestion, the researcher collected data from both sources simultaneously.

The purpose of these steps is to explore the concept and specify the culturally-grounded domains of active ageing among older Thai adults. The initial conceptual structure of active ageing model was generated based on an integrated systematic review in step 1. Then, a qualitative approach was used to confirm the pre-specified structure of the active ageing domains from the literature in order to fit with the Thai elderly context. The participant and setting, instrument, data collection, and data analysis are presented as follows:

Participants and setting: To construct the active ageing scale which is representative for overall older Thai adults, participants were purposefully selected covering all regions of Thailand in both rural and urban areas, including various characteristics of older adults. In settings of data collection, four regions of Thailand (i.e., North, Northeast, Central, and South regions) were targeted. Then, one province of each region (i.e., Nan (North), Nakhon Ratchasima (Northeast), Kanchanaburi (Central), and Songkla (South)) was purposively selected. Furthermore, one urban and one rural area in the selected province were purposefully recruited.

To select the participants for focus groups and in-depth interviews, the purposeful recruiting criteria that must be covered multiple characteristics of older adults were: (a) being a Thai older person aged 60 years or older; (b) living in urban or rural areas/communities; (c) not suffering severe disabilities or severe dementia; and (d) being able to understand and speak Thai. Approximately eight persons in eight focus groups of both rural and urban areas in the four selected provinces were carried out. Therefore, sixty four older adults were recruited in this step.

Instrument: An instrument used in this step was a semi-structured guideline that is the open-ended questions, created from the pre-specified domains of active ageing and data obtained from an integrative review in existing studies in Thai elders. Two forms of the semi-structured guidelines were used for focus group discussions and individual in-depth interviews (see Appendix B). In addition, a demographic data form was also included to obtain the participants' characteristics.

The semi-structured guidelines included the various questions to explore health, participation, and security aspects. For individual in-depth interview, probing questions were further employed to clarify more specific issues or more information of the interested aspects.

Data collection: The elderly participants who met the recruitment criteria were the target group for focus groups and in-depth interviews. They were selected by collaborating with health personnel from local health centers of the selected areas, and were chosen for their varying levels of socio-economic and health statuses. All participants were interviewed after they agreed to participate in the study either via verbal agreement or signing a consent form (see Appendix C). For focus group discussions, the eight participants were invited to participate in the local health center. Focus group discussions were performed by the researcher as a moderator, and the research assistant was a note taker. The participants were also asked to allow for tape recordings. The length of each focus group varied from one hour to one hour and half or end when target data were acquired.

After focus groups, two participants (one man and one woman) were purposively selected from each of focus groups to further in-depth interview. Using focus groups in Thai elders, Knodel (1995) commented that the focus group may not be appropriated to disclose information of a personal nature or a sensitive belief. Therefore, in case of some specific questions, using individualized in-depth interview is more suitable to obtain more personal information (Ingersoll-Dayton, 2011) and provides rich insight into the older persons' experience in their daily lives (Krause, 2002). Each of the participants was interviewed in a private room of the local health center in order to ensure that he/she could freely express their experiences. Before interviewing, the participants were asked to allow for tape recordings. The length of each interview varied from 30 minutes to an hour and end when target data were acquired.

Using qualitative approaches, this phase conducted 16 in-depth interviews and discussed with 64 individuals in 8 focus groups.

Data analysis: The contents of tape recordings were transcribed and developed a coding scheme. The data obtained from both qualitative approaches were analyzed using content analysis. After collecting data in one region, the important

data emerged beyond the semi-structured question guideline were asked for the elderly in the other regions. Constant comparison from one case to another was performed. Then, the important ideas were coded, categorized, and developed the themes portraying the active ageing among Thai elderly. Each focus group and interview was initially transcribed verbatim. The researcher analyzed the data by reading the data line-by-line several times, and then identified coding and summarizing the sub-themes, and themes, consistent with established qualitative data analysis methods (Graneheim & Lundman, 2004). Codes were labeled from the meaning of each response and condensed meaning unit that describes close to the respondent's intended meanings. Codes that were found to be conceptually similar in nature or related in meaning were grouped into sub-themes. The sub-themes that revealed the meanings of the participants' statements were also woven together to explain each main theme to describe the viewpoints and experiences of Thai elderly regarding active ageing. The list of themes and subthemes were reviewed for completeness and accuracy. Throughout the process of data analysis, the researcher's codes, sub-themes, and themes were compared. In cases of a difference of opinion, definitions were clarified and discussions continued until consensus was reached.

To establish the trustworthiness of qualitative content analysis, credibility, dependability, and transferability were identified (Graneheim & Lundman, 2004). Credibility was enhanced through member checking and peer debriefing. Member checking was conducted by directly asking participants during and after the interviews to review the information that they shared, clarify perceptions, and validate the interpretations of their intended meanings. The validity of the study was increased by using various methods. Focus group and interview participants were asked to confirm that the researcher had correctly identified and documented the consensus of the group following discussion of each item on active ageing aspect. A summary of the discussion was given at the end of each focus group or interview session, and participants were again asked to confirm that the researcher had accurately documented their comments. Furthermore, five participants were asked to compare the overall results of the study with their own experiences. In peer checking, two expert supervisors conducted the peer debriefing to consensus on the manner in which the data were analyzed and interpreted, establishing inter-transcripts reliability.

Further, the dependability of this study was established by an audit trail regarding the appropriateness of the decision and methodologically used from its beginning to ending. All activities of the study including raw data such as comments written on field notes, analysis, interpretations, and findings were recorded in a document. The interview transcripts were analyzed by the researcher and two supervisors throughout the research project. This study enhanced the transferability by conducting the data collection in natural settings, in which the elderly participants shared their experiences, at times and in places they preferred. In addition, data were collected with maximized variations of the elderly participants covering four regions of Thailand, thereby making it representative of all Thai older adults.

Phase II: Development of an active ageing scale for Thai people (AAS-Thai)

Step 3: Developing preliminary quantitative measures

The purpose of this step is to use the qualitative data obtained in step 2 to develop culturally-grounded statements related to each specified domains or themes of active ageing. Generating an item pool from the specified domains of Thai active ageing was undertaken. According to scale development guided by DeVellis (2003), there are several procedures to generate the item pool; for example, developing conceptual definitions of each specified domain, formulating operational definitions of the domains, identifying observable indicators of each domain, and writing a blue print of item matrix. In so doing, incorporating words and phrases from the study participants' statements, which are important to develop close-ended items (Ingersoll-Dayton, 2011), was also focused. Redundancy of items, characteristics of good and bad items and positively and negatively worded items were determined.

After generating the item pool of preliminary quantitative measure was finished, the scale format determination was further undertaken. Since the AAS-Thai is designed for measuring the attributes of active ageing perceived by Thai older adults, Likert scale format was appropriate. Likert type instrument has been considered as a type of subject-centered scale and widely used to measure the subjective perceptions such as attitude, opinion, belief, and experience of individual's

lives (DeVellis, 2003). The reasons for using Likert scale for this instrument are as follows: 1) it has been commonly used to measure the subjective perceptions of individuals; 2) it is somewhat simple to create; 3) its quantitative scores are concrete and appropriate to facilitate for several techniques of psychometric evaluation of the scale; and 4) it is easy to response by the elderly respondents.

In summary, the AAS-Thai were designed to measure the attributes of active ageing perceived by the older Thai adults. The first draft of AAS-Thai was completely developed at the end of this phase.

Step 4: Reviewing the preliminary measure by an expert panel

The aim of this step is to evaluate content validity of the preliminary measure of active ageing, reviewed by an expert panel. Examining the content validity of this measure is based on the expert concurrence using Content Validity Index (CVI) (Burns & Grove, 2009). This procedure is a psychometric method used to determine whether the contents of the measure are consistent with what it is supposed to measure and whether or not the contents are representative of the concepts (Merle, 1998). This method is indicating how well the close-ended items of AAS-Thai represent the specified construct's domains. To evaluate the content validity, the procedures were performed as follows:

Sample: In the stage of reviewing of measures by expert panel to determine the generated items, Lynn (1986) recommended that at least five experts are needed in order to minimize erroneous conclusions. Therefore, the researcher of this present study invited seven experts specializing in multidisciplinary areas relevant to the study (i.e., two experts on gerontological nursing; one expert on geriatric medicine; one expert on social gerontology; one expert on geriatric psychiatry; one expert on health promotion; and one expert on scale development) (see Appendix D).

Instrument: Two forms of the instruments used in this step for submitting to experts were: 1) the first draft of AAS-Thai and (see Appendix E) and 2) a content validity evaluation form (see Appendix F). In addition, the proposal of this instrument development, including the conceptual framework, operational definitions of Thai active ageing, and definitions of each subscale, were also included in the submission.

Data collection: There were two steps to approach the multidisciplinary experts. First, the experts who met the criteria to be the sample mentioned above were looked for and informally invited to evaluate the instruments. Then, a letter from the Faculty of Nursing, Prince of Songkla University, attached with two forms of the instruments, was sent by mail to each of the experts who accepted the invitation. The seven experts with outstanding reputations in the area of active ageing were asked to review and comment on the items that were developed for this study. They were instructed to rate each item on a scale that ranged from 1 to 4 in a rating form to rate the relevance of each item, as shown below (Polit & Beck, 2004):

1 = not relevant 2 = somewhat relevant

3 = quite relevant 4 = highly relevant

In addition, the experts were asked to evaluate clarity and conciseness of the close-ended items of AAS-Thai by using 'yes' or 'no' responses on each item. They were also invited to suggest revised wordings for any items that seem ambiguous, unclear, or inappropriate to increase their clarity, including some additional items as indicators of the AAS-Thai.

Data analysis: The content validity was examined using scores of the agreement scale from seven experts to calculate Content Validity Index (CVI). The CVI for the entire instrument is the proportion of the total items judged as content valid (Lynn, 1986), in which CVI's values greater than or equal to 0.80 indicate an acceptable content validity of the instrument (Burns & Grove, 2009; Waltz, Strickland & Lenz, 1991). In order to enhance the content validity of items and overall AAS-Thai, items rated at level 3 or 4 were retained whereas those rated at level 1 or 2 were deleted or modified regarding the expert's suggestion and discussion with the thesis advisors. Taken together, the total list of close-ended items was revised based on the feedback of experts and thesis advisors to the newly devised AAS-Thai, considered as the second draft.

Step 5: Conducting cognitive interviews

Cognitive interview is aimed in several ways, for example, to evaluate if study respondents understand each of the closed-ended questions in the intended manner, to encourage if participants can suggest a better way of phrasing question stems that are confusing, and to investigate if participants feel comfortable with the closed-ended response options (Ingersoll-Dayton et al., 2004; Krause, 2002). Thus, the cognitive interviewing technique has been used to obtain respondent's feedback on question suitability, wording and comprehension, difficulty with response options, and the overall effectiveness of a scale design (Drennan, 2003; Garcia, 2011; Izumi, Vandermause, & Benavides-Vaello, 2013; Sudman, Bradburn, & Schwarz, 1996; Willis, 2005).

Sample and setting: To make the wording of AAS-Thai more clear and practical, ten Thai older adults aged 60 years and older were purposefully selected as participants. The setting from which the participants were recruited was the Health Promotion and Rehabilitation Center for Elderly, Faculty of Nursing, Prince of Songkla University. Participants were selected with variation in gender, age range, educational level, and marital status.

Instrument: The instrument used for the cognitive interviewing techniques comprised two forms: 1) the second draft of AAS-Thai revised from the step 4 of content validity; 2) the cognitive interview questions that comprise two types of guiding questions (think-aloud questions and probing questions) (see Appendix G).

Data collection: Cognitive interview in the present study were conducted with ten Thai elderly, who were the members of the Health Promotion and Rehabilitation Center for Elderly, Faculty of Nursing, Prince of Songkla University. The interviewer read an item on the questionnaire and asked for the respondent's answer. Then the interviewer asked the think-aloud question and a probing question. Using think-aloud strategy, respondents were asked, "Can you tell me about what you are thinking about when you answered this question". Think-aloud questions were used in conjunction with probing questions to find out about participants' general perceptions as well as their reactions to specific aspects of the questions. Likewise, participants were asked to explain some probing questions, such as "What does [a word or phrase] mean to you?" "Can you repeat the question in your own words?"

"What were you thinking about when you answered the question?" "Was it easy or hard for you to answer the question?" And "Do you think it would be hard for other older persons to answers that questions". Interviewers also took notes and asked the respondents for permission to tape record during the interview.

Data analysis: The notes and tape recorded containing the cognitive interview responses were transcribed verbatim and entered into a database. Using data obtained from the respondent's perceptions and interpretations, a modification were made to revise problematic items that elicit response error, ensuring to the comprehensibility and practicality. The third draft of AAS-Thai was emerged in this step.

Phase III: Psychometric testing of AAS-Thai

Step 6: Pre-testing

The goal of this pre-testing is to check the appropriateness of the developed instrument in the real situation, to examine frequency distributions to make sure the indicators had sufficient variance, and to examine the internal consistency of the newly developed scale. The sample and setting, instrument, data collection, and data analysis were described as followings:

Sample and setting: Regarding Polit and Beck (2004)'s recommendation, at least 30 subjects are an appropriate number for pre-testing. Thus, in this pre-testing, thirty older Thai adults were purposefully selected to be the subjects. For the setting to carry out the pilot study, one district (Muang, Nakhon Ratchasima Province), which has a vast number of older people and covers both urban and rural areas while have prominently differences, was purposefully selected. The inclusion criteria for participants in this study were: (a) being an older Thai person aged 60 years or older; (b) not suffering severe disabilities or severe dementia; and (c) being able to understand and speak Thai. In so doing, the researcher attempted to select the subjects from various demographic characteristics and geographic areas in order to make samples heterogeneous.

Instrument: Pre-testing instrument was the third draft of AAS-Thai, also including demographic sheets (see Appendix H).

Data collection: Data collection was conducted for the three approaches. First, a formal letter to the director of the district health center selected was sent asking for permission to collect data. Second, the researcher contacted health personnel who take responsibly of the older people and asked for information to determine the elderly participants. Lastly, the selected respondents were asked to rate the questionnaire by themselves. In case of illiteracy or suffering from functional limitations, the interviewers read and then the elderly respondents rated their responses on their own. Moreover, the researcher asked the respondents if the items were understandable and whether or not it was easy or difficult to complete.

Data analysis: Internal consistency reliability was analyzed for consistency across items within a scale using internal consistency and item analysis. For internal consistency analysis, this study used a Cronbach's alpha coefficient as a measure of scale reliability. It has been concerned with the homogeneity of the items comprising a scale, and high inter-item correlations mean that these items may be measuring the same concept (DeVellis, 2003). If the items are highly correlated, it is indicating that a scale is internally consistent. Moreover, the sub-scales and an overall scale were calculated for Cronbach's alpha coefficients. The Cronbach alpha value of 0.70 and above indicates sufficient internal consistency for a new tool (Nunnally & Berrnstein, 1994). Item analysis was further performed in case of that the scale has unacceptable internal consistency. It is one of the statistical techniques used to investigate the pattern of responses to each item of the scale and provides the guidance for revision to improve the effectiveness of test items and the validity of test scores (Polit & Beck, 2004). The items were therefore considered whether to be retained, revised, or deleted, at this step. This process is described later in the chapter 4.

Additionally, the information, obtained from this pre-testing with respect to the feedback from the interviewers and the interviewees about any problems they encountered with the questionnaire, were used for revision in some of the problematic questions. Taken together, the fourth draft of AAS-Thai was developed and used to further conduct for the nationwide survey.

Step 7: Performing a nationwide survey

Performing a nationwide survey is a field testing conducted in a large number of older persons. There is also aimed to re-evaluate internal consistency and item analysis which includes factor analysis, resulting to reduce the number of items of AAS-Thai, thereby making it more useful to future research.

Sample and setting: The sample size used in this step was targeted regarding to the method to determine sample size in factor analysis guided by MacCallum and colleagues (1999). In psychometric evaluation of a new measure, a minimum of 5-10 subjects per item is recommended (Nunally & Bernstain, 1994; Burns & Grove, 2009). Specifically, MacCallum and colleagues (1999) recommends that sample size in factor analytic studies 500 or more is excellently suitable. Therefore, the 500 subjects in this study were determined. Participants were also deemed sufficient for field testing to be representative of the Thai elderly context.

As this study was a national survey, the sample was randomly stipulated into 4 regions (Central, North, Northeast, and South) by the stratified sampling technique from Thai elders in different parts of Thailand to make it representative of older Thai adults.

For sampling method, a five stage random sampling was used to select the study subjects.

Stage 1: Selecting province

One province of each region of Thailand (North, Northeast, Central, and South) was randomly selected. There were Nan (North), Nakhon Ratchasima (Northeast), Kanchanaburi (Central), and Songkla (South).

Stage 2: Selecting districts

One district of each selected province in stage 1 was randomly selected using ballot method without replacement, yielding four districts for the study.

Stage 3: Selecting sub-districts

Two sub-districts (Tambon) of each selected district, determined one in urban area (municipal) and another one in rural area (non-municipal), were selected by simple random sampling, resulting a total 8 sub-districts.

Stage 4: Selecting villages/communities

Then, two villages/communities of each selected sub-district were recruited by simple random sampling. There was yielding 16 villages/communities that locate in urban area 8 villages/communities and rural areas 8 villages/communities.

Stage 5: Selecting household and respondents

This stage was performed consistent with the sampling frame of selecting subjects guided by the statistical office and social and human development office. From a total number of older persons (2,778) in 16 selected villages/ communities (see Appendix I), the number of subjects was calculated proportional to size of each village or community. The proportion of this study is 0.18 (equal 500 / 2,778). Selecting households according to the calculated number of the study sample in each village was further conducted by systematic random sampling using household lists. One elderly respondent per household, who met the inclusion criteria, was selected. The inclusion criteria were: (1) being an older person who is dwelling in the community; (2) being aged 60 years or older; (3) not suffering severe disabilities or severe dementia and psychiatric disorders; and (4) being able to understand and speak Thai. If any household had the older person more than one met the inclusion criteria, simple random sampling was conducted by putting all their names in the bucket and selecting one. The multi-step random sampling of sample selection and number of samples in each selected village was shown in Appendix I.

Instrument: The fourth draft of AAS-Thai, which was corrected after the pre-testing step, including a demographic data form, was used as an instrument in this step.

Data collection: Steps in data collection were initiated as follows:

1. Contacted with the Provincial Health Offices, and Districtial Health Offices for approval to collect data in the target areas. Once the informal permission was granted, a formal letter from Faculty of Nursing, Prince of Songkla University, was mailed to them.

2. Coordinated with the Community Health Care Center in which took responsible for the area selected to obtain the list of names and household addresses of the older persons.

3. Selected samples using the proportional to size and systematic random sampling.

4. Trained the assistant researchers regarding the objectives of the study, the contents of the questionnaire, and data collecting techniques.

5. Met with potential participants, describe consent process, and obtained consent.

6. Collected the data each of which was approximately 20 to 30 minutes in length. The participants who were educated or well-read were asked to fill out a demographic sheet and responded to the questionnaire by themselves. In case of those who were illiterate or had any limitations, the researcher assisted them by reading the questionnaire loudly and slowly and then asking them to rate a score on each item.

7. Verified questionnaires for completeness.

Data analysis: For data analysis in this stage, socio-demographic characteristics of the respondents were first analyzed using descriptive statistics such as frequency, percentage, mean, and standard deviation. Using statistical analyses, there were three main methods, including internal consistency, item analysis, and factor analysis.

1. Internal consistency

Similar to internal consistency analysis in the pilot-testing step, Cronbach's alpha coefficients of the total AAS-Thai and its subscales were calculated. The alpha coefficients of 0.7 is minimally accepted for a newly developed instrument (Nunnally & Bernstein, 1994)

2. Item analysis

After the exploratory factor analysis, the item means, standard deviations, and inter-item correlations were examined. Following recommendations of the criteria for item analysis proposed by Ferketich (1991) and Nunnally and Bernstein (1994), items of the AAS-Thai were examined. The three critical criteria were considered to manage scale's items. First, a cut-off value used as an arbitrary guide for identifying the valid items was 0.3; therefore, items with a level below 0.3

should be eliminated from the scale. Second, the inter-item correlation of all the items was determined above 0.2 of which their correlations between 0.3 and 0.7 are particularly recommended, which indicate no problems with redundancy. Lastly, the internal consistency estimate (alpha coefficient) was needed to concern that it would not decrease if the item is deleted (Ferketich, 1991; Merle, 1998; Munro, 2005). Furthermore, not only do the criteria mentioned above need to be considered, but, prior to deleting the items, other qualitative criteria were also concern for the development of the AAS-Thai in this study. Specifically, if any items fail to meet the criteria, they may be retained when its contents are meaningful as identified by focus-group and in-depth interview participants, or they are strongly consistent with the theoretical definitions of the scale's dimension.

3. Exploratory factor analysis

Factor analysis is a powerful technique in assessing construct validation (Pedhazur & Schmelkin, 1991). It has been designed to find a way to summarize a number of original items contained in the scale into a newer small set, composite dimension or factor of a set of items with a minimum loss of information (Hair et al., 2006; Maruyama, 1998). Factor analysis is used to disentangle the complex interrelationships among items and identify items that seem the same into groups as unified concepts (Pedhazur & Schmelkin, 1991). Exploratory factor analysis (EFA) was used in this study because the developed AAS-Thai has a large number of items and needs to manage with EFA to condense and group highly correlated items together and creates a new composite measure that can represent each group of items.

Exploratory factor analysis (EFA) was performed using SPSS for window program. Before conducting EFA, the Kaiser-Meyer-Olkin value was analyzed to determine whether the sample is adequate and the Bartlett test was also analyzed to indicate whether the correlations do not occur by chance and that there is justification for the factor analysis (Tabachnick & Fidell, 1989). Then, EFA was performed involving two phases: (a) factor extraction method using principle component analysis (PCA) and (b) factor rotation using varimax methods. An eigenvalue equal to or greater than 1.0 is considered as a criterion to extract the

number of components (Hair et al., 2006; Pedhazur & Schmelkin, 1991). Following the process of factor interpretation guided by Hair and colleagues (2006), this process was conducted in 5 steps. The first step was examining the factor matrix of loadings that is focusing on the factor pattern matrix. Factor loading of 0.40 and higher was recommended to have practical significance. The second step was identifying the significant loading(s) for each variable to see the magnitude and significant loading scores and also the cross-loadings. The third step was assessing communalities, an amount of variance accounted by the factor solution for each item. The communality score less than 0.50 was considered as not having sufficient explanation. The fourth step was respecifying the factor model if needed with respect to finding any one of several problems; for example, (a) insignificant loadings, (b) too low communalities, and (c) cross-loadings. The fifth step was labeling the factors that represent the meaning of a set of items grouped into a specified factor of the AAS-Thai.

To develop and revise the AAS-Thai to be clarity, concise, and useful for practice, the criteria of internal consistency, item analysis, and exploratory factor analyses were used as a guidance to determine the optimal indicators of Thai measure of active ageing. This process resulted in the fifth draft of AAS-Thai that was appropriately developed and reduced the number of items. This fifth draft of AAS-Thai was further examined for psychometric properties in the last step.

Step 8: Testing Psychometric Properties

The purpose of psychometric testing is to examine the validity and reliability of the newly-developed measure of active ageing for Thai people (AAS-Thai). The sample and setting, instrument, data collection, and data analysis of each approach were detailed as follows:

1. Validity

For validity evaluation, this study focused on testing of the construct validity of AAS-Thai. Construct validity was performed with respect to three critical methods involving 1) factor analysis that was mentioned earlier; 2) hypothesis testing; and 3) known group technique.

Hypothesis testing

Hypothesis testing examines the relationships based on theoretical predictions. As the concepts of healthy ageing and active ageing have been interconnected (Flick et al., 2003; Kalache & Kickbusch, 1997), the active ageing scale should be significantly correlated with a healthy ageing scale. Thus, this study attempts to test the hypothesis that active ageing is positively associated with healthy ageing. In addition, hypothesis testing examines the relationships based on theoretical predictions. The hypothesis for the study is "Thai older adults with a high degree of active ageing have a high degree of quality of life" adopting the notion that active ageing is a predictive factor to quality of life (WHO, 2002). Therefore, to confirm the construct validity of AAS-Thai, the hypothesis testing on the relationships between active ageing and healthy ageing and between active ageing and quality of life was examined.

Sample and setting: In this stage, thirty older adults in one village located in Nongproo sub-district, Muang, Nakhon Ratchasima was purposefully selected to be the subjects and setting. The inclusion criteria for participants in this study were similar to the step 6 of pre-testing. Respondents were conveniently selected with various demographic characteristics and geographic areas to make the sample heterogeneous.

Instrument: The final draft of AAS-Thai and the two standard instruments: healthy ageing instrument (HAI) and WHO quality of life measure (WHOQOL-BREF) were used. Healthy ageing instrument (HAI) was developed by Thaimwong et al. (2008) in the Thai elderly, which demonstrated good validity and reliability, and the WHOQOL-BREF was translated by Mahatnirunkul et al. (1998) from a worldwide scale used to measure quality of life.

Data collection: The data collection was undertaken similar to the step 6 of pre-testing procedures.

Data analysis: Pearson's product moment correlation coefficient was used as the statistical analysis. The hypothesis could be accepted as evident validity when high correlation between two instruments was found.

Known group technique

To test the instrument's validity, known group technique has been widely documented as one of the techniques, identifying at least two groups that are expected (or known) to have contrasting scores on the measuring instrument (Burns & Grove, 2009). Construct validity of the AAS-Thai was further tested using known-group validation, demonstrating the fact that the active ageing instrument can differentiate elderly members of one group from another on the basis of their scale scores (DeVellis, 2003). Validity of the instrument is supported if results obtained confirm the possible hypothesis (Nunnally & Bernstein, 1994). Therefore, the contrasting groups of Thai older adults, who are extremely different in active ageing attribute and expected to have different responses to the items in AAS-Thai, were selected. This study tested the instrument on the following two groups: healthy elders, and frail elders. Healthy elders are included based on the existing research in Thailand, indicating that they are mostly achieving active ageing (Kespichayawattana & Wivatvanich, 2006; Sakulkoo, 2009). Much of the studies have identified that frail elders, particularly those living in residential home, are considered as vulnerable groups suffering from various problems and dependence. It is hypothesized that the healthy elderly group would score significantly higher on the AAS-Thai than the frail elderly group. The sample and setting, instrument, data collection, and data analysis of this approach was detailed as follows:

Sample and setting: A total of 60 respondents, classified into two groups (30 for each group), were purposefully selected. The first group was the healthy and productive elders who are the member of the volunteer clubs in Maharaj Nakhon Ratchasiam Hospital, and the second group was the elders who reside in the residential home in Nakhon Ratchasima province. The inclusion criteria were: 1) being an older person who is dwelling in the community or institution; 2) being aged 60 years or older; and 3) being able to understand and speak Thai.

Instrument: The final draft of AAS-Thai with a demographic data form was used.

Data collection: The data collection was undertaken by the researcher. The selected respondents were asked to rate the questionnaire by themselves. In case

of illiteracy or suffering from functional limitations, the interviewers read and then the respondents rated of choice on their own.

Data analysis: A mean score of AAS-Thai in both contrasting groups was compared for their differences using independent t-test statistic. The statistically significant difference between the mean scores of two groups is accepted, indicating that the instrument has construct validity.

2. Reliability

In reliability testing, two methods were performed including internal consistency and test-retest reliability.

Internal consistency

The final draft of the AAS-Thai was retested for its internal consistency. The procedures of internal consistency analysis were detailed as follows.

Sample and setting: In this stage, all 500 subjects obtaining from the nationwide survey was employed.

Instrument: The scale items derived from the factor analysis in the final draft of the AAS-Thai was used as the instrument.

Data collection: The data contained information of the scale items derived from the final draft of the AAS-Thai was used.

Data analysis: The data analysis was performed using Cronbach's alpha coefficients. The acceptable reliability should have a score of 0.7 and above for a new scale (Ferketich, 1991; Nannaly & Bernstein, 1994). In addition, an item is acceptable when it has correlation value above 0.3 with the total score.

Test-retest reliability

The test–retest technique has been used for the stability evaluation of a particular instrument (DeVellis, 2003). This method was used as one of the reliable indicators of the AAS-Thai.

Sample and setting: The subjects, selected by purposive sampling, in this test were 30 Thai elders living in one village of Nongproo sub-district, Muang, Nakhon Ratchasima.

Instrument: The final draft of AAS-Thai was used.

Data collection: The processes of data collection and collaboration with the sub-district health centers were undertaken similar to the step 6 of pre-testing. The selected respondents were asked to respond to complete the questionnaire twice in two weeks. The objectives of the method were explained to the subjects. After the data collection was finished at the first meeting, an appointment for the second data collection was then made.

Data analysis: Data obtained from the two different times were analyzed using the Pearson's product moment correlation coefficient to estimate scale stability. The closer the coefficient is to 1.00, the more stable the measurement (Burns & Grove, 2009).

Protection of Human Subject

Protecting the human right of the respondents of this study is a strong concern. Several steps in this study were followed to address ethical issues. First, prior to data collection, the research protocol was submitted and approved by the Ethical Committee of the Faculty of Nursing, Prince of Songkla University. Second, the purposes of the study and procedures of data collection were also described to the Provincial Chief Medical Officers, and to the administrator of the Districtial Health Offices selected to attain permission and cooperation. Third, potential subjects in all steps of data collection were approached if they were willing to participate in the study. Prior to collecting data, participants were asked to sign a consent form (see Appendix C). As part of informed consent, the overall purposes, protocols of the study, and time required to participate in focus groups or in-depth interviews and to complete questionnaires were explained to potential subjects. Confidentiality and also any inconvenience that might be caused by the interview were explained to assure that potential participants could refuse to answer any question, and withdraw from the study without negative consequences. Participants were informed that the results

obtained from this study are reported only in a group format. Fourth, registered nurses and expert health volunteers in the selected settings of the four provinces in Thailand assisted with data collection. Prior to the study, they were trained in procedures of data collection and protection of human subjects. They were also asked to sign a confidentiality statement stating that they will not disclose names of the participants nor participant's individual scores on instruments used for the study.

Confidentiality was maintained on all data collecting process. All data collection forms were kept in a locked file cabinet and entered into an electronic database by the coded numbers. Data were password protected on the computer. The locked file cabinet was assessable only to the researcher. Participants were also informed that only a dissertation committee from the Faculty of Nursing, Prince of Songkla University was reviewing the results. No participants were identified in any reports or publications.

Summary

The procedure of a comprehensive measurement development is based on multi-steps strategy for developing close-ended items for use in studies of older adults guided by Ingersoll-Dayton (2011), and DeVellis (2003). The research procedure includes instrument formation and instrument validation for measuring active ageing among Thai elderly. Thus, development of the active ageing scale for Thai people (AAS-Thai) used three main phases: 1) specify concept, 2) scale development, and 3) psychometric testing, with eight steps of scale development and psychometric evaluation. Integrated systematic review, focus groups and in-depth interviews were the input from quantitative studies and helped compose the dimensions and items for measures. After that developing preliminary quantitative measure was performed. Then, reviews by experts were further done to evaluate and clarify the content validity. Cognitive interviewing was conducted to clarify when quantitative findings are confusing, which often provides clarification and suggest new areas of exploration. The language testing was also conducted in order to make certain that every word in the questions was understandable by lay older adults. In pre-testing, the close-ended items were administered to a small sample of the older

subjects. After that, the instrument was further developed and revised, and then was applied to a nationwide survey. Finally, psychometric testing was carried out. The method of data analyses to examine psychometric properties of the AAS-Thai included internal consistency, item analysis, and exploratory factor analysis. To test psychometric properties of the newly-developed measure of active ageing for Thai elderly, this study focused on the instrument's validity and reliability. The AAS-Thai's validity was assessed using content validity by reviewing with an expert panel, and construct validity using three critical methods involving exploratory factor analysis, hypothesis testing, and known group techniques. Furthermore, to evaluate the AAS-Thai's reliability, two methods were performed including internal consistency and test-retest reliability. The development and evaluation processes of the AAS-Thai were mapped in Figure 3.

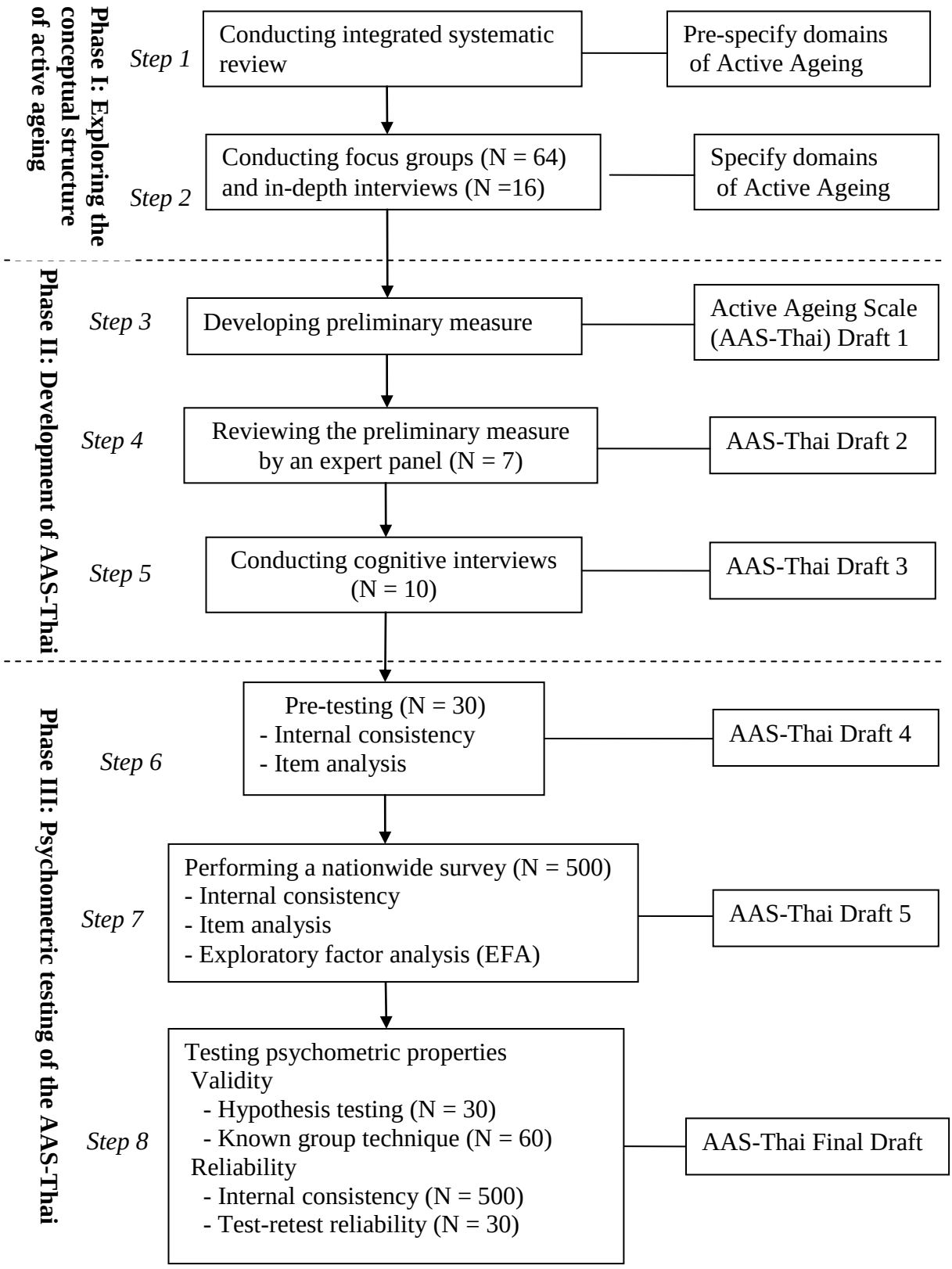

Figure 3 The process in developing the instrument for measuring active ageing among Thai elderly

CHAPTER 4

RESULTS AND DISCUSSION

This present study aimed to explore the conceptual structure of active ageing based on the indigenous perspective of Thai elderly, develop an active ageing scale for Thai people (AAS-Thai), and test its psychometric properties. The findings are reported in three main sections based on the objectives mentioned in the first chapter. Initially, exploring the conceptual structure of active ageing for Thai elderly is addressed. Following this section, the development of AAS-Thai is presented. Lastly, psychometric testing of the AAS-Thai is examined. In addition, the highlights of the research findings are discussed.

Results

Phase I: *Exploring the conceptual structure of active ageing for Thai elderly*

A two-step approach, (1) an integrated systematic review of national and international publications and (2) a qualitative study were carried out. The initial conceptual structure emerged from the first step was used to generate a guide for semi-structured interview in order to obtain perspectives on active ageing among Thai elderly. For integrated systematic review, the pre-specified domains of active ageing were synthesized from the common constructs of the existing knowledge and were classified into three categories: health, participation, and security. The initial conceptual structure of active ageing based on three pillars –Health, Participation, and Security – was developed, 10 domains with 14 components were also generated to portray the concept of active ageing for Thai elderly and used to retrieve qualitative data through focus groups and in-depth interviews.

After determining the pre-specified domains of active ageing, a qualitative approach using focus groups and in-depth interviews was conducted. Of the 64 participants, ages ranged from 60 to 85 years with a mean of 70 years

(SD = 7.5). More than half (55%) were female and about 59% were currently married. Most of them (92%) were Buddhist. For education, half of them (50%) completed primary school (Grade 4), and about 85% were able to read and write. The majority of them (54%) were not working. With regard to economic status, about one-fourth (23%) had an annual income lower than the poverty line (12,000 baht). About 22% of them suffered with income insufficiency. In residential area, more than half (52%) lived in urban area. The majority of them (71%) co-resided with adult children, and about 15% co-resided with only spouse. About three-fourths of them (64%) faced at least one chronic condition. Most of the elderly respondents reported their health status as good (45%).

Findings revealed that analysis of the data gathered during the empirical investigation generated 6 domains, composed of 19 components. The comparison between evidences from literature review (pre-specified domains) and the data from focus groups and interviews (specified domains) is presented in Table 1.

Table 1 *Pre- specified and specified domains of active ageing among Thai elderly*

Pre-specified domains (literature review)	Specified domains (qualitative study)
Health	
1. being physically active	1. Being self-reliant
2. being mentally/cognitively active	1.1 living independently
3. promoting health and preventing disease and injury	1.2 having autonomously in decision making
3.1 maintaining exercise	1.3 having financial independence
3.2 eating healthful food	2. Keeping busy with daily living
3.3 managing stress	2.1 being physically active
3.4 avoiding substance abuse	2.2 staying cognitively active
4. growing positive spirituality	2.3 engaging in meaningful activities
4.1 engaging in spiritually-productive activities	3. Maintaining healthy lifestyle
4.2 trusting and practicing religious doctrines	3.1 maintaining exercise
	3.2 eating healthful food
	3.3 managing stress
	3.4 avoiding substance abuse

Table 1 *(continue)*

Pre-specified domains (literature review)	Specified domains (qualitative study)
Participation	4. Being actively engaged with society
5. being actively engaged in life	4.1 participating in social activities
6. maintaining social participation	4.2 connecting with friends
7. contributing productive activities	4.3 contributing to society
	5. Growing spiritual wisdom
Security	5.1 making merit
8. being secured about income, housing and caregivers	5.2 being accepting and calm
	5.3 trusting and practicing religious doctrines
8. being supported and being in satisfying relationships	6. Managing security for later life
10. being safe from any harm or abuse	6.1 managing living arrangement
	6.2 building up financial security
	6.3 strengthening family ties with care givers

The concepts and structure identified in this study were based on lay older persons' views toward active ageing. These conceptual structures were the process to promote ageing actively. Each domain (see Table 1) was then sub-divided into three or four components. Three domains (i.e., keeping busy with daily living, maintaining healthy lifestyle, and growing spiritual wisdom) were related to health aspect; one domain, being actively engaged with society, was related to participation aspect; and two domains (i.e., being self-reliant and managing later-life security) were related to security aspect. The details of each domain emerged and ordered from qualitative findings were described below with illustrative quotes from the participants.

1. Being self-reliant

Being self-reliant consisted of three components: living independently, having autonomy in decision making, and having financial independence.

1.1 Living independently

Living independently means being able to perform all activities in daily living that the elderly participants want to do without support from others. Thus, the elderly are self-reliant for taking care of many essential activities in their daily lives and could live alone.

> *"At present, I live alone, but I am able to do everything by myself without putting much effort into it. Thus, my children are not worried. I do my own cooking, gardening, and household chores, as well as travelling. I think I am not depending on others but relying on myself."*(70-year-old man)

1.2 Having autonomy in decision making

Having autonomy in decision making means that the elderly have freedom in making decisions about their daily tasks and issues that affect their lives and well-being, as reflected in the following statement:

> *"I feel free from relying on others. I am able to make my own choices. Although I live with my spouse and children, I mostly have freedom in making decisions about activities in daily living, except for the important things I would consult my spouse or children to make decisions together."* (73-year-old woman)

1.3 Having financial independence

The elderly participants viewed having financial independence as being self-reliant. There was a widespread agreement that financial status shows significant effects on the older adult's health and well-being. Many participants noticed that no debt is a piece of luck.

> *"Even though I am not rich, I feel happy that I have money and properties enough to make me living comfortably. I can eat what I want and I can go anywhere I want. I don't want anything else. I have my own house and land and have no debt."* (75-year-old man)

2. Keeping busy in daily living

Keeping busy with daily living consisted of three components: being physically active, staying cognitively active, and engaging in meaningful activities.

2.1 Being physically active

Being physically active refers to the elderly's perception of activities which they do on a daily basis. The participants indicated that they still stayed physically active by having plenty to do, as reflected in the following statement:

> *"I have plenty to do each day, from waking up to going to the bed. I get up early around 4 A.M., then prepare and offer food to the monks, go for a walk exercise with my husband, then have breakfast, tend to chores, attend activities with friends at the elderly club. In the evening, I prepare dinner for my family, watch news and TV series, and go to bed around 10 PM. … I would be bored if I have nothing to do."*(69-year-old woman)

2.2 Staying cognitively active

Staying cognitively active refers to the elderly's perception of being cognitively active by keeping their brain and thinking stimulated. There are several techniques to keep cognitively active including planning, following news, and learning new skills and technology, as reflected in the following statement:

> *"I try to keep my brain active. Each day, I think and plan on what I have to do. I like to learn about everything around me particularly new technology, reading books or newspapers, watching television, and talking with my friends about new experiences."*(71-year-old man)

2.3 Engaging in meaningful activities

Engaging in meaningful activities is considered as working, and doing leisure activities that make the elderly participants feel happy or achieve meaning of life, as reflected in the following statement:

> *"I still work as "Mor Kwan" (a witch doctor who makes trade of restoring souls). I have earned some money from this work even though it is not a lot. If I have spare time, I like playing Lanna music."*(67-year-old man)

3. Maintaining healthy lifestyle

Maintaining healthy lifestyle composed of four components: maintaining exercise, eating healthful food, managing stress, and avoiding substance abuse.

3.1 Maintaining exercise

The elderly respondents consistently held the view that exercise was important to promote good health. This could include rigorous exercise or simple and non-rigid body movement. All of the informants perceived that exercise helped keep their body fit and energetic as reflected in the following statement:

> *"I have no health problems and never been admitted to the hospital. One thing that keeps me fit is exercise. I usually exercise in the early morning for about 30 minutes by walking around my home. Nowadays, I am old but still keep exercising everyday at home and I feel active.'* (80-year-old man)

3.2 Eating healthful food

The elderly participants of the focus group and those who were interviewed believed that consuming healthful food was appropriate for their age and health conditions. They reported that they usually ate three times per day. One of the participants displayed eating habits as follows:

> *"It is not just only eating, but we should eat a variety of healthy food. I always avoid fatty and salty foods. I dislike eating meat products from big animals, such as pork or beef. I often eat fish and vegetables. Eating healthful food helps us live well and stay healthy".* (74-year-old woman)

3.3 Managing stress

Managing stress is also considered as an important component of maintaining healthy lifestyle. Preventing stress or managing when suffering from stress leads to being healthy. There are a variety of ways to deal with stress, such as having a sense of humor, doing favorite activities, performing meditation, or expressing feelings to family members or close friends. One participant displayed her management of stress as follows:

"We are all old, so we should not be taking in anything but good feelings. I never keep stressful feelings to myself. I always talk with my daughter and my close friend when I suffer from any problems."(67-year-old woman)

3.4 Avoiding substance abuse

Avoiding substance abuse refers to keeping away from addictive substances, particularly smoking and drinking alcohol. The participants were in agreement that old age is degenerative and most older persons suffer from chronic illnesses, so smoking and alcohol consumption accelerate issues that could damage health:

"Since in my twenties, I would sometimes consume alcohol when attending parties. As I turn 60 years old, I never have any contact with alcohol. Now I am 75, many people do not believe my age because I look healthy and fit."(75-year-old man)

4. Being actively engaged with society

Being actively engaged with society comprised of three components: participating in social activities, connecting with friends, and contributing to society.

4.1 Participating in social activities

The elderly participants described maintaining socially active engagement including the myriad of meaningful activities performed within the context that they connect with society. These activities included the participation in social or public services and political process at the community and national level. This component is regarded as a meaningful and responsible duty as community members and citizens.

"I always get involved in social activities. There are several activities in my community in which I have participated such as the elderly club's activities, Buddhist ritual activities, and traditional festivals. I have also participated in private ceremonies, such as weddings, ordinations, or funeral ceremonies in the community." (70-year-old woman)

4.2 Connecting with friends

The elderly participants viewed connecting with friends as their interpersonal relationships with others that involve companionship, contact, sharing, and caring for each other. The example statement is as follows:

> *"I never feel lonely because I have numerous friends surrounding me. We always stay connected and get along well. We plan several activities to do together in the elderly club, including a variety of group-based activities such as exercising, singing, dancing, playing folk music, and sharing experience regarding healthcare. Staying connected with friends make our lives enjoyable and happy."* (68-year-old woman)

4.3 Contributing to society

Contributing to society refers to being engaged in socially productive activities. The elderly participants viewed a perfect life as being useful and helpful by way of contributing their productivity, knowledge, experience and wisdom to others. They contribute to social or economic activities in many capacities that are of great value to themselves, their families, as well as the society at large.

> *"I have the knowledge of making "Bai-sri" (an elaborate handcrafted banana leaf decoration, used for formal ceremonies) that I learned from my parents. I was often invited to teach students in primary schools . . . I take pleasure in passing on my knowledge to the younger generation and hope that this cultural heritage will not disappear after I pass away."*(72-year-old woman)

5. Growing spiritual wisdom

Growing spiritual wisdom was viewed as the insightful understanding the truth of life and the meaningful relationship with others and relate to religion or transcendence. It consists of three components: making merit, being accepting and calm, and trusting and practicing religious doctrines.

5.1 Making merit

Making merit means doing good deeds that make elderly participants feel happy, peaceful, and attain meaning in life. There are several forms of making

merits – helping the unfortunate or persons in distress, making donations, and contributing to the society. One informant stated as follows:

> *"My parents taught me to make merits since I was young. I have always helped those who are going through difficulties, stressful situations, or poverty. Many people called me a philanthropist… I feel happy and my mind is calm after making merit".* (72-year-old woman)

5.2 Being accepting and calm

Being accepting and calm means having a peace of mind in daily living or even negative situations. This is a crucial part of Buddhist values with respect to accepting the natural reality of one's life.

> *"We have to know ourselves we are old like an old tree near a bank. Thus, we should take care and control our mind by not holding on to anything, letting it go and letting it be. Everything is up to our mind."* (77-year-old man)

5.3 Trusting and practicing religious doctrines

Trusting and practicing religious doctrines refer to believing in religious values, leading to do activities regarding religious doctrines. The general philosophy of all religions is similar with respect to doing a good deed.

> *"I have rigorously practiced the five Buddhist precepts. I have gone to the temple every Buddhist holy day for praying and listening to sermons. Following the religious doctrines makes me attain peaceful life. I attempt to collect good deeds as much as I can."*(72-year-old man)

6. Managing later life security

To manage their later-life security, there were three components the elderly participants reported that they focus on: managing living arrangements, building financial security, and strengthening family ties with caregivers.

6.1 Managing living arrangement

Managing living arrangement, as revealed by the participants, refers to preparing for living arrangement with respect to having their own homes. Most of elderly participants were the owners of the houses in which they lived. Living in one's

own home maximizes one's sense of security because housing is one of the 4 fundamental living factors.

> *"My husband and I built our own home 30 years ago when we were working. This new home is built by my children who reside with us. Having one's own home is essential for secured living, particularly when you get older. Home is the nest of our heaven."* (77-year-old woman)

6.2 Building up financial security

The elderly participants viewed building up financial security as the way to ensure their late-life security. Saving money for old age, accumulating properties, such as land, buildings, jewelry, etc., and preparing for death were considered as building financial security for later life. Most elderly participants contributed a certain amount of money to a community funeral fund, which their children could use to arrange the funeral when they die.

> *"Money is imperative for nowadays life. If you have no money, you may have no value or dignity. On the other hand, if you have money and properties, it is assured that your children and relatives will come on to take care of you… This is a truth of life."* (76-year-old man)

6.3 Strengthening family ties with caregivers

To ensure to be cared for when they are old, the participants described focusing on strengthening family ties with caregivers in late life. They believed that once they raise children and give them opportunity of education, their children should repay by taking care of them in their old age. Being supported by family members was seen as one way to help all of the elderly participants feel safe and warm.

> *"I am happy with my family relationships. I am lucky that my children love and respect me. They always provide all things to make me comfortable, and take care of my health and well-being. This maybe because I have taken care of them since they were young and taught them to follow Buddhist values, specifically filial piety. Therefore, I am confident that they will not abuse or neglect me."* (65-year-old woman)

In conclusion, the conceptual structure of active ageing among Thai elderly was categorized into 6 domains and consisted of 19 components. The conceptualization of each domain is presented in Table 2. Each domain and component was identified by the Thai elderly participants' point of view, as presented in Table 2. This conceptual structure involves the World Health Organization's three key pillars of active ageing (WHO, 2002), which are health, participation and security.

Table 2 *Domains and definitions of active ageing among Thai elderly*

Domain	Description
Being self-reliant	Being independent and not burdening their families with respect to living independently, having autonomy in decision making, and having financial independence.
Keeping busy with daily living	Engaging in daily activities to keep the elderly themselves busy and active that involve being physically active, staying cognitively active, and engaging in meaningful activities.
Being actively engaged with society	Social participation and contribution by continued participation in social activities, connecting with friends, and contributing productive activities to society.
Maintaining healthy lifestyle	Maintaining healthy lifestyles to promote good health and well-being.
Growing spiritual wisdom	Making merit and good deeds, being accepting and calm, and trusting and practicing religious doctrines.
Managing later life security	Managing and preparing for ensuring to be secured in the later life with respect to living arrangement, economics, and family ties.

Phase II: Development of an Active Ageing Scale for Thai people (AAS-Thai)

Step 3 Developing preliminary quantitative measures

Based on the operational definitions of the specified domains that emerged from the focus groups and in-depth interviews, the preliminary quantitative measure of active ageing was developed. An item pool was drafted through a matrix of six domains with 19 components. The construction of these items involved several distinct steps similar to those described by Ingersoll-Dayton (2004, 2011) to develop culturally-grounded statements related to each specified domain of active ageing. For each of the six domains, the investigator constructed closed-ended statements (e.g., ‘‘I am self-reliant to do any activities in daily living’’) based on relevant phrases from the transcripts of the in-depth and focus-group interviews (e.g., ‘‘At present, I live alone, but I am able to do everything by myself without putting much effort into it. Thus, my children are not worried. I do my own cooking, gardening, and household chores, as well as travelling. I think I am not depending on others but relying on myself”).

The first draft of AAS-Thai was completely developed at the end of this step. The initial form of the AAS-Thai comprised a total of 81 items within six domains relating to the process of active ageing (see Appendix E), described as follows.

(1) Being self-reliant, which included 17 items
(2) Keeping busy in daily living, which included 14 items
(3) Maintaining healthy lifestyle, which included 13 items
(4) Being actively engaged with society, which included 15 items
(5) Growing spiritual wisdom, which included 13 items
(6) Managing later life security, which included 9 items

To determine scale format, a Likert’s five-point scale was employed to measure a level of active ageing based on the response set of the Thai’s healthy ageing instrument (HAI). HAI, a related construct of active ageing, was developed by Thiamwong et al. (2008) that demonstrated acceptable validity and reliability in Thai context. The descriptor of the five-levels rating scale ranged from 1 = definitely not,

2 = less likely, 3 = not sure, 4 = most likely, to 5 = definitely yes. Scale item construction resulted in a summative score that was averaged to obtain an overall score. Higher scores indicate being more active in life for older adults. Details of the first draft of AAS-Thai are present in Table 21, Appendix E.

Step 4 Reviewing of a preliminary measure by an expert panel

The aim of this step is to evaluate the content validity of the preliminary measure of active ageing, reviewed by expert panel. Therefore, the questionnaire was sent to seven experts specializing in multidisciplinary areas relevant to the study (i.e., two experts in gerontological nursing; one expert in geriatric medicine; one expert in social gerontology; one expert in population development; one expert in linguistic and cultures; and one expert in instrument development). The first draft of 81 items was reviewed and judged by the experts for clarity and relevance to active ageing. There was consensus among the experts that the six domains represented active ageing for Thai elders. In addition, they provided suggestions to enhance the clarity of specific items and suggested possible improvements in phrasing for some items. On the basis of their feedback, wordings or phrasing for any items that seem ambiguous, unclear, or inappropriate, identified by the experts were undertaken. The items rated at level 3 or 4 were retained whereas those rated at level 1 or 2 by three or more experts were deleted or modified regarding the expert's suggestions. Taken together, 21 items were deleted because their CVIs ranged from 0.33 to 0.67 and they were seen as redundant, 8 items were considered ambiguous and rephrased so that they were easier to understand by the lay older Thai adults, and a few items were rewritten to improve the semantic meaning. Thus, the final questionnaire as the second draft of the ASS-Thai contained 60 items. Examining the content validity of this measure was based on the expert concurrence using the content validity index (CVI), calculated for category evaluation and item evaluation (Burns & Grove, 2009). The CVI's values greater than or equal to 0.80 indicate an acceptable content validity of the instrument (Burns & Grove, 2009; Waltz, Strickland & Lenz, 1991). For this study, the final item-level CVIs for the revised AAS-Thai ranged from 0.83 to 1.00 and the overall CVI of this scale was 0.91, indicating highly acceptable content validity of the item pool.

Step 5 Conducting cognitive interviews

The cognitive interviews have several aims; for example, to evaluate if study respondents understand each of the closed-ended questions in the intended manner, to encourage participants to suggest a better way of phrasing question stems that are confusing, and to investigate if participants are comfortable with the closed-ended response options (Ingersoll-Dayton et al., 2004; Krause, 2002). Cognitive interviewing in the present study was examined by ten active Thai elderly, who were the members of the Health Promotion and Rehabilitation Center for Elderly, Faculty of Nursing, Prince of Songkla University, Hat Yai, Thailand. Most of the interviewees were fairly well-educated and socially active. In recruiting these individuals, efforts were made to ensure that they had the capacity to think about the clarity of the close-ended items from their own perspective as well as from the perspective of older Thais with less education (Ingersoll-Dayton, 2011). Think-aloud question and a probing question were used. The think-aloud question was used in conjunction with the probing question to find out about participants' general perceptions as well as their reactions to specific aspects of the questions. The result of the participants' review indicated that most of the items of the AAS-Thai were easy to understand by all participants. Although most elderly participants agreed with the clarity and interpretability of AAS-Thai, minor rewording was suggested. Participants indicated that some words or phrases were difficult to understand or ambiguous; for example, "learning new technologies", "independence", "busy body", "work for generating income", or "being a consultant". They also noted that some words were redundant, as well as some questions were too long. Using data obtained from the respondent's perceptions and interpretations, a modification was made to revise problematic items that may elicit response error, ensuring the comprehensibility and practicality for lay older adults in Thailand. With regard to scale format determination, the participants suggested that the 5-level scale format was too long and quite difficult for older adults to response. Actually, active ageing attributes are not the perception but the reality in life. Therefore, in order to make it more clear and practical for participants, the number of response categories was shortened to a 4-level scale format and revised using a response set that incorporated different degrees of truth (ranging from not at all true to very true), which was more easily understood by the respondents. The

response choices appeared as “1=not at all true”, “2=slightly true”, “3=somewhat true”, and “4=very true”. This format was deemed most appropriate to measure the process of active ageing in Thai elderly since it has fewer choices and has no middle choice that prevents middle-point choosing, a typical habit of Thai elderly (Maneerat, 2011). Finally, the third draft 60-item AAS-Thai using a 4-point Likert type scale was preserved and further evaluated for its internal consistency using item analysis in the step six of the pre-testing.

Phase III: Psychometric testing of AAS-Thai

Step 6 Pre-testing

The third draft of 60 items was pre-tested with a convenience sample of 30 community-dwelling elders who were drawn from Muang district, NakhonRatchasima province which is located in the northeastern Thailand. The sample represented variability with respect to gender, socioeconomic status, education, and health. The results of sample socio-demographic characteristics, item analysis, and internal consistency are presented as follows.

Sample socio-demographic characteristics: The ages of the sample ranged from 61 to 83 years, with a mean of 70 years (SD = 6.73). More than half (60%) of the subjects were female, and about 50% were currently married. For education, most of them (36.7% and 36.7%) completed primary school and secondary school. The majority (53.3%) were not working. With regard to economic status, about one-fourth of them had monthly income 2,001-5,000 baht (26.7%) and 5,001-10,000 baht (23.3%). More than one-third of them suffered with income insufficiency (36.7%). Nearly three-fourths of them (70%) faced at least one chronic condition. The majority of them (57%) lived with adult children. Socio-demographic characteristics are detailed in Table 3.

Table 3 *Socio-demographic characteristics of the sample (n=30)*

Variables	N	Percent
Age		
60-69 years	16	53.3
70-79 years	9	30.0
80 years and over	5	16.7
Min=61, Max=83, Mean=70, SD=6.73		
Sex		
Male	12	40.0
Female	18	60.0
Marital status		
Single	4	13.3
Married	15	50.0
Widowed/Divorced/Separated	11	36.7
Educational level		
No schooling	3	10.0
Primary school (Grade 4)	11	36.7
Secondary school	11	36.7
Bachelor degree	5	16.6
Occupational status		
Not working	16	53.3
Working	14	46.7
Income per month		
≤2,000 baht	6	20.0
2,001-5,000 baht	8	26.7
5,001-10,000 baht	7	23.3
10,001-20,000 baht	4	13.3
> 20,000 baht	5	16.7
Sufficiency of income		
Insufficient	11	36.7
Sufficient	19	63.3

Table 3 *Socio-demographic characteristics of the sample (continued)*

Variables	N	Percent
Chronic illness		
None	9	30.0
One	11	36.7
Two or above	10	33.3
Min=0, Max=3, Mean = 1.5 SD = 0.6		
Living arrangement		
Living alone	5	16.7
Living with spouse only	6	36.6
Living with adult children	12	56.7

Item analysis: Item analysis was used to estimate item performances, to evaluate item discrimination, and to determine whether to retain scales and items. The alpha coefficient was used to examine correlations between item to item, item to subscale, and item to an overall scale. Three criteria were used in the decision process in deleting items: 1) a minimum inter-item correlation less than 0.20 and a maximum higher than 0.70; 2) a minimum corrected item-total correlation coefficient of 0.30; and 3) a minimum Cronbach's reliability of 0.70 (Ferketich, 1991; Nunnally & Bernstein, 1994; Polit & Beck, 2008). According to the criteria mentioned above, five items (items 4, 12, 14, 17, and 32) were deleted since they had corrected item-total correlation coefficient less than 0.30. Three items (items 11, 13, and 34) were deleted because they had inter-item less than 0.20. Furthermore, five items (items 28, 29, 43, 44, and 46) were removed since they had inter-items correlation higher than 0.8 suggesting over-redundancy. Finally, the 47-item AAS-Thai was retained.

The results showed that the inter-item correlations ranged from 0.24 to 0.74, the item-subscale correlations ranged from 0.40 to 0.85, and the corrected item-total correlations ranged from 0.44 to 0.79, as shown in Table 4. Item number 31 had the lowest item-total correlation, and item number 47 exhibited the highest coefficient.

Table 4 *Correlation coefficients of item to item, item to subscale, and item to entire scale of the AAS-Thai (N=30)*

Scale	Item - item	Item - subscale	Item– entire scale
1. Being self-reliant	0.25 – 0.68	0.42 – 0.75	0.48 – 0.57
2. Keeping busy in daily living	0.26 – 0.73	0.48 – 0.81	0.52 – 0.73
3. Maintaining healthy lifestyle	0.24 – 0.66	0.40 – 0.69	0.44 – 0.74
4. Being actively engaged with society	0.30 – 0.74	0.54 – 0.82	0.45 – 0.77
5. Growing spiritual wisdom	0.22 – 0.71	0.41 – 0.85	0.52 – 0.79
6. Managing later life security	0.26 – 0.74	0.53 – 0.78	0.57 – 0.79
7. Entire scale	0.24 – 0.74		0.44 – 0.79

In addition, the correlations between subscale to subscale ranged from 0.55 to 0.91, indicating moderate to high correlations, and the correlations between subscales to entire scale ranged from 0.81 to 0.91, signifying high correlations (Table 5).

Table 5 *Correlation coefficients of subscale to subscale and subscale to entire scale of the AAS-Thai (N=30)*

Scale	1	2	3	4	5	6	7
1. Being self-reliant	1.00						
2. Keeping busy in daily living	0.78*	1.00					
3. Maintaining healthy lifestyle	0.54*	0.71*	1.00				
4. Being actively engaged with society	0.64*	0.69*	0.77*	1.00			
5. Growing spiritual wisdom	0.64*	0.81*	0.77*	0.71*	1.00		
6. Managing later life security	0.63*	0.72*	0.77*	0.72*	0.87*	1.00	
7. Entire scale	0.81*	0.90*	0.86*	0.88*	0.91*	0.89*	1.00

*$p < 0.001$

For internal consistency, the fourth draft of 47-item AAS-Thai was tested on its internal consistency using Cronbach' alpha coefficients. The findings revealed that Cronbach's alpha coefficient of each of the six subscales after item analysis ranged from 0.81 to 0.92 and the overall scale of 0.97 which is considered excellent reliability, as presented in the Table 6.

Table 6 Alpha coefficients of the fourth draft 47-item AAS-Thai (N=30)

Scale	Number of item	Mean (SD)	Cronbach's Alpha
1. Being self-reliant	8	25.93 (4.14)	0.84
2. Keeping busy in daily living	8	26.93 (4.79)	0.88
3. Maintaining healthy lifestyle	7	23.50 (3.60)	0.81
4. Being actively engaged with society	9	30.30 (5.53)	0.92
5. Growing spiritual wisdom	8	27.60 (3.89)	0.89
6. Managing later life security	7	24.70 (3.72)	0.88
Entire scale	47	158.97 (22.47)	0.97

Taken together, the item analysis result indicated that the 47 items of the AAS-Thai which met the criteria and had excellent reliability. This fourth AAS-Thai version was then used for examination of its psychometric properties in step 7 the field testing of the nationwide survey.

Step 7 Performing a nationwide survey

A nationwide survey was conducted with 500 participants aged 60 and older in four regions of Thailand (North, Northeast, Central, and South). A multistage selection process was performed to enhance representativeness of older Thai adults and individuals across socio-demographic variables. First, four provinces were selected randomly. Second, two districts within these provinces were selected randomly. Third, two sub-districts within these districts were selected randomly. Fourth, two villages/communities of each selected sub-district were picked randomly.

Fifth, potential research participants were selected randomly from each of the villages. After consent was obtained, some elderly participants completed all questionnaires by self-administration, and illiterate participants were completed by personal interview. This field testing aimed to re-evaluate internal consistency and item analysis which includes exploratory factor analysis. The results of this step including socio-demographic characteristics of the sample, internal consistency, and exploratory factor analysis (EFA) are presented as follows.

Sample socio-demographic characteristics: The 500 participants were older Thai adults living in communities across four regions of Thailand. About two-thirds of them (64%) were female. Ages of the sample ranged from 60 to 96 years, with a mean of 71 years (SD = 7.88), and half of them (50%) were young elderly aged 60 to 69 years. These sex and age data of this study are consistent with the national data with respect to sex proportion and age structure of the old-age population in Thailand in that older women and young elderly (aged 60-69 years) are predominant (Prachuabmoh, 2013). Most of them (88%) were Buddhist. More than half (54%) of the subjects was married and living with their spouse. For education, most of them (69%) completed primary school (Grade 4), and about 76% were able to read and write. The majority of them (52.8%) were not working. With regard to economic status, about one-fourth of them (26%) had monthly income 500-1,000 baht and nearly one-third (31%) had an annual income lower than the poverty line (12,000 baht). About 28% of them suffered with income insufficiency. More than half (54%) lived in urban area. The majority of them (82%) co-resided with adult children, and about 12% co-resided with only spouse. About three-fourths of them (76%) faced at least one chronic condition. Most of the elderly respondents reported their health status as fair (48%) or good (34%). Socio-demographic characteristics are detailed in Table 7.

Table 7 *Socio-demographic characteristics of the sample (n=500)*

Variables	N	Percent
Age		
60-69 years	251	50.2
70-79 years	169	33.8
80 years and over	80	16.0
Min = 60, Max = 96, Mean = 71, SD = 7.88		
Sex		
Male	180	36.0
Female	320	64.0
Religious		
Buddhist	441	88.2
Islam	54	10.8
Christian	5	1.0
Marital status		
Single	12	2.4
Married	271	54.2
Widowed/Divorced/Separated	217	43.4
Educational level		
No schooling	80	16.0
Primary school (Grade 4)	347	69.4
Secondary school	60	12.0
Bachelor degree	13	2.6
Literacy		
Able to read and write	381	76.2
Able to read but unable to write	22	4.4
Unable to read but able to write	21	4.2
Unable to both read and write	76	15.2
Occupational status		
Not working	264	52.8
Working	236	47.2

Table 7 *Socio-demographic characteristics of the sample (cont.)*

Variables	N	Percent
Income per month		
No income	22	4.4
500 – 1,000 baht	132	26.4
1,001- 2,000 baht	92	18.4
2,001-5,000 baht	112	22.4
5,001-10,000 baht	80	16.0
> 10,000 baht	62	12.4
Sufficiency of income		
Insufficient	141	28.2
Sufficient	359	71.8
Chronic illness		
None	121	24.2
One	183	36.6
Two	113	22.6
Three or above	83	16.6
Min = 0, Max = 6, Mean = 1.4 SD = 1.17		
Self-rated health		
Very bad	9	1.8
Bad	34	6.8
Fair	241	48.2
Good	169	33.8
Very good	47	9.4
Living arrangement		
Living alone	32	6.4
Living with spouse only	59	11.8
Living with adult children	409	81.8

Item analysis: All items of the fourth draft 47 item AAS-Thai were analyzed to examine the inter-item correlation, item-subscale correlation, and item-total correlation. The Pearson product-moment correlation coefficients were calculated for those correlations. The Cronbach's alpha was computed to assess the internal consistency reliability of each subscale and the total scale. The results showed that the inter-item correlations ranged from 0.18 to 0.74, the inter-subscale correlations ranged from 0.34 to 0.80, and the item-total correlation coefficient ranged from 0.16 to 0.75. Two items (item 22 and 23) had item-total correlation less than 0.30. Using the standard criteria to eliminate items whose correlation with the total scale is less than 0.30 (Polit & Beck, 2008), these two items were deleted. The 45-item AAS-Thai were retained and re-analyzed (see Appendix J). The results showed that the inter-item correlations ranged from 0.27 to 0.74, the inter-subscale correlations ranged from 0.44 to 0.80 and the item-total correlation coefficients ranged from 0.36 to 0.76, as shown in Table 8.

Table 8 *Correlation coefficients of item to item, item to subscale, and item to entire scale of the 45-item AAS-Thai (N=500)*

Scale	Item - item	Item - subscale	Item– entire scale
1. Being self-reliant	0.28 – 0.63	0.48 – 0.68	0.36 – 0.65
2. Keeping busy in daily living	0.41 – 0.68	0.56 – 0.77	0.66 – 0.76
3. Maintaining healthy lifestyle	0.30 – 0.65	0.44 – 0.69	0.39 – 0.58
4. Being actively engaged with society	0.35 – 0.72	0.64 – 0.79	0.53 – 0.72
5. Growing spiritual wisdom	0.27 – 0.70	0.52 – 0.74	0.46 – 0.63
6. Managing later life security	0.33 – 0.74	0.55 – 0.80	0.53 – 0.66
Entire scale	0.27 – 0.74		0.36 – 0.76

In addition, the correlations between subscale to subscale ranged from 0.53 to 0.81, and the correlations between subscales and the entire scale ranged from 0.75 to 0.91, as shown in Table 9.

Table 9 *Correlation coefficients of subscale to subscale and subscale to entire scale of the 45-item AAS-Thai (N=500)*

Scale	1	2	3	4	5	6	7
1. Being self-reliant	1.00						
2. Keeping busy in daily living	0.81*	1.00					
3. Maintaining healthy lifestyle	0.57*	0.62*	1.00				
4. Being actively engaged with society	0.65*	0.78*	0.55*	1.00			
5. Growing spiritual wisdom	0.53*	0.64*	0.62*	0.63*	1.00		
6. Managing later life security	0.63*	0.65*	0.57*	0.56*	0.57*	1.00	
7. Entire scale	0.85*	0.91*	0.75*	0.87*	0.79*	0.79*	1.00

*$p < 0.001$

Internal consistency: The 45 item AAS-Thai was retested on its internal consistency with the large sample (N = 500) using Cronbach's alpha coefficients. The results revealed that the alpha coefficients of the six subscales ranged from 0.82 to 0.91, and the entire scale was 0.96 which is considered excellent reliability, as presented in the Table 10. Therefore, the 45-item AAS-Thai was retained and further analyzed using exploratory factor analysis to examine its construct validity.

Table *10 Alpha coefficients of the 45-item AAS-Thai (N=500)*

Scale	Number of item	Cronbach's Alpha
1. Being self-reliant	8	0.86
2. Keeping busy in daily living	7	0.89
3. Maintaining healthy lifestyle	6	0.82
4. Being actively engaged with society	9	0.91
5. Growing spiritual wisdom	8	0.86
6. Managing later life security	7	0.88
Entire scale	45	0.96

Exploratory factor analysis: To examine the construct validity of the 45-item AAS-Thai, an exploratory factor analysis (EFA) was undertaken. EFA is performed involving three steps: (1) descriptive factor analysis, (2) factor extraction method using principle component analysis (PCA), and (3) factor rotation using varimax methods. The results of the EFA are presented as follows.

1. Descriptive factor analysis: Before performing the factor analysis, the Kaiser-Meyer-Olkin (KMO) and Bartlett's test of sphericity were conducted to measure sampling adequacy and evaluate the appropriateness of whether the sample was large enough to perform a factor analysis. The results showed a KMO value of 0.944, indicating sample adequacy for factor analysis. Bartlett's test of sphericity was significant ($p < 0.001$) with the chi-square value of 16379.23, suggesting that the variables were in linear relationship. Thus, the results of both KMO value and Bartlett's test met standard criteria and verified further use of factor analysis for the data.

2. Factor extraction: Factor extraction method was conducted using principle component analysis (PCA). To extract factors, components with eigenvalues greater than 1 were considered as a criterion and were retained (Dixon, 2005; Hair et al., 2006). The results of the first exploratory factor analysis indicated that eight factors had eigenvalues from 17.594 to 1.025 and thus were retrieved. They accounted for 67.51% of the total variance. Furthermore, Scree plot figure that indicated a number of 7-8 factors should be examined, as shown in Figure 4. Moreover, most of

the items had higher factor loadings in the first component and some items had high loading on more than one factor. Therefore, the second factor analysis using rotation with orthogonal varimax method was further investigated.

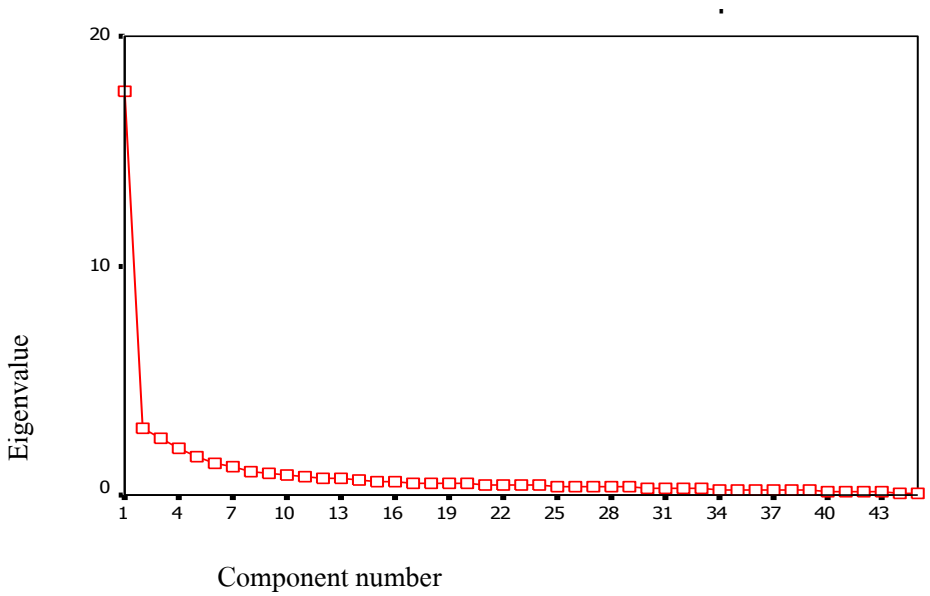

Figure 4 *The Cattle's scree plot of the 45-item AAS-Thai*

3. Factor rotation using varimax methods: The second exploratory factor analysis using principal component analysis with varimax rotation method was performed. The criteria used to consider the number of factors are (1) an eigenvalue greater than 1; (2) scree plot characteristics; and (3) interpretability (Hair et al., 2006; Nunnally & Bernstein, 1994). Specifically, items were removed when: (1) the item-factor loading is below 0.40; (2) the loading(s) for each variable is insignificant; (3) the communality score is less than 0.50; (4) the cross-loadings indicate that there is relatively high loading on more than one factor; and (5) they do not contribute to factor interpretability (DeVellis, 2003; Hair et al., 2006; Nunnally & Bernstein, 1994). The results indicated that the eight factors had cumulative percentage of variance of 67.51% (see Table 11). All factor loadings were greater than 0.40 with statistical significance. However, nine items (Item 7, 14, 21, 27, 28, 34, 39, 40, and 41) were eliminated since they had relatively high loading on more than one factor (see Appendix J). These nine items were eliminated accordingly. The remaining 36-item AAS-Thai draft was then reanalyzed.

The results of the last factor analysis with varimax rotation showed a KMO value of 0.933, indicating sample adequacy for factor analysis. Bartlett's test of sphericity was significant ($\chi 2 = 12595.21$, $p < 0.001$), indicating the appropriateness of the data for further factor analysis. In the end, seven factors with eigenvalues greater than 1 were generated and 36 items retained. The eigenvalues ranged from 5.77 to 1.65 and all components accounted for 68.53% of the total variance. The seven factors, corresponding eigenvalues, percent of variances account for by each factor, and cumulative percent of variance explained are presented in Table 11.

Table 11 *Total loading, percent of variance, and cumulative percentage of the fifth draft 36-item AAS-Thai classified by eigenvalues greater than 1*

Factor	Extraction sums of square loading			Rotation Extraction sums of square loadings		
	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
1	13.834	38.427	38.427	5.773	16.037	16.037
2	2.635	7.320	45.747	4.970	13.805	29.842
3	2.401	6.670	52.417	3.577	9.936	39.778
4	1.737	4.824	57.241	3.131	8.697	48.474
5	1.650	4.583	61.824	2.865	7.960	56.434
6	1.279	3.553	65.377	2.709	7.525	63.959
7	1.135	3.154	68.531	1.646	4.572	68.531

All the 36 remaining items had loading values greater than 0.40 on only one of the seven factors, and could be meaningfully explained in their corresponding components. The factor loading ranged from 0.45 to 0.89 with statistical significance ($p < 0.001$). The communality values ranged from 0.54 to 0.87, indicating that all items are reflected well via their extracted factor. The item statements, factor loadings, and communality scores are presented in Table 12. The domains are named according to the contents of their corresponding item statements and the meaning of a set of items grouped into a specified factor of the AAS-Thai.

The new seven factors of active ageing were more optimal, parsimonious, theoretically organized, and presented a simple structure. Each factor could be interpreted as a distinct psychological meaning of the process of active ageing. The seven factors of the 36-item AAS-Thai, loading, and communalities are presented in Table 13. In sum, factor analysis of the resulting 36-item instrument yielded seven factors, named and described as follow (see Table 12).

Factor 1 was named "Being self-reliant" and consisted of eight items, with factor loadings ranging from 0.55 to 0.80. This is the strongest factor, explaining 16.04% of variance of the AAS-Thai. Factor 1 items described the independent living and dignity of older adults with respect to self-care tasks, such as "(1) I am self-reliant to do all activities in daily living"; "(2) I try to take care myself before asking others for help"; "(3) I still work depending upon my competency"; "(4) Each day, I try to do plenty of activities"; "(5) I can think or decide with my own autonomy"; "(6) I like to do leisure time activities to diminish loneliness"; and family-care tasks, such as "(7) I help family to do several activities" and "8) I can manage for housekeeping with my own arrangement".

Factor 2 was named "Being actively engaged with society" and consisted of eight items, with factor loading ranging from 0.61 to 0.73. This is the second strongest factor, explaining 13.81% of variance of the AAS-Thai. This factor includes the two sub-domains: social participation and social contribution. The social participation items include: (1) "I usually participate in public activities or community development activities"; (2) "I actively participate in elderly club activities or other clubs in which I am a member"; and (3) "I join ritual or traditional activities within my community". The social contribution involves: (1) "I act as a consultant, expert, or local wisdom person within my community"; (2) "I work as a volunteer"; (3) "I transfer my tacit knowledge, wisdom, and skills to others"; (4) "I like to work for society without concerning for paid"; and (5) "I donate money or materials for community or public benefits".

Factor 3 was named "Growing spiritual wisdom" and consisted of five items, with factor loading ranging from 0.60 to 0.89. This factor denotes positive spirituality and spiritual growth and wisdom, explaining 9.94% of variance of the AAS-Thai, and including (1) "I usually look at anything in positive circumstances";

(2) “I trust in my religion”; (3) “I accept about problems that I cannot solve”; (4) “ I always do good deeds”; and (5) “I try not to attach to anything”.

Factor 4 was named “Building up financial security” and consisted of four items, with factor loading ranging from 0.48 to 0.87. This factor could explain 8.70% of variance of the AAS-Thai. It is relative to preparing finances and properties to ensure security in the later life, including (1) “I have money or properties enough to meet expenses in the later life”; (2) “I have saved money to use when I am getting old”; (3) “I have prepared about financial assurance to be used in my funerary activities”; and (4) “I can provide financial assistance to my family”.

Factor 5 was named “Maintaining healthy lifestyle” and consisted of five items, with factor loading ranging from 0.45 to 0.81, and explaining 7.96% of variance of the AAS-Thai. This factor involves health-promoting behaviors; for example, (1) “I avoid eating sweat, fatty, and salty food”; (2) “I try to select healthful foods”; (3) “I regularly eat fish, vegetables, and fruits”; (4) “I always try to mobilize and stretch my body”; and (5) “I regularly exercise at least 3 times a week”.

Factor 6 was named “Engaging in active learning” and consisted of four items, with factor loading ranging from 0.57 to 0.78. This factor could explain 7.53% of variance of the AAS-Thai. The factor referred to the process of learning inquiry to make them cognitively active and healthy and included items such as (1) “I can learn using new information technologies and facilitated equipment”; (2) “I like to do new things or search for new experiences”; (3) “I search information to use for taking care of my health”; and (4) “I usually plan to do any activities beforehand”.

Factor 7 was named “Strengthening family ties for being cared for in the late life” and consisted of two items, such as (1) “I have strengthened family ties to maintain children’s attachment when I am getting old”; and (2) “I have taught about filial piety to my children concerning the filial obligation of caregiving to older parents”. This factor had factor loadings of 0.68 and could explain 4.57% of variance of the AAS-Thai.

Table 12 *Principal component analysis with varimax rotation: Factor loadings and communalities of the 36-item AAS-Thai (n=500)*

Item	Factor and item statement	Factor loading	Communality (h^2)
	Factor 1: Being self-reliant		
	Eigenvalue = 5.77, Percent of variance = 16.04		
1	I am self-reliant to do all activities in daily living	0.80	0.71
2	I try to take care myself before asking others for help	0.76	0.69
11	I still work depending upon my competency	0.72	0.69
9	Each day, I try to do plenty of activities	0.68	0.68
3	I can think or decide with my own autonomy	0.67	0.59
13	I help family to do several activities	0.65	0.65
42	I can manage for housekeeping with my own arrangement	0.63	0.61
15	I like to do leisure time activities to diminish loneliness	0.55	0.55
	Factor 2: Being actively engaged with society		
	Eigenvalue = 4.97, Percent of variance = 13.81		
24	I usually participate in public activities or community development activities	0.74	0.79
26	I actively participate in elderly club activities or other clubs in which I am a member	0.73	0.62
32	I act as a consultant, expert, or local wisdom person within my community	0.73	0.68
25	I join ritual or traditional activities within my community	0.69	0.79
31	I work as a volunteer	0.69	0.64
30	I transfer my tacit knowledge, wisdom, and skills to others	0.67	0.62
12	I like to work for society without concerning for paid	0.62	0.70
29	I donate money or materials for community or public benefits	0.61	0.65

Table 12 *Factor loadings and communalities of the 36-item AAS-Thai (cont.)*

Item	Factor and item statement	Factor loading	Communality (h^2)
	Factor 3: Growing spiritual wisdom		
	Eigenvalue = 3.58, Percent of variance = 9.94		
37	I usually look at anything in positive circumstances	0.89	0.87
38	I trust in my religion	0.87	0.82
36	I accept about problems that I cannot solve	0.70	0.62
33	I always do good deeds	0.61	0.59
35	I try not to attach to anything	0.60	0.54
	Factor 4: Building up financial security		
	Eigenvalue = 3.13, Percent of variance = 8.70		
44	I have money or properties enough to meet expenses in later life	0.87	0.87
43	I have saved money to use when I am getting old	0.84	0.85
45	I have prepared about financial assurance to be used in my funerary activities	0.71	0.66
8	I can provide financial assistance to my family	0.48	0.56
	Factor 5: Maintaining healthy lifestyle		
	Eigenvalue = 2.87, Percent of variance = 7.96		
19	I avoid eating sweat, fatty, and salty food	0.81	0.69
18	I try to select healthful foods	0.72	0.74
20	I regularly eat fish, vegetables, and fruits	0.71	0.71
17	I always try to mobilize and stretch my body	0.54	0.69
16	I regularly exercise at least 3 times a week	0.45	0.66
	Factor 6: Engaging in active learning		
	Eigenvalue = 2.71, Percent of variance = 7.53		
5	I can learn using new information technologies and facilitated equipment	0.78	0.69
4	I like to do new things or search for new experiences	0.68	0.71
6	I search information to use for taking care of my health	0.60	0.62
10	I usually plan to do any activities beforehand	0.57	0.66

Table 12 *Factor loadings and communalities of the 36-item AAS-Thai (cont.)*

Item	Factor and item statement	Factor loading	Communality (h^2)
	Factor 7: Strengthening family ties for being cared for in the late life		
	Eigenvalue = 1.65, Percent of variance = 4.57		
46	I have strengthened family ties to maintain children's attachment when I am getting old	0.68	0.73
47	I have taught about filial piety to my children concerning the filial obligation of caregiving to older parents	0.68	0.72
	Total variance explained = 68.53%		

Step 8 Testing psychometric properties

The 36-items AAS-Thai final draft was further tested for its psychometric properties with respect to validity and reliability. To test the validity of the AAS-Thai, hypothesis testing and known group technique were employed. With regard to reliability, internal consistency and test-retest reliability were examined.

Hypothesis testing: This method involved the testing of the hypothesis in relation to how the scale will relate to other conceptually related variables. With regard to the hypothesis that "*active ageing is positively related to healthy ageing"*, the findings supported that the AAS-Thai had a significant positive association with healthy ageing instrument (HAI) ($r = 0.84$, $p < 0.001$), and the subscales of AAS-Thai had significant strong associations with the HAI ($r = 0.55 - 0.65$, $p < 0.001$), indicating the satisfactory construct validity of the AAS-Thai. In addition, based on WHO's active ageing concept (WHO, 2002) that active ageing is leading to enhanced quality of life, the hypothesis of this study, "*Thai older adults with a high degree of active ageing have a high degree of quality of life*" was tested. The WHOQOL-BREF-Thai was used to investigate the evidence for construct validity of the AAS-Thai. Therefore, it was expected that the more active the older Thai adults, the greater quality of life they perceived. Pearson's product moment correlation coefficient was

used for data analysis. The results revealed that active ageing had a significantly positive association with quality of life (r = 0.74, $p < 0.001$), supporting good construct validity of the AAS-Thai. In addition, the subscales of AAS-Thai had a significantly moderate to strong association with quality of life (r = 0.44 - 0.68, $p < 0.001$), as shown in Table 13.

Table 13 *Pearson's correlation coefficients between the AAS-Thai and HAI and WHOQOL-BREF (N=30)*

Scale	HAI	WHOQOL-BREF
1. Being self-reliant	0.64*	0.50*
2. Being actively engaged with society	0.65*	0.68*
3. Growing spiritual wisdom	0.61*	0.56*
4. Building up financial security	0.64*	0.51*
5. Maintaining healthy lifestyle	0.63*	0.44*
6. Engaging in active learning	0.65*	0.67*
7. Strengthening family ties for being cared for in the late life	0.55*	0.47*
The entire AAS-Thai	0.84*	0.74*

*$p < 0.001$

Construct validity: Known-group technique: Known-group technique was employed to examine the construct validity of the 36-item AAS-Thai. Sixty participants were recruited with two contrasting groups: the healthy and productive elders who are the members of the volunteer club in Maharaj Nakhonratchasima Hospital (n=30) and the elders who resided in the residential home in Nakhonratchasima province (n=30). An independent sample t-test was performed to analyze the difference of the AAS-Thai on the total mean scores of the two groups. When comparing the mean scores of active ageing between two groups, it was found that the first group showed a higher score of active ageing than the latter with a statistically significant difference at 0.001 level (t = 7.98) (see Table 14). The findings indicate that the newly developed AAS-Thai can differentiate the active ageing attributes between active elderly and frail elderly. This finding demonstrates acceptable construct validity.

Table 14 *Mean, standard deviation, and t-value of the fifth draft AAS-Thai classified by elderly in different groups*

Group of the elderly	n	Mean	SD	t
1. The healthy elders who are the member of the volunteer club	30	121.07	17.50	7.98*
2. The elders who reside in the residential home	30	87.03	15.45	

*$p < 0.001$

Internal consistency: The internal consistency reliability of the final draft AAS-Thai was re-evaluated with the 500 elderly subjects, conducted in the step of nationwide survey. Cronbach alpha coefficients were calculated for the entire scale and for each of the subscales with the value 0.70 or greater indicating an acceptable standard (Hair et al., 2006). The results revealed that the scale's overall internal consistency reliability was 0.95, indicating a reliable instrument for measuring the multidimensional attributes of active ageing. The Cronbach alpha coefficients for the seven subscales ranged from 0.81 to 0.91 (see Table 15).

Table 15 *Alpha coefficients of the final draft 36-item AAS-Thai (N=500)*

Scale	Number of item	Cronbach's Alpha
1. Being self-reliant	8	0.91
2. Being actively engaged with society	8	0.91
3. Growing spiritual wisdom	5	0.86
4. Building up financial security	4	0.85
5. Maintaining healthy lifestyle	5	0.81
6. Engaging in active learning	4	0.82
7. Strengthening family ties for being cared for in the late life	2	0.85
The entire AAS-Thai	36	0.95

For correlation analysis to confirm exclusively differentiated construct of the active ageing subscales from factor analysis, the Pearson's correlations among subscales and between subscales and the total scale were positively correlated. The correlations between subscale to subscale ranged from 0.30 to 0.65, and the correlations between the seven subscales to the entire scale ranged from 0.56 to 0.87 with statistical significance at 0.001 level, as shown in Table 16. These positive correlations indicate that each of the subscales represents a component of active ageing. In sum, the results provide strong evidence of the reliability of the AAS-Thai.

Table 16 Correlation coefficients of subscale to subscale and subscale to entire scale of the final draft 36-item AAS-Thai (N=500)

Scale	1	2	3	4	5	6		7
1. Being self-reliant	1.00							
2. Being actively engaged with society	0.65*	1.00						
3. Growing spiritual wisdom	0.46*	0.51*	1.00					
4. Building up financial security	0.58*	0.51*	0.43*	1.00				
5. Maintaining healthy lifestyle	0.60*	0.50*	0.45*	0.48*	1.00			
6. Engaging in active learning	0.62*	0.63*	0.40*	0.45*	0.38*	1.00		
7. Strengthening family ties for being cared for in the late life	0.46*	0.36*	0.40*	0.50*	0.48*	0.30*	1.00	
8. Entire scale	0.87*	0.86*	0.67*	0.73*	0.71*	0.74*	0.56*	1.00

*$p < 0.001$

Test-retest reliability: To evaluate the stability of the final draft 36-item AAS-Thai, test-retest reliability within a 2-week interval was conducted among 30 community-dwelling elderly. A Pearson's product moment correlation coefficient was calculated to assess the consistency of the active ageing scores between time 1 and time 2. The mean score of the AAS-Thai at time 1 was 105.03 and the mean score at time 2 was 106.80. The correlation between both scores of the two periods was 0.92, indicating good stability. In addition, the mean scores of the seven subscales at time 1 ranged from 6.83 to 27.57 and those scores at time 2 ranged from 6.83 to 28.00 (see Table 17). The correlations of these subscales between time 1 and time 2 ranged from 0.78 to 0.92. The results indicate that the 36-item AAS-Thai is stable for its test-retest reliability.

Table 17 *Stability estimates of the total scores for AAS-Thai in time 1 and time 2*

Group of the elderly	AAS-Thai time 1		AAS-Thai time 2		r
	Mean	SD	Mean	SD	
1. Being self-reliant	27.57	4.96	28.00	4.00	0.88*
2. Being actively engaged with society	19.13	6.82	20.20	5.60	0.92*
3. Growing spiritual wisdom	16.27	2.03	16.07	1.93	0.81*
4. Building up financial security	9.53	3.74	9.40	3.35	0.90*
5. Maintaining healthy lifestyle	15.50	3.08	15.73	2.33	0.85*
6. Engaging in active learning	10.20	3.12	10.57	2.43	0.78*
7. Strengthening family ties for being cared for in the late life	6.83	0.95	6.83	0.83	0.89*
Entire scale	105.03	18.71	106.80	14.23	0.92*

*$p < 0.001$

Summary

The Active Ageing Scale for Thai people (AAS-Thai) was developed in three phases with eight steps based on a multi-step strategy for developing a culturally-sensitive measure on the elderly guided by Ingersoll-Dayton (2004, 2011). The first phase involved two steps aiming to review the concepts of active ageing using an integrated systematic review and further exploring its conceptual structure perceived by the older Thai adults through focus groups and in-depth interviews. This initial phase resulted in the specified domains of active ageing emerged from the indigenous experiences of the Thai elderly. The second phase is the development of an active ageing scale for Thai people (AAS-Thai) including three steps: (1) developing preliminary quantitative measures by using the data obtained from the first phase; (2) reviewing of a preliminary measure by an expert panel; and (3) conducting cognitive interviews to revise problematic items ensuring their readability and practicality. The third phase is psychometric testing of the AAS-Thai employing three steps; (1) pre-testing; (2) performing a nationwide survey; and (3) testing psychometric properties, to evaluate the validity and reliability of the AAS-Thai.

The findings of data analysis indicate that the 36-item AAS-Thai was conceptually constructed based on Thai context (see Appendix K). The scale demonstrated acceptable psychometric properties with strong internal consistency reliability and construct validity. As a measuring tool, it was able to effectively differentiate active and inactive elders. Analysis of the factor composition of the 36-item AAS-Thai revealed seven underlying domains, which support the theoretical understanding of active ageing as a multidimensional construct that is a culturally-grounded measure among the Thai elderly. Discussions of the key results are presented as follows.

Discussion

A discussion of the results was highlighted based on the three main phases with eight steps of scale development and psychometric evaluation: (1) exploring the conceptual structure of active ageing for Thai people; (2) development of an active ageing scale for Thai people (AAS-Thai); and (3) psychometric testing of the AAS-Thai.

Phase I: *Exploring the conceptual structure of active ageing for Thai people*

This first phase includes two steps: (1) conducting integrated systematic review and (2) using focus groups and in-depth interviews to explore the conceptual structure of active ageing for Thai elderly.

Step 1 Conducting integrated systematic review

In step 1, the existing studies of active ageing and related positive ageing (i.e., healthy ageing, successful ageing, and productive ageing) were systematically reviewed to determine the pre-specified domains of active ageing. Ten domains of active ageing were identified involving the three key pillars (health, participation, and security) of active ageing (WHO, 2002). This is consistent with the concept of active ageing proposed by the World Health Organization (WHO, 2002) is being used worldwide to promote healthy lifestyles, productive activities, and quality of life. Specifically, this step provided the preconceived concept of active ageing, and its data were used to develop the semi-structure interview guideline for conducting qualitative approaches to clarify the conceptual structure of active ageing grounded in Thai cultural context.

Step 2 Using focus groups and in-depth interviews

Qualitative study aimed to explore a culturally-specific conceptual structure of active ageing among Thai elderly. In qualitative inquiry, focus groups and in-depth interviews were employed using semi-structure questions obtained from integrated systematic review. This study conducted focus groups and interviews participants at the same time. As Ingersoll-Dayton (2011) have suggested, conducting focus groups and in-depth interviews simultaneously is appropriately for Thai elderly

to save time and use both data to complement each other. The present study initially employed the focus group discussions to obtain the ideas and viewpoints among the participants. Then, individualized in-depth interviews were conducted in private places by face-to-face interviews. Boudiny and Mortelmans (2011) argued that traditional conceptions of active ageing obtained from qualitative research focusing on lay older persons' own perceptions are needed as it should represent dynamic and life course-driven concepts, instead of focusing on a predetermined, limited number of domains usually developed from an expert perspective (Bowling, 2005; Walker, 2009). Thus, using qualitative approach both focus groups and in-depth interviews is well-suited for this study. Using only focus groups in Thai elders, Knodel (1995) commented that the focus group may not be appropriated to disclose information of a personal nature or a sensitive belief. Therefore, in case of some specific questions, using individualized in-depth interview is more suitable to obtain more personal information (Ingersoll-Dayton, 2011) and provides rich insight into the older persons' experience in their daily lives (Krause, 2002).

Empirical analyses generated six domains: keeping busy with daily living, maintaining healthy lifestyle, growing spiritual wisdom, being actively engaged with society, being self-reliant, and managing later-life security. The Thai active ageing concept demonstrated a multidimensional character of active ageing. The multidimensional aspect of active ageing involving health, participation, and security is consistent with an active ageing conceptual framework proposed by World Health Organization (WHO, 2002). Moreover, this finding supports existing studies related to active ageing (Bowling, 2008; Buys & Miller, 2006; Stenner, McFarguhar, & Bowling, 2011; Buys et al., 2008; Kespichayawattana, & Wiwatvanich, 2006; Nantsupawat, 2010). For Asian elders, active ageing has been viewed as multidimensional involving healthy being, social engagement and security. In Hong Kong, Chinese elderly viewed active ageing as having good health and a positive life attitude, having active engagement with life, feeling supported by family and friends, being financially secure, and living in a place with emotional ties (Chong et al., 2006). In Thailand, active ageing perceived by healthy and well-known elders consists of three attributes. First, remaining continually active, which means that the elderly perform their favorite activities and participate in activities of the organizations of

which they are members. Second, being healthy, that means that the elderly are able to appropriately care for themselves in physical, mental, social, and spiritual aspects. Lastly, having security, which means that the elderly have feelings of being safe and free from worry about income, housing and caregivers (Kespichayawattana, & Wiwatvanich, 2006). Therefore the active ageing concept is comprehensive going beyond health aspects but involving psychological, social, spiritual, and economic aspects (Paul, Ribeiro, & Teixeira, 20012).

The six domains of active ageing emerged from qualitative approach covering three key aspects, "Health", "Participation", and "Security" (WHO, 2002). The first aspect, "Health", consists of 3 key domains: keeping busy in daily living, maintaining healthy lifestyle, and growing spiritual wisdom that are relative to physical, psychological, and spiritual health. There are various activities to promote their holistic health. World Health Organization contends that healthiness is the central pillar that influences both participation and security (WHO, 2002). Being healthy has been widely accepted as the core aspect of active ageing (Chong et al., 2006; Flick et al., 2003; Peel, Bartlett, & McClure, 2004). Specifically, promoting spiritual health, by way of making merit and good deeds, which is ingrained with religiosity, may be unique in Thai culture in which most people are Buddhists. Also, Thai people rely heavily on their Buddhist beliefs of doing good deeds as a way of "making merit". This is congruent with the findings in existing studies in Thai healthy ageing (Danyuthasilpe et al., 2009; Rattanamongkolgul et al., 2012; Thanakwang, Soonthorndhada, & Mongkolprasoet, 2012; Thiamwong, McManus, & Suwanno, 2013), which specify that making merit and following Buddhist doctrines provide Thai elderly an opportunity to achieve spiritual well-being.

The second aspect, "Participation", which is reflected in the elderly's social participation and contribution to society. Engagement in social and productive activities appears to be particularly beneficial to older persons. Research supports the notion that older persons, who keep active tasks and roles or contribute to their family and community, have higher life satisfaction, happiness, and better health than those who are inactive (Moen, Mc-Clain, & Williams, 1992). Being able to do or choose something meaningful and keep actively engaged in any favorite activities have been indicated as the crucial indicator of healthy and active ageing (Buys & Miller, 2006;

Kespichayawattana, & Wiwatvanich, 2006; Thiamwong, McManus, & Suwanno, 2013). Thanakwang and colleagues (2012) stated that social relationships of the Thai elderly are based on the specific culture of interdependence and reciprocity with regard to the collectivistic nature in the Thai context. Several aspects of social relationships with both family and community have been evidenced in studies conducted in Thailand (Danyuthasilpe et al., 2009; Rattanamongkolgul et al., 2012; Thanakwang, Soonthorndhada, & Mongkolprasoet, 2012; Thiamwong, McManus, & Suwanno, 2013), thereby indicating that social relationships are important to healthy and active ageing.

The last aspect, "Security", consists of two domains, which reflect the capacity of an individual to maintain self-reliant and security in the late life. There is a firm agreement that self-reliant is significant for active ageing among Thai elderly. A possible reason may be that living independently is desirable in the contemporary era in which there are dramatic changes in family size, living arrangements, and potential social support to the older people. This verifies the finding of the study done by Rattanamongkolgul and colleagues (2012), which indicated that the Thai elderly try to do self-care as much as they can, and need to be cared by others only when they get very old or frail. In regard to security, feeling secure with respect to housing, finances, and caregiving was identified. The World Health Organization (WHO, 2002) has usually focused on the security aspect of active ageing – social, financial and physical security needs and rights of people as they age. Specifically, older people are ensured of protection, dignity and care in the event that they are no longer able to support and protect themselves (Harper, 2009; WHO, 2002). Buys and colleagues (2008) pointed to the sense of security of the Australian elders that include three major aspects – financial, emotional and future care. Likewise, the study done by Kespichayawattana and Wiwatvanich (2006) indicated that having a sense of security among the Thai elders is also found in feeling free of worry from the three important aspects in terms of income, housing and caregivers.

Phase II: Development of an active ageing scale for Thai people (AAS-Thai)

Step 3 Developing preliminary quantitative measures

This present study attempts to highlight the importance of developing culturally relevant measure of active ageing in Thai context. This addresses the issue of importing standardized instruments from the Western context that may not be relevant to the Eastern context. Therefore, this active ageing scale for Thai people (AAS-Thai) can be assumed to be a culturally sensitive instrument because the items emerged from the indigenous perspectives of the lay older adults in Thailand. The multistage process suggested by Ingersoll-Dayton (2004, 2011) provided a useful framework for developing the measurement based on mixed methods using a qualitative approach and moves toward quantitative approach. A qualitative method is initially employed to identify the relevant or specific domains as it provides a means by which to incorporate the perceptions of indigenous older adults in relation to Thai context. Then, the culturally-sensitive specific domains are subsequently used for the construction of quantitative close-ended items (Ingersoll-Dayton, 2011).

To generate an item pool of the active ageing scale, data emerged from the focus groups and in-depth interviews conceptualized in six domains and were used as the input of the item generating to develop the statements related to each of the six domains of active ageing. Therefore, all items were incorporated with words and phrases from the elderly participants' viewpoint which is considered as a culturally-grounded measure of active ageing. To construct the culturally-meaningful instrument, many experts have suggested that data obtained from qualitative approaches (i.e., focus groups or in-depth interviews) were important to generate the close-end items (Ingersoll-Dayton, 2011; Krause, 2002; Onwuegbuzie, Bustamante, & Nelson, 2010). This model is specifically advantageous when a researcher needs to building a new instrument (Creswell, 2003). A mixed methods approach allows the design and calibration of an instrument that measures the attribute of active ageing for Thai elderly relevant to the Thai context and general older Thai people. It can be concluded that a qualitative method is initially employed to identify the relevant or specific domains as it provides a means by which to incorporate the perceptions of indigenous older adults within the Thai context. Then, the culturally-sensitive specific domains are subsequently used in the construction of the scale items (Ingersoll-

Dayton, 2011; Krause, 2002). The process of the construction of a culturally-grounded measure of active ageing for older people in Thailand is consistent with the previous studies in Thai elders (Ingersoll-Dayton et al., 2004; Thiamwong et al., 2008) which construct the quantitative items based on the qualitative data from focus groups and in-depth interviews.

Step 4 Reviewing of a measure by expert panel

After the first draft of a culturally-specific AAS-Thai is completed, it was reviewed for content validity by seven experts to consider the scale validity. The experts review serves multiple purposes related to maximizing the content validity of the instrument (DeVellis, 2003). Content validity is concerned with whether or not the test items adequately sample the content area, or the representativeness and comprehensiveness of the items. Thus, content validity of the new measurement lies in the hand of a panel of experts who determine whether the contents of the measure are consistent with what it is supposed to measure (Merle, 1998). Seven scholars with expertise in multidiscipline research on ageing (i.e., geriatric medicine, gerontological nursing, social gerontology, geriatric psychiatry, including scale development) make this newly developed scale more acceptable in its validity. Examining the content validity of this measure is based on the expert concurrence using Content Validity Index (CVI), which a CVI score of 0.80 and above signify adequate content validity (Burns & Grove, 2009; Waltz, Strickland, & Lenz, 1991). The CVI score of the AAS-Thai was 0.91, indicating that it is acceptable for the content validity. According to the expert's suggestions, the AAS-Thai was revised.

Step 5 Conducting cognitive interviews

Since the scholarly views are usually theoretically based that may not be consistent with the lay elderly's viewpoint, confirming the clarity and readability of the items with the older persons is needed. Bowling (2007) argued that the lay views that are based on people's values are important to explore the meaning of successful ageing. Thus, cognitive interviews with active older adults were further conducted in this present study. Findings from cognitive interview were used to revise the items; for example, items that were unclear or difficult to understand were

modified as suggested by the elderly participants. An instrument may not guarantee respondents' correct interpretations although it is following the best guidelines for scale development. Thus, cognitive interview has been used by instrument developers to examine how well an instrument generates the intended data when tested with prospective respondents (Izumi, Vandermause, & Benavides-Vaello, 2013). Several nursing scholars have suggested that gathering respondents' perspectives of an instrument by cognitive interviewing is important to make the clarity of wordings or identify problematic questions before pre-testing in the field (Drennan, 2002; Garcia, 2011). Importantly, cognitive interviewing is needed for developing instruments to collect reliable and valid self-report data and to examine whether the quantifiable questions capture the qualitative characteristics of respondents' experiences (Izumi, Vandermause, & Benavides-Vaello, 2013). Cognitive interviewing method has been acknowledged as an effective way to provide a culturally-valid measure because it is relative to the elderly respondents' perspectives or experiences rather than that of the researcher's viewpoints. Taken together both reviewing by experts and cognitive interviewing with older adults, the developed items of the AAS-Thai are validated for its contents by both scholarly views and the lay views. Ingersoll-Dayton (2011) confirmed that using cognitive interviewing is necessary for developing a culturally-sensitive measure, leading to a number of important insights. First, it is ensure that the items are accurate indictors of the underlying domains of the instrument identified by the qualitative approach. Second, it is possible to determine if the items were generally understood and consistent with the intended meaning. Lastly, it is possible to develop or revise a more appropriate response set for the items.

Phase III: Psychometric testing of AAS-Thai

Step 6 Pre-testing

To check the appropriateness of the developed instrument in the real situation, pre-testing was undertaken with the 30 respondents. Polit and Beck (2004) recommended that a number of 30 subjects are appropriated for pre-testing. In the process of instrument development, a pre-testing should be done to find many early questions in instrument development and determine the feasibility of using the instrument in a formal study, and to identify some early problems in instrument use

such as accuracy, clarity, appropriateness or bias in terms and level of readability (Ingersoll-Dayton, 2011; Mishel, 1998; Polit & Beck, 2004). It provides an opportunity to try out the techniques or the instructions that will be used with an instrument, specifically if it has never been used with a specific population.

Item analysis is employed to examine the reliability and determine the validity of a test by separately evaluating each item of the instrument. It is desirable to ensure that each item contributes to the overall test and to reduce the amount of measurement error in the test as a whole. The results of item analysis can help in making a decision about whether any given item should be retained or deleted (Ferketich, 1991). After some items drop from the instrument, the coefficient alpha should be calculated. This pre-testing step also examined the internal consistency of the newly developed instrument. The alpha value of 0.70 or more for a newly developed instrument indicated sufficient internal consistency (Nunnally & Bernstein, 1994). Thirteen items were deleted and the 47-item AAS-Thai was retained. This fourth draft 47-item AAS-Thai revealed that Cronbach's alpha coefficient of each of the six subscales after item analysis ranged from 0.81 to 0.92 and the overall scale of 0.97 which was higher than the criterion of 0.70 (Nunnally & Bernstein, 1994), indicating an excellent reliability. The procedure of pre-testing has been conducted for scale development in several prior researches of ageing in Thailand (Komjakraphan et al., 2009; Maneerat, 2011, Ingersoll-Dayton et al., 2004). Fortunately, the AAS-Thai has no items with negative terms; therefore, it is easy for understanding and interpreting by the respondents. Ingersoll-Dayton (2011) suggested that items with negative terms are confusing for older persons when the response choices also include negative options.

Step 7 Performing a nationwide survey

After obtaining the fourth draft 47-item AAS-Thai in the pre-testing step, a nationwide survey with a large number of older persons was conducted. This step is also aimed to re-evaluate internal consistency and item analysis which includes factor analysis, resulting to reduce the number of items of AAS-Thai. This field testing was conducted using a multi-stage random sampling approach to draw 500 older adults from four regions of Thailand (i.e., North, Northeast, Central, and South).

The 500 valid questionnaires were more than the most conservative ratio of 10 participants per item (Nunnally & Bernstein, 1994; Dixon, 2005), and were considered sufficient for the subsequent data analysis. Particularly, MacCallum et al. (1999) suggest that sample size in factor analytic studies 500 or more is excellently suitable.

The initial conceptual framework for the process of scale development of the Thai active ageing composed of six domains and 81 items. Finally, after the components of the draft of the AAS-Thai designed to measure active ageing were examined using principle component analysis, 36 items of 7 domains met the requirements, as shown in Table 18.

Table 18 *Difference between the initial and final frameworks*

Initial framework* (81 items)	Final framework** (36 items)
1. Being self-reliant (17 items)	1. Being self-reliant (8 items)
2. Keeping busy with daily living (14 items)	2. Being actively engaged with society (8 items)
3. Maintaining healthy lifestyle (13 items)	3. Growing spiritual wisdom (5 items)
4. Being actively engaged with society (15 items)	4. Building up financial security (4 items)
5. Growing spiritual wisdom (13 items)	5. Maintaining healthy lifestyle (5 items)
6. Managing later life security (9 items)	6. Engaging in active learning (4 items)
	7. Strengthening family ties for being cared for in the late life (2 items)

*Set order of factors by qualitative findings, **Set order of factors by EFA result

From Table 18, there are three changes in concepts from the initial framework to the final framework. First, the “being self-reliant” domain was split into two domains: (1) “being self-reliant” and (2) “engaging in active learning”. The reasons may be that their meanings are not exactly similar. The four items of engaging in active learning seem going beyond being self-reliant in that learning has

become an important feature of contemporary existence (Tam, 2011). Active learning facilitates older adults to participate in modern society that is characterized by rapid technology changes and to enjoy a positive quality of life (WHO, 2002). Second, the "keeping busy with daily living" domain was split into two domains: (1) "being self-reliant" and (2) "being actively engaged with society". This may be that the items of keeping busy with daily living are the activities that are overlapping with both self-oriented and social-oriented activities. Thus, it is not surprising that when exploring factor analysis was conducted, the items of the domain of "keeping busy with daily living" were grouped into both domains ("being self-reliant" and "being actively engaged with society"). Third, the "managing later life security" domain was split into two domains: (1) "building up financial security" and (2) "strengthening family ties for being cared for in the late life". The findings support that both finances and family caregivers are important to security in the later life, and they are not the same construct. Particularly, financial situation has been acknowledged as an important aspect for living in the present era (Komjakraphan et al., 2009; Thanakwang & Soonthorndhada, 2007). Thus, the financial security domain is different from the domain of strengthening family ties for being cared for in the late life.

In summated scales, factor analysis is often used to test the validity of ideas about items so the researcher can decide how items should be grouped together into subscales and which items should be dropped from the instrument entirely (Dixon, 2005). Using exploratory factor analysis, seven domains were resulted including (1) being self-reliant; (2) being actively engaged with society; (3) growing spiritual wisdom; (4) building up financial security; (5) maintaining healthy lifestyle; (6) engaging in active learning; and (7) strengthening family ties for being cared for in the late life. This is the concept of the process of being active engaged in life of the Thai elderly. The discussion about the resulting domains of active ageing for Thai people was presented as follows.

1. Being self-reliant

The first important dimension of the Thai active ageing is being self-reliant, the strongest factor that explains the greatest percentage variance in the AAS-Thai. It includes eight items which represent independence of self-care tasks to take

care themselves as they able to do, and family-care tasks to do various activities in the household. Keeping active with his/her own autonomy has been found as an important aspect of active ageing in the previous studies (Buys et al., 2008; Clarke et al., 2005; Stenner, MaFarguhar, & Bowling, 2011; Terrill & Gullifer, 2010). Given from the older adult's perspectives, "being able to do what they want to do" is meaningful for their autonomy that they are able to manage their lives on their own (Clarke et al., 2005; Kwok & Tsang, 2012; Stenner, MaFarguhar, & Bowling, 2011). Being self-reliant is positively related to good physical health. Both maintaining physically active and preserving optimal functioning have been indicated by several studies as the most common perceptions of ageing actively (Bowling, 2008; Clarke & Warren, 2007; Kespichayawattana & Wiwatvanich, 2006; Stenner, McFarquhar, & Bowling, 2011). Wendy et al. (2002) stated that healthy community-dwelling older women dealt with getting older by staying physically active. American elders also cited the importance of good physical health and functionality as keys to ageing well (Collin, 2001).

Having meaningful activities in daily life that keep the elderly individuals busy makes them proud that they are independent and not burdensome. This notion is consistent with the value of individualism among the Western elders (Ingersoll-Dayton et al., 2001, 2004). Much of Western scholars point out that active ageing is based on the concept of selfhood that the elderly individuals must have self-responsibility and self-care for their own life (Katz, 2000; Kwok & Tsang, 2012; Marhankova, 2011). However, the findings of this present study with respect to "being self-reliant" expand upon findings in Western studies that the self-reliant aspect among the Thai elderly is not only focused on self-caring but also addressed family caring. The rationale may come from the collectivistic nature of Thai context that people are fundamentally interdependent; therefore, the self is viewed as interconnected that people are mutually responsible for one another (Danyuthasilpe et al., 2009; Ingersoll-Dayton et al., 2004). This finding is congruent with the study done by Nantsupawat and colleagues (2010) that active ageing meant that the elderly actively do many things beneficial for themselves and their family.

2. Being actively engaged with society

This component includes eight items including engaging in social participation and social contribution. The social participation includes participating in community, tradition, and elderly club activities. The social contribution involves contributing their knowledge and skills to others, and their productive activities to society at large such as volunteering, working and donating for public benefits. The findings support the fact of the attributes of active ageing that Thai elderly are not characterized only being self-reliant but also participating and contributing in the community and society at large. Active or productive agers have been needed for all countries worldwide, specifically in Thailand that includes in the national plan for older persons (Jitapunkul & Wivatvanit, 2009). Social relationships are important to well-being among the Thai elderly (Ingersoll-Dayton et al., 2001; Thanakwang, Ingersoll-Dayton, & Soonthorndhada, 2012). Research supports the notion that healthy persons, who keep active tasks and roles or contribute to their family and community, have higher life satisfaction, happiness, and better health than those who are inactive (Moen, Mc-Clain, & Williams, 1992).

This social participation aspect is similar to several studies in Western society that active engagement with life has been considered as an important indicator of successful ageing (Register & Herman, 2010; Rowe & Kahn, 1997, 1998) and active ageing (Buys & Miller, 2006; Terrill & Gullifer, 2010). In Western countries, active engagement may involve volunteering in various tasks and agencies, participating in leisure, hobby and religious activities (Hoyman & Kiyax, 1996; Martinson & Minkler, 2006; Rebecca et al., 2002; Smith & Gay, 2005)**.** In Thailand, active participation among the elderly involves both formal and informal activities in the community such as participating in social activities, joining an elderly club, or engaging in religious activities (Danyuthasilpe et al., 2009; Thiamwong et al., 2008).

Not only does the participation of older adults in social activities, but the contribution of the elderly to others has also been considered as an important aspect of active ageing. Maintaining socially active engagement may be the myriad of meaningful activities performed within the context that the older persons connect or contribute their benefits to others and the whole society. The productive activities of the Thai elderly found in this study is consistent with the socially productive activities

found in the prior existing studies (Burr, Caro, & Moorhead, 2002; Morrow-Howell, Hinterlong, & Sherraden, 2001). Therefore, productive engagement among older adults has been indicated as an important indicator of active ageing, indicating that they contribute many capacities including social or economic activities that are of great value to older people themselves, to their families, as well as to society at large (Hoglund, Sadovsky, & Classie, 2009; Nuntsupawat et al., 2010; Ranzijn, 2010; Thanakwang & Isaramalai, 2013). In other words, it can be said that "active ageing implies usage of older people's life competences as a human capital of society" (Kruse & Schmitt, 2012, p.1). In Western perspective; for example in UK, formal volunteering is considered as one of the most prominent indicators of active ageing (Lie, Baines, & Wheelock, 2009). However, formal volunteering is not prominently recognized in Thailand that it has been limited for healthy, highly educated elders, such as "brain bank" of the seniors (Sakulkoo, 2009). Social contributions among the lay older adults in Thailand are distinctly seen as informal productive activities related to reciprocity and interdependence. Social contribution has been widely acknowledged as one important indicator of productive ageing that focuses on dedication, elderly-led initiatives in their own situation and abilities (Peng & Fei, 2013; Thanakwang & Isaramalai, 2013). Thus, social contributions as productive engagement cover and go beyond social participation, facilitating positive potentials, dignity and self-actualization in older adults (Peng & Fei, 2013). In so doing, social connectedness, social activities, and social contributions to others are commonly found in collectivistic societies such as Thailand. Being actively and productively engaged with society should be continuously supported by government agencies for older Thai people to be positive contributors to their family, friends, community, and nation. A comprehensive assessment of social engagement among older Thai people should include social interactions (both social participation and contribution activities) with family members, friends, neighbors, and social clubs or groups, both formal and informal.

3. Growing spiritual wisdom

Growing spiritual wisdom is also identified as an important aspect of active ageing. This component involves having inner strength and calmness including

trusting in religion, and making merits. It is widely agreed that spiritual growth is an important aspect of being humanistic and meaningful life, which articulates of going beyond, enabling one to contribute to a meaningful relationship with others relating to God, religion, or transcendence (Chuengsatiansup, 2003; Dalby, 2006). Ardelt (2003) defined wisdom as an integration of cognitive, reflective, and affective (compassionate) characteristics in relation to understanding the truth of life, engaging in self-examination to develop self-awareness and self-insight, and decreasing self-centeredness that tends to result in compassionate love and concern for the welfare of others. The majority of Thai elderly are Buddhist. The Thai people rely heavily on their Buddhist beliefs of doing good deeds as a way of "making merit." Buddhists adhere to the notion that by helping others, they are accumulating merit, which will ensure a better next life (Thiamwong, McManus, & Suwanno, 2013). The doctrines of Buddhism (e.g., Dharma) commonly foster positive psychological and spiritual well-being to attain inner calmness and wisdom among the elderly (Saengtienchai, 2004). As one gets older, and has more free time as well as wisdom to be involved with higher forms of religious activities by performing activities such as mental development (meditation) and teaching the doctrine or showing truth to others, which are considered as rendering more merit. Making merit and following Buddhist doctrines may provide Thai elderly an opportunity to achieve being actively engaged for spiritual growth. The findings of the positive spirituality are consistent with the studies of positive ageing, specifically in Thai elderly, who found that spirituality is the key indicator of healthy ageing (Danyuthasilpe et al., 2009; Thanakwang, Soonthorndhada, & Mongkolprasoet, 2012; Thiamwong, McManus, & Suwanno, 2013), successful ageing (Rattakorn, 2009), productive ageing (Neovakul, 1993), and active ageing (Rattanamongkolgul et al., 2012). This component is predominantly viewed by older Thai people to be active or productive agers. Thus, this spiritual and wisdom aspect of active ageing may be unique for Thai elderly that differ from the WHO's active ageing concept (Rattanamongkolgul et al., 2012).

4. Building up financial security

This component is extracted from the initial conceptual framework by exploratory factor analysis. Building up financial security is identified as preparing

financially for the later life and for funerary activities including having money enough for expenses in daily life. This finding is congruent with numerous studies suggesting that financial security has been associated with active ageing (Buys et al., 2008; Kespichayawattana & Wiwatvanich, 2006), including successful ageing (Troutman, Nies, & Bentley, 2011; Rowe & Khan, 1998). Being financially secure maximizes one's sense of security and autonomy (Chong et al., 2006; Soodeen, Gregory, Bond, 2007). For studies of Thai elderly, Kespichayawattana and Wiwatvanich (2006) indicated that one of the senses of security among the Thai elders is feeling free from worry about living expenses. Likewise, Nantsupawat and colleagues (2010) identified that having economic stability is one indicator of active ageing. The finding of financial security is crucial for Thai elderly that have been indicated by numerous studies (Kespichayawattana & Wiwatvanich, 2006; Knodel & Chayovan, 2009; Nantsupawat et al., 2010; Rattanamongkolgul et al., 2012; Thanakwang & Soonthorndhada, 2007). However, the study done by Bowling (2008) argued that a few British elders mentioned finances as a constituent of active ageing. For the qualitative study done by Chong et al. (2006), it was revealed that the Hong Kong elders viewed that being financially secure is important to active ageing. Thus, financial security may be significant for Asian elders because most of Asian elders are limited for income stability and depending on financial support from their children (Knodel & Chayovan, 2009; Komjakraphan et al., 2009). Moreover, specifically found in Thai elderly research, pre-death preparation that the elderly prepare for their funerals by engaging to be a member of community funeral funds to ensure that their children will have money enough to arrange their funerals (Nantsupawat et al., 2010; Rattanamongkolgul et al., 2012).

5. Maintaining healthy lifestyle

This component consists of five items that attempt to define the construct of health-promoting behaviors, such as eating healthful food and practicing physical activity or exercise. The concepts within this component are consistent with the prior nursing research in Thailand that older adults mostly view healthy lifestyle in relation to eating healthful food and exercising (Danyuthasilpe et al., 2009; Thanakwang, Soonthorndhada, & Mongkolprasoet, 2012; Thiamwong, McManus, &

Suwanno, 2013). The findings indicated that health promotion behaviors were perceived as a constituent of active ageing. This means that the more the elderly practice promoting healthy lifestyles, the greater their active ageing. An explanation for the positive association is that health promotion practices maintain and improve health and well-being (Gochman, 1988; Laverack, 2004; Pender, Murdaugh, & Parsons, 2006). It may be that older persons who regularly engage in health promoting practices tend to achieve independence in daily living, high cognitive and physical functioning, and active engagement with life. This is, health promotion behavior enables individuals to increase control over the determinants of health and to make choices for active and healthy living.

This finding is consistent with numerous studies suggesting that health promoting lifestyle has a strong association with healthy conditions (Danyuthasilpe et al., 2009; Peel, McClure, & Bartlett, 2005; Thanakwang, Soonthorndhada, & Mongkolprasoet, 2012). For example, many studies have demonstrated that physical exercise is beneficial to physiological functioning in older adults, thus facilitating successful or healthy aging (Mores & Souza, 2005; Phelan & Larson, 2002). Several longitudinal studies have found that physical activities are the strongest predictor of successful aging (Strawbridge et al., 1996). Moreover, healthy nutrition and lifestyles are essential to achieving healthy aging (Bryant et al., 2001; Haveman-Nies, Groot, & Staveren, 2003). Bowling (2009) indicated that the British elders define active ageing in terms of good physical health and fitness, and exercise is identified as a key determinant by them. Healthy lifestyle is significantly associated with positive ageing (Woo et al., 2008). Corresponding with the Western studies, Thanakwang and Soonthorndhada (2006) and Rattanamongkolgul et al. (2012) argued that, among Thai elderly, health-promoting behaviors including regular exercise, avoiding health risk behaviors (i.e., smoking, alcohol drinking, and substance abuse), eating healthy food, following up the professional advice, and using techniques to relax lead to better healthy and active ageing. This finding supports the WHO's active ageing model that healthy behaviors including regular exercise, sufficient nutrition, stress relieving activities, and avoiding health risk behaviors are associated with better health, functioning, and longevity across the lifespan (Marshall & Altpeter, 2005; Van Malderen, Mets, & De Vriendt, 2012; WHO, 2002).

6. Engaging in active learning

Engaging in active learning was also extracted from the initial conceptual framework by exploratory factor analysis. This component consists of four items reflecting the capacity of an elderly individual to learn new information technologies and facilitated equipment to make them cognitively active and healthy. Most of participants said that, at present, the information technologies have been developed and come to their daily lives; thus, it is essential that older persons should attempt to learn new things and new experiences. They wanted to keep learning as well as they can or have the opportunity to do so. The finding suggests that engaging in active lifelong learning is important for older adults in Thailand, consistent with findings in many prior studies that have confirmed that continued learning is important for active ageing (Boulton-Lewis, 2010; Boulton-Lewis et al., 2006; Buys et al., 2008; Kwok & Tsang, 2012; Rowe & Kahn, 1998). Engaging in lifelong learning makes older adults keep physical and mentally active, enhance self-esteem and self-health care (Tam, 2011). At present, lifelong learning is imperative for older persons in the modernization era, in which technologies are rapidly changed. Learning is beneficial for personal development and enhanced skills. With regard to older people's experiences of learning, there are a variety of ways to learn over their life courses both formally and informally. In addition, being involved in continuing learning activities can be a good way for the elderly to develop networks and connections (Nevakul, 1993). Continued learning in old age contributes to improve health, well-being in life, dignity, self-actualization, human capital, and independence (Dench & Regan, 2000; Purdie & Boulton-Lewis, 2003; Tam, 2011). Thus, the policies to promote lifelong learning for older people in relation to their interests and contexts should be established.

7. Strengthening family ties for being cared for in the late life

The final domain of the process of active ageing is "Strengthening family ties for being cared for in the late life" that consisted of two items: strengthening family ties, and teaching children about filial piety. This dimension is performed by the parents to ensure that they will be cared for by their children when they are old or frail. This finding is congruent with a few studies in the Western

context (Buys et al., 2008), but a number of Eastern studies (Chong et al., 2006; Hsu, 2007), also studies in Thailand (Nantsupawat et al., 2010; Rattanamongkolgul et al., 2012). The study done by Nantsupawat et al. (2010) indicated that the three and four-generation family patterns prominently promote active ageing in relation to the older parents feeling secure that someone would care for them in the present and in the future. It is widely known that elderly support is expected by family members. In the Thai context, elderly support by kin may be related to social norms such as filial obligation and reciprocal exchanges. The value of filial obligation is still strong and continues to be cultivated through cultural norms and the Buddhist doctrine of karma, *'bunkhun'* (assistance from parents), and merit that involves repayment to parents for their cares and nurturance (Caffrey, 1992; Choowattanapakorn, 1999; Kespichayawattana, 1999; Subgranon & Lund, 2000). Based on these cultural norms, the elderly's expectations for support from family members may be deeply ingrained. If the children respect and care for older parents, it helps older parents feel that they have succeeded in their nurturing and teaching their offspring (Ingersoll-Dayton et al., 2001). Therefore, strengthening family ties is perceived as one important aspect of active ageing to ensure that the elderly will be cared for in the later life.

Step 8: Testing Psychometric Properties of the AAS-Thai

The psychometric properties of the AAS-Thai were tested for two key issues: validity and reliability. With regard to the construct validity, factor analysis, hypothesis testing and the known group technique were examined. Construct validity is the most important type of validity for a quantitative instrument (Polit & Beck, 2004). For the reliability, internal consistency and test-retest reliability were performed.

1. Construct validity of the AAS-Thai

1.1 The results of the exploratory factor analysis indicate that the seven-factor AAS-Thai with remaining 36 items achieves a well-constructed instrument for measuring active ageing in Thai people. Specifically, factor analysis was used in this study to help determine empirically how many constructs, or latent variables, or factors underlie a set of items (DeVellis, 2003). Nevertheless, although guided by the supposition that seven subscales were present, the analysis was more

exploratory than confirmatory in nature as it provided the initial assessment of the construct validity of the instrument. All the 36 remaining items had loading values greater than 0.40 and grouping indicators on only one of the seven factors that could be meaningfully explained in their corresponding components. The communality values were greater than 0.50, indicating that all items are reflected well via their extracted factors (Hair et al., 2006). The eigenvalues of the seven factors ranged from 5.77 to 1.65 and all components accounted for 68.53% of the total variance, which is greater than 50% of explained variance for the factors (Streiner & Norman, 1995), indicating that the AAS-Thai is adequate for capturing the many of the attributes of the Thai active ageing.

1.2 With regard to the construct validity, the AAS-Thai demonstrated statistically significant association with the closely related constructs (i.e., Healthy Ageing Instrument - HAI and WHO Quality of Life – WHOQOL-BREF). These scales were given to the sample at the same time. Hair and colleagues (2006) suggested that the concurrent validity of the new instruments is acceptable when it correlates well with a criterion measure that has previously been validated. According to Polit and Beck (2004), criterion related validity is confirmed when the instrument is useful in predicting other behaviors, experiences, or conditions. The findings indicate that the AAS-Thai was associated positively and significantly with HAI ($r = 0.84$, $p < 0.001$), as well as all of the seven active ageing subscales were associated positively and significantly with the HAI ($r = 0.55 - 0.65$, $p < 0.001$), signifying a high correlation with healthy ageing concept. The reason may be that health has been considered as one of the important aspects of active ageing (WHO, 2002); therefore; active ageing concept is overlapped with healthy ageing (Flick et al., 2003; Kalache & Kickbusch, 1997). Thiamwong and colleagues (2008) developed the healthy ageing instrument (HAI) in the Thai elderly, yielding the 35-item HAI that is acceptable for its validity and reliability. Most of the subscales of HAI are related to subscales of the AAS-Thai. Moreover, the findings indicate that the AAS-Thai was significantly correlated with WHOQOL-BREF scale ($r = 0.74$, $p < 0.001$), and all of the seven active ageing subscales were significantly correlated with the WHOQOL-BREF scale ($r = 0.44 - 0.68$, $p < 0.001$). The elders with higher levels of active ageing reported greater level of quality of life. This means that being active ageing can predict quality

of life among the Thai elderly. This is consistent with WHO's active ageing concept, indicating that quality of life is the consequence of active ageing (WHO, 2002). Much of existing studies have also identified that active ageing is positively related to enhance quality of life (Bowling, 2007, 2009; Kwok & Tsang, 2012). Thus, the analytic findings indicate that the AAS-Thai is highly acceptable for its construct validity in relation to healthy ageing and quality of life.

1.3 To further test the construct validity of the ASS-Thai, the known group technique was employed to examine the fact that this new instrument can differentiate members of one group from another on the basis of the measurement with the same scale (DeVellis, 2003). The findings demonstrated a statistically significant difference between the mean scores of the two contrasting groups: the productively-active elders and the dependent elders. This supports the expectation that the productive elders who are members of the volunteer clubs would be more active than the elders who reside in the residential home. It is not surprising that the active elders had a high score of active ageing since most of them are quite healthy and have a secure economic situation, and were more likely to participate with others and contribute their productivity to community or society at large (Kespischayawattana & Wiwatvanich, 2006; Sakulkoo, 2009). In the contrast, the elders residing in the residential home are poorer and dependent upon government agencies (Kespichayawattana & Jitapunkul, 2009); therefore, they are limited for the opportunities of participation and contribution to others. These findings support the construct validity of the AAS-Thai that can differentiate the active ageing attributes among the two contrasting groups. The known group technique of the present study is similar to the previous study done by Maneerat (2010) using the Thai elderly resilient scale (TER) to distinguish the resilient scores of the two groups, which demonstrated that the TER scale can differentiate resilience between Thai elderly coresiding with family members and those living in a residential home.

2. Reliability of the AAS-Thai

2.1 The internal consistency reliability of the AAS-Thai was examined using Cronbach's alpha for the final 36-item instrument. The alpha coefficient was 0.95, which demonstrates excellent overall reliability. In addition seven subscales of

the AAS-Thai were also found to have high internal consistency, with alpha coefficients ranging from 0.81 to 0.91. Based on the internal reliability criteria that all values of alpha coefficients should be greater than 0.70 (Burns & Grove, 2009; Hair et al., 2006; Knapp & Brown, 1995; Nunnally & Bernstein, 1994), the AAS-Thai is acceptable for its internal consistency reliability and has a high degree of homogeneity.

2.2 Test-retest reliability was further conducted. This type of reliability has been used to ensure the scale's stability since it reflects measurement consistency over time (Burns & Grove, 2009; Nunnally & Bernstein, 1994). The two times of data collection (test 1 and test 2) were carried out after a 2 week interval that has been widely accepted to reduce the effects of a respondent's memory of his/her response to the first instrument administration (Waltz, Strickland & Lenz, 1991). To test the stability of the AAS-Thai, Pearson's product moment correlation was employed to examine the relationships between the two tests. The test-retest reliability coefficient of 0.92 verified that the AAS-Thai demonstrates stability over time.

In summary, the active ageing scale for Thai people (AAS-Thai) could potentially be the first culturally contextualized, relevant, and valid multidimensional scale of active ageing from a nursing perspective in Thailand. Psychometric properties of the 36-item AAS-Thai were evaluated and found to have satisfactory validity and reliability. The findings of validity testing using three techniques: factor analysis, hypothesis testing, and known group technique, indicate that the AAS-Thai is acceptable for its construct validity. Exploratory factor analysis provides the seven-factor AAS-Thai which is considered as a well-constructed instrument, which reflects important aspects of the process of active ageing in Thai people. The AAS-Thai is strongly correlated to the HAI and WHOQOL-BREF, which indicates its construct validity. Likewise, the AAS-Thai can differentiate the two contrasting groups in relation to active ageing attributes. According to the reliability testing, the AAS-Thai also demonstrates acceptable internal consistency and test-retest reliability.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

This study explored the conceptual structure of active ageing for Thai elderly, developed an active ageing scale for Thai people (AAS-Thai), and evaluated its psychometric properties, including the validity (content and construct validity) and reliability (internal consistency and test-retest reliability). This section begins with a summary of the findings relative to the objectives of the study. Subsequently, the strengths and limitations of the study are presented along with suggestions for further study. Lastly, recommendations for policy implications, nursing education, nursing practice, and nursing research are proposed.

Summary of the findings in relation to the objectives of the study

The development method of the active ageing scale for Thai people (AAS-Thai) consisted of three phases involving eight-steps strategy for developing close-ended items for use in the study of older adults guided by Ingersoll-Dayton (2004, 2011). The initial step was to identify the culturally-meaningful domains of the conceptual structure of active ageing, specifically for Thai elderly, using literature review integrated with focus groups and in-depth interviews. Six domains emerging from the indigenous views of the older Thai adults were identified: (1) being self-reliant; (2) keeping busy with daily living; (3) maintaining healthy lifestyle; (4) being actively engaged with society; (5) growing spiritual wisdom; and (6) managing later life security. All of these domains cover the three key pillars of active ageing (health, participation, and security) proposed by World Health Organization (WHO, 2002).

The findings of this study provide a better understanding of the conceptual structure of active ageing of Thai elderly. The study also supports the notions that active ageing is multidimensional involving health, participation, and security, which are the three inextricable pillars of active ageing suggested by the World Health Organization (WHO, 2002). Moreover, the study verifies the broad concept of WHO's active ageing by focusing on the culturally-specific conceptual

structure in a Thai context. Active ageing in Thai elderly is identified as the process of being actively engaged in life in order to have self-reliant, maintain healthy lifestyles, engage in socially productive activities, and manage to ensure later life security.

In the second phase of scale development, data obtained from a qualitative approach were used to generate the close-ended items in step 3. The relevant domains and appropriate phrases or wordings were subsequently used in the construction of quantitative close-ended items. Ten to fifteen items were generated for each domain with the first draft containing 81 items. All items are culturally meaningful and valid for Thai elderly. Likert scaling was chosen as the format of the AAS-Thai and the selection of a four-point response choice was considered adequate. Then, the first draft was submitted to seven experts specializing in multidisciplinary areas relevant to the study to evaluate the contents of the measure. Twenty one items were deleted because of low CVI values (0.33 - 0.67) and redundancy, eight items were rephrased, and nine items were rewritten to improve the semantic meaning according to the experts' recommendation. After revision, there was remaining 60 items as the second draft of the ASS-Thai. The overall CVI of this scale was 0.91, indicating the acceptable content validity of the item pool. To make the AAS-Thai more clear and understandable by the lay older adults, cognitive interviews were conducted with ten Thai elderly. Most of the elderly participants agreed with the clarity and interpretability of AAS-Thai, and minor rewording was suggested. Thus, the third draft the AAS-Thai contained 60 items and was further administered in a pre-testing step.

With regard to the third phase of psychometric testing of the AAS-Thai, the three steps including pre-testing, field testing with a nationwide survey, and testing its validity and reliability were performed. The results of the pre-testing step indicated that the AAS-Thai was revised by using item analysis to enhance its internal consistency. This step created the fourth draft 47-item AAS-Thai with the Cronbach' alpha coefficient of 0.97, which indicates an acceptable internal consistency.

A nationwide survey was conducted with 500 participants across four regions (i.e., North, Northeast, Central, and South) of Thailand to further test the validity and reliability of the AAS-Thai. The item analysis with the 45-item AAS-Thai was performed, resulting in two items being eliminated since they had item-total

correlation value less than 0.30. The results indicated acceptable correlations between item to item, items to subscale, and items to overall scale. The alpha coefficient for the entire scale was 0.96, which is considered good reliability. Exploratory factor analysis using principal component analysis with varimax rotation method was employed to examine the construct validity. By the first factor analysis result, nine items were eliminated since they were relatively high loading on more than one factor. Therefore, the scale's 45 items were reduced to 36 items. The final factor analysis provided the 36 remaining items with seven factors that are relevant to the specified domains that emerged from this qualitative-approach step. The seven factors could explain 69% of the variance of active ageing. The factor loadings ranged from 0.45 to 0.89 with statistical significance ($p < 0.001$), and the communality values ranged from 0.54 to 0.87, indicating that all items are reflected well via their extracted factors. These factors were named with respect to the process of being active engaged in the lifelong of the elderly including: (1) being self-reliant; (2) being actively engaged with society; (3) growing spiritual wisdom; (4) building up financial security; (5) maintaining healthy lifestyle; (6) engaging in active learning; and (7) strengthening family ties for being cared for in the late life. These final conceptual domains of active ageing are overlapping with the initial specified domains of active ageing, which five domains are similar whereas two domains are different.

For final testing of psychometric properties of the AAS-Thai, construct validity using hypothesis testing and known-group technique was carried out. Likewise, internal consistency and test-retest reliability were performed to examine the scale's reliability. The results indicated that the AAS-Thai had a significant positive association with the healthy ageing instrument - HAI ($r = 0.84$, $p < 0.001$) and quality of life - WHOQOL ($r = 0.74$, $p < 0.001$), indicating its satisfactory construct validity. This denotes that the Thai elderly who had higher scores on active ageing had greater scores of healthy ageing and quality of life. For known-group technique analysis with the two contrasting groups, it was found that the mean active ageing score of the productive elders who are the member of the volunteer club was greater than the elders who resided in the residential home with a statistically significant difference at 0.001 level. This indicated the construct validity of the newly developed AAS-Thai since it differentiated the active ageing attributes between active

elderly and frail elderly. Furthermore, the results confirmed that AAS-Thai had overall internal consistency reliability of 0.95, indicating a reliable instrument for measuring the multidimensional attributes of active ageing. Finally, a 2-week test-retest reliability using Pearson's correlation coefficient was 0.92, indicating an acceptable stability for the AAS-Thai.

In summary, the AAS-Thai items are derived from the thoughts, feelings, and insights of older Thai adults. The final 36-item version of AAS-Thai with seven culturally-specific domains demonstrates acceptable overall validity and reliability, which could be useful to thoroughly assess active ageing attributes for Thai elderly. Additionally, it could be used for policy implication, further research and practice.

Strengths and limitations of the study

The strengths of this present study are highlighted with respect to the contributions of the study. The definitive strength of this study and the new instrument stems from the fact that the instrument is based on a robust theoretical model. The findings specifically contribute to advancement of nursing knowledge related to promoting health and well-being for the elderly and scale development. To do so, the contributions of this study are described as follows.

1. The present study provides the conceptual structure of active ageing, specifically for Thai elderly. There is widespread agreement that active ageing concept is multidimensional and overlapped with other positive ageing terms (i.e., healthy ageing, successful ageing, and productive ageing) (Bowling, 2008; Buys & Miller, 2006; Fernandez-Ballesteros et al., 2013; Hsu, 2007; Stenner, McFarquhar, & Bowling, 2011). However, active ageing has been defined differently with fragmented measures (Bowling, 2007, 2009; Davey & Glasgow, 2006). There are still significant gaps in our understanding of multidimensional active ageing, particularly in Asian style. The present study addresses this gap by examining active ageing concept among older Thai adults. The results of this study indicate that seven domains of the Thai active ageing involve health, social participation and security aspects. Being actively engaged in the late life is relative to both self-oriented and interpersonal-oriented. The findings confirm the notion of well-being of the Thai elderly that is inextricably

related to both intrapersonal and interpersonal dimensions (Ingersoll-Dayton et al., 2001, 2004).

2. It is widely accepted that the development of concept is important to expand nursing knowledge (Rodgers & Knafl, 2000; Walker & Avant, 2005). Ultimately, development and psychometric evaluations of Active Ageing Scale for Thai people (AAS-Thai) is expected to add to the new knowledge in nursing science and other disciplines. The concept of Thai active ageing obtained in the process of this present study is one method to clarify a discipline of its characteristics or attributes which, in turn, can result in a precursor of theory and knowledge development through testing a middle range theory relative to active ageing, specifically in the Asian context, in order to be used for research and to ultimately improve practice (Cronin et al., 2010).

3. Prior to this study, no instrument could directly measure active ageing in older people and the processes involved with active ageing were poorly understood. This study represents the first attempt to recognize the significance of active ageing. This study also provided a first and crucial step toward filling the knowledge gap that currently exists in the quantification scale development of active ageing by examining the reliability and validity of active ageing for Thai people (AAS-Thai).

4. The scale development of this AAS-Thai focuses on the culturally-sensitive measure, which is grounded in the experiences of older Thai people. Using standardized measures developed in the Western context may be problematic for Eastern context because of differences in cultures. Thus, translations of the close-ended item questionnaire in Western cultures may not be transferable to the meaning of words or key concepts for Eastern cultures (Ingersoll-Dayton, 2011). This study fills the gaps mentioned above by creating the active ageing scale based on the perceptions and perspectives of indigenous Thai older people to capture the culturally-meaningful domains of the active ageing specific phenomena. The study methods to obtain a culturally-grounded measure of active ageing are challenging. A mixed methods research design to develop scale measurement, particular a culturally-sensitive measure in gerontological research was employed (Ingersoll-Dayton, 2011). To accomplish a comprehensive measurement development, the study

employs various best practice methods for scale development recommended by DeVellis (2003), a multi-step strategy for developing a national tool in studies of older adults suggested by Krause (2002), and development of culturally-sensitive measures for research in Thai elders guided by Ingersoll-Dayton (2011). This research can expand and fulfill the knowledge of active ageing, specifically active ageing relative to Thai cultures. More recently, the mixed method research has been widely documented in nursing research (Andrew & Halcomb, 2009; Gilbert, 2006; Lipscomb, 2008; Sandelowski, 2000; Wilkins & Woodgate, 2008). There have been found that, in scale development research in Thailand, the knowledge of mixed method design has rarely been addressed. Therefore, this study may be a pioneer using and disseminating this method, specifically the mixed method design integrating both qualitative and quantitative data to construct a culturally-specific instrument for research on ageing (Ingersoll-Dayton, 2011; Krause, 2002).

5. Another one of the strengths of the development of active ageing measure is that it was tested with a diverse sample of older Thai adults. This is the first study of active ageing attempting to design and collect data involving the older persons in all four regions of Thailand (North, Northeast, Central, and South). The elderly participants for this study were recruited with maximized variations. There are a variety of genders, age groups, socio-economic statuses, health statuses, and religions (i.e., Buddhist, Islam, and Christian). A valid and reliable AAS-Thai can be assumed that it is fit in Thai context and is representative for general older Thai adults. Accordingly, it can be used as a national tool.

Although the findings of this present study contribute to an understanding of the concept of active ageing in the Thai elderly, the scale development based on a Thai culturally-grounded measure, and the valid and reliable AAS-Thai that can be used as a national tool, its limitations must be acknowledged. First, although the sampling design of the study is randomly for the sample recruitment in the community-dwelling elderly, the selected elders who were admitted in the hospital at the time period of the data collection and those who were frail were not recruited. Moreover, the elderly living in residential homes were excluded. Thus, it was a relatively small number of frail elders. This may have distorted the

generalizability to the overall older Thai population. Further research should be conducted using more diverse institutional settings. Second, the study results may be limited by the response bias to respond in a socially desirable manner that will make them look good, particularly if the elderly participants were interviewed surrounding with family members or neighbors. There is similar to the in-depth interviews of the research performed by Ingersoll-Dayton et al. (2004) who found the obstacles that family, friends, and neighbors of the Thai elderly are frequently present during an interview since Thai context is prominently collectivistic nature. Many researchers on social desirability and culture have noted that populations from collectivistic societies tend to respond in a more socially desirable way than those from individualistic societies (Lalwani, Shavitt, & Johnson, 2006; Smith, 2004). To use the AAS-Thai in the future, social desirability test should be undertaken simultaneously to confirm that the scores on this scale are not biased in a socially desirable manner or influenced by the significant others.

Recommendations for policy implications

This study provides the implications for policy and programs to support active ageing in Thailand. The findings of this study identifies the processes involved with being actively and productively engaged in life, and represents an effort to understand the domains of active ageing that are indigenous to older Thai people. Specifically, this present study attempts to focus on the lay older persons with a variation of socioeconomic and personal characteristics covering four regions of Thailand. Therefore, the information obtained from this study may be directly beneficial for government to establish the national policies to promote active ageing and quality of life among Thai older people. The seven conceptual domains of the Thai active ageing and the newly developed scale could have potential benefits and significance for policy implications and programs as suggested below.

1. If Thailand plans to promote the concept of active ageing, a national strategy and related programs to encourage active ageing are important for bringing the older people into the mainstream of national development. Positive images of older adults with respect to being self-reliant and being actively engaged with society need to be promoted. Public awareness of the need to prepare for old age and positive

images of older people need to be encouraged, taking into consideration the changing situation of socio-economics, families and overall population trends. This would include encouraging people to be realistic about self-dependence and autonomy including contribution to others. Messages portraying older people as a valuable resource of social development and not simply a burden to society should be conveyed using education system, mass media and social media. Creating awareness and understanding about ageing in general, and positive ageing in particular is needed, on the part of government officials, policy makers, academicians, program administrators, private organizations, and the general public of the older people's potential as a human resource.

2. Engaging in active learning is also considered as an important domain of active ageing among Thai elderly. To develop and maintain their knowledge and skills, the policies and strategies of lifelong learning and self-directed learning should be promoted to ensure learners who possess the basic skills for non-formal learning and the motivation to pursue a variety of learning interests throughout their lives. Specifically, a number of older people have access to new information technology (IT) such as telephone, computers, or facilitated equipment. The policy or strategy of expanding IT access and familiarity would encourage social inclusion of older people, improve service delivery and help with maintaining family and social contacts.

3. The government is encouraged to concern financial security among the Thai elderly. The policies to build up financial security in the late life should be established since it is one of the important domains of active ageing. According to Knodel, Prachuabmoh, and Chayovan (2013, p.91)'s suggestions for Thai government to promote income security for older people, several policies need to be concerned. First, the benefit level of the Old Age Allowance is encouraged to increase and standardize by linking it to consistent with the nationally defined poverty line and regularly adjusting it to reflect the cost of living and health status and dependency. Second, saving for old age and consumption smoothing in different forms should be promoted. Special attention should be given to informal sector workers whose economic security in old age is not yet adequately addressed. Lastly, improving income security by facilitating work opportunities for older people should be fostered.

Similarly, Suwanrada (2009) suggests three important policy options to deal with poverty and enhance economic security of the Thai elderly including: (1) promote the establishment of a community-based social welfare fund; (2) expand the coverage of the old-age allowance system; and (3) establish the national pension system, which covers employed persons who do not currently receive coverage.

4. Growing spiritual wisdom is found as an important domain of active ageing among Thai elderly. The policies and strategies to promote spiritual growth should be taken into account when considering how older people respond to attain positively spiritual wisdom. Interventions or programs helping older adults to have sense of connectedness in what they believe in and to create calmness in life should be continuously promoted. For example, creating the atmosphere that helps older adults to perform activities related to their faith/belief such as making merits, prayer, meditation, listening to sermons, and attending religious activities and traditional rituals and rites. In health services, it is the possibility of assessing spiritual and existential needs that older people might have as part of a holistic care strategy. To enhance spiritual health, Chuengsatiansup (2003) suggests that spiritual infrastructures and conducive environment for spiritual health should be provided. Spiritual infrastructures (i.e., knowledge source, religious institutions, socio-spatial organization of life) refer to basic cultural elements that support spiritual practices. Within environment conducive to spiritual growth, these basic infrastructures become the framework by which individuals and communities engage with their spiritual practice.

5. Since health promotion behavior influences healthy ageing, intervention strategies should focus on health promotion, disease and injury prevention programs. The findings of this study show that maintaining healthy lifestyle is important to active ageing. Strategies such as those included in Alberta's Healthy Aging and Seniors Wellness Strategic Framework (KPMG Consulting, 2002) should be implemented to enhance elderly health promotion behavior and healthy ageing. In addition, Srithanyarat and colleagues (2002) suggested that interventions to promote self-care management and health-promoting behaviors should be elder-centered. Then, family, community, and healthcare professionals can also support and encourage healthy behaviors. Efforts to provide education for health promotion and

disease prevention for older persons and their family members should be continuously evaluated and revised. Essential health education programs, consistent with the findings of the present study, should include: healthy nutrition, exercise and physical activity health-damaging reduction such alcohol drinking and unhealthy food. In particular, exercise and healthy food should be emphasized.

6. The policy to strengthen family solidarity and campaigns for promoting familial support is needed. Since strengthening family ties is perceived that it leads to enhance intergenerational solidarity that may guarantee for being cared for by family members in the late life. The Thai government has tried to promote family caregiving and filial obligation, and these efforts should be continued through educational system, mass media and both government and non-government agencies. The existing public policy aimed at strengthening and maintaining traditional and cultural values of respect and care for the elderly should be expanded. Policy makers, particularly local government agencies, should create the campaign to promote the significance and usefulness of living together in extended families.

7. As the findings of this study indicate that active ageing is the process of being active engaged in life, it is possible to suggest some implications for administration to promote potentials and quality of life of the older Thai people. The policies and strategies of preparing for ageing should be established and promoted for all age groups of the Thai people. How to make Thai people concern and prepare themselves for ageing is very challenging for government agencies. Preparation for old age with respect to health, social participation, finances, and caregivers should be continuously supported by government organizations or personnel working in public health, education, human security and development, and local administrative organizations. Therefore, the knowledge based on this study may be beneficial to ultimate outcome of the Thai elderly with respect to enhancing good health, well-being, security, dignity, and quality of life throughout the national and healthcare policies linking to community, institutional, family, and neighborhood programs.

8. This study aims to develop a national tool to measure active ageing attributes of the older Thai people. This instrument may be useful for policy makers at both national and regional levels who decide to use the active ageing scale to assess “active agers” that can be used for national, community, and institutional settings.

Recommendations for nursing education

The scale of this study can be made into a new innovation, the "Active Ageing Scale for Thai People (AAS-Thai)" as a contribution to nursing knowledge. It can lead nursing education to finding a way to support nursing students to understand the values and potentials of older persons. In addition, targeting educational contents in geriatric and gerontology courses needs to move forward to place emphasis on a healthy, productive, and active ageing process.

Recommendations for nursing practice

1. The understanding of the active ageing attribution in Thai elderly could facilitate nurses or other healthcare personnel for designing nursing programs/interventions, particularly in health promotion strategies and lifelong preparation for ageing to promote and enhance active ageing in Thailand.

2. The newly developed measure of active ageing scale could benefit nursing practice as it can be used to assess and screen active agers that may be used in clinical practice settings, institutions, and communities.

3. The findings of the Thai active ageing concept could be used in nursing interventions to measure level of active ageing, which, in turn, provides valuable information on the risk of inactive agers (i.e., risk in health problem, social or security problems). Moreover, the scale may be useful in the evaluation of nursing intervention by testing the effectiveness of active ageing level.

Recommendations for nursing research

The active ageing scale is not only useful for nursing practice but also beneficial for nursing research, specifically focusing on health promotion, positive ageing, and well-being among Thai elders. Further nursing research may be needed as follows.

1. Since the interrelatedness of the active ageing construct was disclosed by this research, future research aiming to develop nursing knowledge through testing a middle range theory of the active ageing should be conducted.

2. The measure of active ageing of this study has been developed only for the Thai elderly. This measure should be further tested in cross-cultural research in other Asian countries.

3. Confirmatory factor analysis research to confirm the seven conceptual domains of active ageing should be conducted and to assess the fit indices and a construct validity of the Thai active ageing model.

4. Future studies should be undertaken to further evaluate the psychometric properties of the AAS-Thai with other positive ageing instruments (e.g., successful ageing and productive ageing instruments) to examine more its concurrent criterion-related validity.

5. Further examination and shortening of the 36-item AAS-Thai should be conducted in the future because short versions of questionnaires are more appropriate for collecting data among older adults.

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Appendix

Appendix A

Existing instrument

Table 19 *Existing measurements related to active ageing*

Instrument name	*Healthy Aging Instrument (HAI)*	*Successful Aging Inventory (SAI)*	*Global Activity Motivation Measure (GAMM)*	*Change in Activity and Interest Index (CAII)*	*Social Values of Older People (SVOP)*	*Scale for Older Adults' Routine (SOAR)*	*Register-Connectedness Scale for Older Adults*
Author, year / Country	Thiamwong et al. (2008) / Thailand	Troutman, Nies, Small, & Bates (2011) / USA	Caro, Caspi, Burr, & Mutchler (2009) USA	Adams & Sanders (2010) USA	Yoon & Kolomer (2007) USA	Zisberg, Young, & Schepp (2009) USA	Register, Herman, & Tavakoli (2011) USA
Focus	Healthy ageing	Successful ageing	Productive ageing	Successful & Productive ageing	Productive ageing	Healthy & successful ageing	Successful ageing
Domain/ Construct	- Measure the process of healthy aging in a Thai context - Multidimensional aspects of health, including physical, mental/cognitive, social, and spiritual	- Development and testing the Successful Aging Inventory. - Multidimensional aspects of successful aging based on a mid-range theory of successful aging guided by Flood (2006), including five dimensions: 1) Functional performance mechanisms, 2) Intrapsychic factors, 3) Spirituality, 4) Gerotranscendence, and purposefulness/ life satisfaction.	- Measure the overall activity patterns in late life to understand the nature of successful and productive aging.	- To examine empirically the perceived changes that occur in the lives of older adults. - To continue define the properties of the measure and its relevance to socio-emotional selectivity and gerotranscendenc e theories.	- Develop a valid, reliable measure of social values of older people, viewed by social work students. - Productive activities given by older people are valuable and beneficial for their family, community, and society.	- Routine is a concept pertaining to strategically designed behavioral patterns used to organize and coordinate activities along the axes of times, duration, social and physical contexts, sequence and order. - Develop and test the reliability, convergent and criterion-related validity of the scale of older adults' routine.	- Connectedness is significantly related to maintaining active engagement with life that represents a crucial aspect of successful ageing. - Connectedness includes multidimensional aspects; however, development and testing a scale to measure connectedness have never been done. - Domains of connectedness are based on a middle range theory for

Instrument name	*Healthy Aging Instrument (HAI)*	*Successful Aging Inventory (SAI)*	*Global Activity Motivation Measure (GAMM)*	*The Change in Activity and Interest Index (CAII)*	*Social Values of Older People (SVOP)*	*Scale for Older Adults' Routine (SOAR)*	*Register-Connectedness Scale for Older Adults*
						- Testing took place in samples of independently dwelling residents in four retirement communities in an urban area in the Pacific Northwest, USA.	generative quality of life for the elderly proposed by Register & Herman (2006).
Target & Setting	- 403 Thai community-dwelling elders in Songkla Province, Southern Thailand	- 200 elders aged 65 years and older were recruited from local senior centers, health fairs, neighborhoods, and assist living facilities.	- 193 elderly participants aged 55 and older living in Boston, Massachusetts were recruited, conducted in 2004.	- 234 older adults in independent living residents were recruited as sample.	-The 204 students in social work in Southeastern University were recruited using questionnaire	- A total 90 participants was recruited in the study (10 in pilot study and 80 in a prospective three-time point longitudinal study.	- 428 community-dwelling older adults were recruited using convenient sampling.
Dimension ality	- Factor analysis (PCA) yielded nine dimensions: 1) being self-sufficient and living simply, 2) managing stress, 3) having social relationships and support, 4) making merit and good deeds,	- Factor analysis (PCA) yielded five dimensions of successful aging: 1) Intrapsychic and functional performance coping mechanisms, 2) Existential being,	- Form the 13 original items, factor analysis (PCA) yielded four items: 1) Put your skills to use on a regular basis, 2) Keep a flexible schedule,	- Factor analysis (PCA) yielded four domains: 1) active instrumental, 2) active social, 3) transcendent attitudes, and 4) passive social/ spiritual.	- Develop a new instrument by applying from the Aging Opinion Survey (Kafer et al., 1980), resulting 20-item scale. - Item analyses	- The SOAR has five dimensions: 1) Basic routine activities, 2) Instrumental activities, 3) Social participation, 4) Leisure activities, and 5) Rest activity.	- Factor analysis (EFA) yielded five domains: 1) self-regulating, 2) facing aging, 3) being part of a family, 4) having friends, and 5) being spiritual.

Instrument name	*Healthy Aging Instrument (HAI)*	*Successful Aging Inventory (SAI)*	*Global Activity Motivation Measure (GAMM)*	*The Change in Activity and Interest Index (CAII)*	*Social Values of Older People (SVOP)*	*Scale for Older Adults' Routine (SOAR)*	*Register-Connectedness Scale for Older Adults*
Dimension ality	5) practicing self-care and self-awareness, 6) staying physically active, 7) staying cognitively active, 8) having social participation, and 9) accepting aging. - HAI consisted of 45 items and 4-point rating scale (1-4).	3) Introspective gerotranscendence, 4) Spirituality, and 5) Retrospective gerotranscendence. - SAI consisted of 20 items in two version dichotomous (yes/no) and 4-point Likert rating scale (1-4). - The Likert-format SAI appears suitable to measure successful aging.	3) Contribute to the community, and 4) Feel that you have accomplished something everyday. - The 5-point Likert rating scale from 1 to 5 with 1 being "not important" and 5 being "very important".	-Form the 30 original items, using criteria of factor loading > 0.37, the items of CAII were retained 24 items. - CAII was conducted with the three-anchor responses and scoring of 0 (more interest/ investment), 1 (about the same), and 2 (less interest/investment) that higher scores indicate reductions in engagement with the activities or interest.	with original 20 items resulted deleting 4 items due to lower correlation to overall scale. - Factor analysis (PCA) the newly trimmed 16-item scale yielded five domains: 1) positive contribution to society, 2) utilization of knowledge and experience, 3) intergenerational relationship, 4) constructive contribution to policy making in community, and 5) positive asset in an age-integrated neighborhood.	- The resulting instrument was comprised of 42 items in five categories.	- The scale consists of 45 items in five subscales with factor loadings ranging from 0.40 to 0.86.

Instrument name	*Healthy Aging Instrument (HAI)*	*Successful Aging Inventory (SAI)*	*Global Activity Motivation Measure (GAMM)*	*The Change in Activity and Interest Index (CAII)*	*Social Values of Older People (SVOP)*	*Scale for Older Adults' Routine (SOAR)*	*Register-Connectedness Scale for Older Adults*
Reliability & Validity	- Item analysis: no items correlation above 0.70. - Construct validity: factor loading of items ranged from 0.47 to 0.83. - Concurrent criterion-related validity: correlation between HAI and overall SF-36 scale was quite low (r=0.26), but with most sub-scales of SF-36 was moderate (r=0.42-0.56) -Internal consistency: reliability of the overall HAI was 0.88 and of sub-scales ranged from 0.69 to 0.80. - Test-retest reliability: the 2 week test-retest ability using pearson's coefficient and total HAI was 0.31.	- The reliability of SAI with the Cronbach's alpha coefficient was 0.86. - Convergent validity by testing correlation with life satisfaction scale and purpose in life scale is acceptable. - Discriminant validity by testing with depression scale (CES-D) is acceptable by significant negative correlations with the CES-D.	- The Cronbach's alpha for the GAMM was 0.76, indicating adequate internal reliability. - Factor loading of the 24 items ranged from 0.40 to 0.94.	- The Cronbach's alpha coefficients of the four subscales ranged from 0.65 to 0.75.	- The scale reliability showed quite good (α = 0.82). - The construct validity of the scale was supported by the commonalities ranging from 0.376 to 0.797 and the factor loadings ranging from 0.43 to 0.86. - The CFA adequately supported the five factor solution with CFI of 0.92 and RMSEA of 0.05, indicating good model fit.	- SOAR demonstrated acceptable psychometric properties for most of its subscales and scores. - Reliability indices were acceptable ranging from 0.56 to 0.90 for the subscales. Validity tests showed moderate correlations with both functional indices (r=0.29-0.56) and trait routinization (r=0.30-0.38).	- Item analysis: the range of inter-item correlation was 0.03 to 0.74, which indicated no problem of redundancy. - The reliability of the subscales demonstrated with good levels ranging from 0.85 to 0.88.

Instrument name	*Healthy Aging Instrument (HAI)*	*Successful Aging Inventory (SAI)*	*Global Activity Motivation Measure (GAMM)*	*The Change in Activity and Interest Index (CAII)*	*Social Values of Older People (SVOP)*	*Scale for Older Adults' Routine (SOAR)*	*Register-Connectedness Scale for Older Adults*
Strength	- HAI was developed based on Thai context. - HAI showed acceptable validity and reliability. - Not take time too much to complete questionnaire (less than 15 min)	- Easy to administer (20 items) - The scale has been used by other researchers and the reliability is good. - This scale is developed based on the middle-range theory in nursing science.	- GAMM can be used as the predictor of productive ageing. - The scale is adequate for conducting research to measure productive ageing.	- CAII can be used as the indicator of successful and productive ageing. - Factor analysis revisits construct validity for the original index in ways that are more methodologically sound.	- This scale is suitable to apply for a large survey because it is easy to administer (16 items).	- AOAR can be measuring of healthy and successful ageing. - The procedure of scale development was rigorous. - This is the first comprehensive, quantitative measure of routine aimed specifically at older adults.	- This scale can appropriately be used to measure successful ageing. - The items are short declarative statements and easy to complete. - The scale is culturally-specific measure for American elders.
Weakness	-Limitation of generalizability to Thai older people. - A 2-week test-retest reliability with Perason's correlation coefficient is quite low, indicating low temporal stability for the HAI	- SAI is not constructed based on diverse ethnic and racial groups in USA; therefore, the instrument's utility needs to be evaluated in varied ethnic groups. - SAI is not developed grounded from the elderly perspectives but based on the theory	- A conceptual definition of global activity motivation may be having dimensions more than this work that potential dimensions of activity and further empirical work is needed to develop the measures.	- The sample was quite homogenous with regard to race and religious affiliation, so the CAII may be limited for generalizability. - CAII meets minimal reliability standards - Lack of administration	- The scale demonstrated in students' view that may be different with characteristic of the positive ageing.	- The number of the samples (N=80) for psychometric testing of the scale is quite small and homogenous in high socio-economic status. This may have biases the sample and limited the generalizability.	- Samples are selected with no variation (most of participants are well connectedness) that may be affecting for the bias in instrument development.

Instrument name	*Healthy Aging Instrument (HAI)*	*Successful Aging Inventory (SAI)*	*Global Activity Motivation Measure (GAMM)*	*The Change in Activity and Interest Index (CAII)*	*Social Values of Older People (SVOP)*	*Scale for Older Adults' Routine (SOAR)*	*Register-Connectedness Scale for Older Adults*
		of successful aging. - CFA to confirm SAI with the theory of successful aging is not performed.	- GAMM is not sufficiently sensitive for individual assessment in clinical purposes. - Scale brevity (4 items) can effect internal consistency.	procedure to confirm validity.			

Table 20 *Evaluation of psychometric properties of the existing measurements related to active ageing*

Instrument name/ Authors	Content validity by expert panel	Construct validity	Convergent validity	Internal consistency	Test-retest reliability
Healthy Aging Instrument (HAI) Thiamwong et al. (2008)	✓	✓	✓	✓	✓
Successful Aging Inventory (SAI) Troutman, Nies, Small, & Bates (2011)		✓	✓	✓	
Global Activity Motivation Measure (GAMM) Caro, Caspi, Burr, & Mutchler (2009)		✓		✓	
The Change in Activity and Interest Index (CAII) Adams & Sanders (2010)		✓		✓	
Social Values of Older People (SVOP Yoon & Kolomer (2007)		✓		✓	
Scale for Older Adults' Routine (SOAR) Zisberg, Young, & Schepp (2009)	✓	✓	✓	✓	✓
Register-Connectedness Scale for Older Adults Register, Herman, & Tavakoli (2011)	✓	✓		✓	

Appendix B

Focus Group and In-depth Interview Guides

The Focus Group Discussion Guide

The purpose of using The Focus Group Discussion Guide was to explore active ageing attributes for general Thai elderly. The nine main questions will be used to ask the participants to describe and to identify what active ageing process general Thai elders should have. You are kindly invited to answer the questions according to your own perceptions. The questions were as following.

1. What do you think which ‘an active ageing’ means? And what are the attributes associated with active ageing? Why do you think older persons should have those active ageing attributes?
2. Is being ‘active ageing’ important to yourself, family, and society? How?
3. What are revealed behaviors of active ageing general older persons should perform to themselves, family, and society?
4. In health aspect, what do you think which being healthy older persons should achieve? How?
    4.1 Physical health promotion
    4.2 Mental health promotion
    4.3 Social health promotion
    4.4 Spiritual health promotion
5. What do you think which participations, activities or productivities older persons contribute to family, friends, neighbors and society? How? And what are the goals of those?
6. What, at present, are the things associated with securities of older persons? Which sources of securities the older persons receive? Are they sufficient in your opinion? How?
    6.1 Living arrangement, housing
    6.2 Income, sources of income
    6.3 Caregivers in the present and the future
7. How do older persons should perform to promote their life being secured in either the present or the future?
8. Which resources or organizations provide an opportunity for older persons to attain being active ageing? How?
    8.1 Family

8.2 Friends, neighbors

8.3 Community/ informal groups of clubs in community, such as elderly club, youth club

8.4 Government agencies or non-government organization related

9. How do environments and facilities within community enable older people to active ageing?

The In-depth Interview Guide

In this study, the interview guide will be developed by researcher based on the culturally specific data of active ageing obtained from an integrative review of the existing studies in Thai elderly and literature review. These questions were designed to elicit a process of active ageing from Thai older adults' perspectives, as shown as follows.

1. Please tell me about the history of your background, your hometown, or your family.
2. How did your life in the working age?
   2.1 Work, income, and family formation
   2.2 Health, illnesses, and health promotion behaviors
   2.3 Social roles
3. Before retirement, what did you prepare yourselves for the late life? How?
4. At present, what do you doing? How?
   4.1 Working, kinds of work
   4.2 Health, illnesses, and health promotion behaviors
   4.3 Daily life, routine activities
   4.4 Role and responsibility within family
   4.5 Leisure time and hobby
   4.6 Religious participation
5. What do the words 'active ageing' mean to you? How would you define an active ageing?
6. What characterizes an active ageing in Thai society?
7. Thinking of the things that you have listed as associated with active ageing, would you say you are ageing 'actively' so far? And what makes you

become an active ager? How do you perform not being dependence but contributing to others?

8. Looking at elders around, do you think you differ from those in the same age who are not actively and/or more actively? How do they differ?
9. How do you practice for health promotion and self-care to attain being healthy and well-being? How do you maintain physically, mentally and spiritually active?
10. With regard to social engagement, please tell me about what are your roles and productive activities? What have those been targeted? And how are they beneficial to society? How do you maintain being actively engaged in social participation? Can you give me some examples?
11. How do you feel for your life in the past? Do you think what makes you succeed? And what things are most likely to make you proud?
12. Currently, are you happy and satisfied with your life? How?
13. Thinking of your present living, would you say you are being secured? How?
    - 13.1 Who are owned your home? Do you have properties? And how to mange those properties?
    - 13.2 Do you have income? What are sources of income? And how are they sufficient or available for daily living?
    - 13.3 Who are responsible to care you at the present? How do they take care or support? Are those sufficient to you? Are you satisfied for support you have received? And what are kinds of support you need?
14. How do you plan or perform to guarantee yourselves be secured in the late life with respect to housing, financing, and caregiving?
15. What do you experience of lifelong learning and active learning that promote you to attain an active ageing? How?
16. Who are influencing you to be an older person with active lifestyle? How do they support? Do you have any obstacles for staying actively in your life?
17. Is there anything more than you would like to share about your perspectives and experiences than above?

Appendix C

Informed consent (English version)

INFORMED CONSENT (English version)

Principal Investigator: Kattika Thanakwang, Faculty of Nursing, Prince of Songkla University, Had Yai, Thailand

Permanent contact: Department of Adult and Gerontological Nursing, Institute of Nursing, Suranaree University of Technology, Muang, Nakhon Ratchasima, Thailand

Telephone: 044-223520; 087-9713663

Email:kattika@sut.ac.th ; kattika99@yahoo.com

Dear Participants,

My name is Kattika Thanakwang, a doctoral nursing student at the Faculty of Nursing, Prince of Songkla University, Thailand. I am doing my doctoral program research on "Development and Psychometric Testing of the Active Ageing Scale for Thai People (AAS-Thai)". The study is aimed at developing a culturally-specific scale to measure active ageing among Thai elderly and to examine its psychometric properties in terms of validity and reliability.

Your participation in this study is paramount; and the results of study will be beneficial to improve quality of life of Thai older adults, and enhance the active ageing practice in Thailand. If you decide to participate, you will be invited to group discussions for sharing some experiences related to active ageing aspects about one hour. In our study, some of participants will be further interviewed individually by the researcher using a time about one hour or more upon your request.

The study is of no harm to you. Your participation is really dependent on your own intentions and you have right to withdraw from the study at any time without receiving any penalty. Your information will be anonymous and confidential. The results of this study will be presented as a group. If you would like to know any more information, please don't hesitate to contact the investigator via mail, e-mail, or telephone in the address shown above.

Thank you for your support and participation.

Kattika Thanakwang

Informed Consent Form for Participants

I am willing to participate the research “Development and Psychometric Testing of the Active Ageing Scale for Thai People (AAS-Thai)” through answering all of the interviews and the questionnaires provided in this study.

Participant’s signature……...

Appendix D

List of experts

1. ศ. นพ. ประเสริฐ อัสสันตชัย ภาควิชาเวชศาสตร์ป้องกันและสังคม คณะแพทยศาสตร์ศิริราชพยาบาลมหาวิทยาลัยมหิดล
Professor Dr. Prasert Aussantachai Department of Social and Preventive Medicine Faculty of medicine, Siriraj, Mahidol University

2. ศ. ดร. ประนอม โอทกานนท์ คณะพยาบาลศาสตร์ มหาวิทยาลัยบูรพา
Professor Dr. Pranom Otaganon Faculty of Nursing, Burapha University

3. ร.ศ. ดร. กุศล สุนทรธาดา สถาบันวิจัยประชากรและสังคม มหาวิทยาลัยมหิดล
Assoc. Prof. Dr. Kusol Soonthorndhada Institute for Population and Social Research Mahidol Univesrsity

4. ผ.ศ. ดร. ขวัญจิต ศศิวงศ์สาโรจน์ สถาบันวิจัยภาษาและวัฒนธรรมเอเชีย มหาวิทยาลัยมหิดล
Assist. Prof. Dr. Kwanchit Sasiwongsaroj Institute of Language and Asian Cultures Mahidol University

5. ผ.ศ. ดร. วิภาวี คงอินทร์ คณะพยาบาลศาสตร์ มหาวิทยาลัยสงขลานครินทร์
Assist. Prof. Dr. Wipawee Kongin Faculty of nursing, Prince of Songkla University

6. ศ. ศศิพัฒน์ ยอดเพชร คณะสังคมสงเคราะห์ศาสตร์ มหาวิทยาลัยธรรมศาสตร์
Professor Sasipat Yodpetch Faculty of Social work Thammasart University

7. ร.ศ. ดร. อัมพรพรรณ ธีรานุตร คณะพยาบาลศาสตร์ มหาวิทยาลัยขอนแก่น
Assoc. Prof. Dr. Ampornpan Theeranutra Faculty of nursing, Konkean University

Appendix E

Item generation of Active Ageing Scale for Thai people

Table 21 *Item generation of Active Ageing Scale for Thai people*

Theme	Sub-theme	Item
1. อยู่อย่างพึ่งพาตนเองได้ (Being self-reliant)	อยู่ด้วยตนเองได้ในชีวิตประจำวัน (Living independent and being self-care in daily activities)	1.ท่านสามารถพึ่งพาตนเองได้ในการดำรงชีวิตประจำวัน 2.ท่านพยายามทำกิจกรรมต่างๆด้วยตนเองก่อน โดยไม่หวังพึ่งพาบุตร หลาน หรือคนอื่นๆ 3.ท่านสามารถช่วยเหลือตัวเองในเรื่องการกินอยู่ได้ 4.ท่านพยายามดูแลตนเอง ไม่ทำตัวให้เป็นปัญหากับครอบครัว บุตรหลาน
	มีอิสระในการตัดสินใจ (Having autonomy in decision making)	5.ท่านสามารถตัดสินใจทำกิจกรรมต่างๆ ได้อย่างอิสระ 6.ท่านสามารถทำอะไรได้ด้วยตนเอง โดยไม่มีใครมาบังคับให้ทำ 7.ท่านอยากจะไปไหนมาไหน หรืออยากทำอะไรก็สามารถทำได้โดยไม่ต้องพึ่งพาผู้อื่น
	มีอิสระด้านการเงิน (Having financial independent)	8.ท่านสามารถพึ่งพาตนเองด้านการเงินได้ 9.ท่านมีรายได้เพียงพอในการดำรงชีวิตประจำวัน 10.ท่านกังวลเกี่ยวกับสถานะทางเศรษฐกิจ 11.ท่านต้องพึ่งพาบุตรหลานทางด้านการเงิน 12.ท่านสามารถให้การช่วยเหลือเกื้อหนุนบุตรหลานด้านการเงินได้
	สามารถเรียนรู้ทักษะและเทคโนโลยีใหม่ๆ (Being able to learn new skills and technologies)	13.ท่านได้หาความรู้ ข้อมูลต่างๆ จากการอ่านหนังสือ 14.ท่านติดตามข่าวสารบ้านเมือง และการเปลี่ยนแปลงของสังคม 15.ท่านชอบฝึกทำกิจกรรมใหม่ๆ หรือการหาประสบการณ์ใหม่ๆ 16.ท่านสามารถเรียนรู้การใช้เครื่องมือ อุปกรณ์ หรือเทคโนโลยีใหม่ๆ ได้ 17.ท่านหาความรู้ในการดูแลตนเองเพื่อให้มีสุขภาพดี
2. ไม่อยู่นิ่งเฉยในชีวิตประจำวัน (Keeping busy in daily living)	ไม่อยู่นิ่งเฉยด้านกายและความคิด (Being physically and cognitively active)	18.ท่านพยายามหากิจกรรมต่างๆ ทำในแต่ละวัน โดยไม่อยู่นิ่งเฉย 19.ท่านจะรู้สึกเบื่อถ้าต้องอยู่เฉยโดยไม่ได้ทำอะไร 20.ท่านชอบออกนอกบ้านมากกว่าอยู่แต่ในบ้าน 21.ท่านจะไม่รอคอยให้คนอื่นมาช่วยเหลือเวลาต้องการทำกิจกรรมต่างๆ

Theme	Sub-theme	Item
		22.ท่านมีเรื่องที่คิดจะต้องทำในแต่ละวัน 23.ท่านสามารถบวกลบคูณหารตัวเลขได้คล่องแคล่ว 24.ท่านมักวางแผนในการทำกิจกรรมต่างๆ ไว้ล่วงหน้า
	ทำกิจกรรมที่ชอบหรือที่มีความหมาย (Engaging in meaningful activities)	25.ท่านยังคงทำงานตามกำลังของท่านอยู่เสมอ 26.ท่านจะหยุดทำงานต่อเมื่อไม่มีแรงที่จะทำ 27.ท่านมักทำงานที่ก่อให้เกิดรายได้ 28.ท่านทำงานเพื่อสังคม โดยไม่ได้รับค่าตอบแทน 29.ท่านช่วยเหลือครอบครัวในการทำกิจกรรมต่างๆ 30.ท่านให้คำแนะนำปรึกษาแก่บุตรหลาน 31.ท่านหางาน หรือกิจกรรมทำยามว่าง เพื่อให้คลายเหงา
3. มีวิถีชีวิตที่ส่งเสริมสุขภาพ (Maintaining healthy lifestyle)	ออกกำลังกาย (Maintaining exercise)	32.ท่านออกกำลังกายอย่างสม่ำเสมอ 33.ท่านพยายามออกกำลังกายเพื่อให้มีสุขภาพดี 34.ท่านพยายามเคลื่อนไหวร่างกายอยู่เสมอ
	รับประทานอาหารที่มีประโยชน์ (Eating healthful food)	35.ท่านเลือกรับประทานอาหารที่เป็นประโยชน์ต่อร่างกาย 36.ท่านงดรับประทานอาหารที่ หวาน มัน เค็ม หรืออาหารที่มีรสจัด 37.ท่านรับประทานเนื้อปลา ผัก และผลไม้ เป็นประจำ 38.ท่านเลือกรับประทานอาหารตามคำแนะนำบุคลากรทางด้านสาธารณสุข
	จัดการความเครียด (Managing stress)	39.ท่านพยายาม ดูแลจิตใจไม่ให้เคร่งเครียด 40.ท่านพยายามหาทางหาทางออก เมื่อมีปัญหา 41.ท่านมีสติในการเผชิญกับปัญหาต่างๆได้
	หลีกเลี่ยงสารเสพติด (Avoiding substance abuse)	42.ท่านหลีกเลี่ยงการดื่มอัลกอฮอล์ หรือสารเสพติดอื่นๆ 43.ท่านพยายามหลีกเลี่ยงควันจากบุหรี่ 44.ท่านหลีกเลี่ยงการเกี่ยวข้องกับการพนัน
4. เข้าร่วมกิจกรรมและทำประโยชน์กับสังคม	เข้าร่วมกิจกรรมทางสังคม (Participating in social activities)	45.ท่านร่วมกิจกรรมงานบุญในชุมชนอย่างสม่ำเสมอ 46.ท่านพยายามเข้าร่วมและช่วยงานศพ ของคนที่รู้จักอยู่เสมอ 47.ท่านร่วมกิจกรรมสาธารณะประโยชน์ หรือกิจกรรม

Theme	Sub-theme	Item
(Being actively engaged with society)		พัฒนาชุมชน อยู่เสมอ 48.ท่านให้ความร่วมมือกับชุมชนที่มีการร้องขอความช่วยเหลือ 49.ท่านเข้าร่วมกิจกรรมทางวัฒนธรรม ประเพณี ของชุมชน เป็นประจำ 50.ท่านเข้าร่วมกิจกรรมของชมรมผู้สูงอายุ หรือชมรมอื่นๆที่เป็นสมาชิกอยู่เสมอ
	มีปฏิสัมพันธ์กับเพื่อน (Connecting with friends)	51.ท่านชอบพูดคุย แลกเปลี่ยนเรียนรู้กับเพื่อนหรือเพื่อนบ้าน 52.ท่านเป็นคนที่มีเพื่อนมาก 53.ท่านไปเยี่ยมเยือนเพื่อนผู้สูงอายุที่ลำบากหรือตกทุกข์ได้ยาก 54.ท่านมีความสุขที่ได้เข้ากลุ่มหรือทำกิจกรรมกับเพื่อน
	ทำประโยชน์ให้กับสังคม (Contributing to society)	55.ท่านชอบช่วยเหลือ แบ่งปันให้คนอื่นๆ 56.ท่านบริจาคเงินทอง หรือทรัพย์สินให้กับชุมชนหรือสาธารณประโยชน์ 57.ท่านถ่ายทอดความรู้ ภูมิปัญญา ทักษะประสบการณ์ให้กับผู้อื่น 58.ท่านทำงานอาสาสมัคร ช่วยเหลือสังคม อยู่เสมอ 59.ท่านเป็นที่ปรึกษา เป็นผู้ทรงคุณวุฒิ หรือผู้มีภูมิรู้ภูมิปัญญาในชุมชน
5. มีความงอกงามทางปัญญา (Growing spiritual wisdom)	ทำความดี (Making merits)	60.ท่านเชื่อในกฎแห่งกรรม และการทำความดี 61.ท่านทำบุญทำทานอยู่เสมอ 62.ท่านหมั่นทำความดี 63.ท่านสบายใจ สุขใจเมื่อได้ทำความดี
	มีสติ ยอมรับและปล่อยวาง (Being acceptance and calmness)	64.ท่านพยายามควบคุมตนเองให้มีสติอยู่เสมอ 65.ท่านพอใจในสิ่งที่ตนเองมีอยู่ 66.ท่านพยายามไม่ยึดมั่นและถือมั่นกับสิ่งใด 67.ท่านยอมรับที่จะอยู่กับปัญหาแม้ว่ายังแก้ไขไม่ได้ 68.ท่านชอบชีวิตที่เรียบง่าย 69.ท่านมักมองโลกในแง่บวกอยู่เสมอ

Theme	Sub-theme	Item
	ศรัทธาและปฏิบัติตามหลักศาสนา (Trusting and practicing religious doctrines)	70.ท่านเชื่อมั่นและศรัทธาในศาสนาที่ท่านนับถือ 71.ท่านยึดถือและปฏิบัติตามหลักคำสอนของศาสนาอย่างเคร่งครัด 72.ท่านปฏิบัติศาสนกิจ หรือเข้าร่วมกิจกรรมทางศาสนาเป็นประจำ
6. มีการจัดการให้มีความมั่นคงในชีวิตยามชรา (Managing later life security)	จัดการด้านที่อยู่อาศัย (Managing for living arrangement)	73.ท่านได้เตรียมพร้อมสำหรับที่อยู่อาศัยที่มั่นคงถาวร 74.ท่านสามารถจัดการ ดูแลที่อยู่อาศัยได้ด้วยตัวเอง
	สร้างความมั่นคงด้านการเงิน (Building up financial security)	75.ท่านมีการเก็บออมเงินทองไว้เพื่อใช้ในยามชรา 76.ท่านมีเงินทองหรือทรัพย์สิน เพื่อเป็นค่าใช้จ่ายสำหรับผู้ดูแลในยามชรา 77.ท่านได้จัดการเรื่องมรดก ให้กับครอบครัว 78.ท่านได้เตรียมความพร้อมในการออมทรัพย์เพื่อการฌาปนกิจ หลังเสียชีวิต
	สร้างความผูกพันเพื่อมีผู้ดูแลยามชรา (Strengthening family ties for being cared for in the late life)	79.ท่านมั่นใจว่าบุตรหลานจะดูแลท่านในยามชรา 80.ท่านได้สร้างความรักความผูกพันกับครอบครัวเพื่อให้สามารถดูแลท่านในยามชรา 81.ท่านได้สั่งสอนและปฏิบัติให้บุตรหลานเห็นถึงความกตัญญู กตเวที การดูแลบุพการี

Appendix F

A content validity evaluation form (in Thai)

แบบให้ข้อคิดเห็นเครื่องมือวิจัยโดยผู้เชี่ยวชาญ

เอกสารชุดนี้เป็นแบบให้ข้อคิดเห็นเครื่องมือวิจัย ผู้วิจัยขออนุเคราะห์จากท่านให้แสดงความคิดเห็นในความสอดคล้อง ความซ้ำซ้อน และความชัดเจนของข้อคำถาม โดยการทำเครื่องหมาย ✓ ลงในช่องที่ตรงกับความคิดเห็นของท่าน ในแต่ละประเด็นและเติมข้อความในช่องข้อคิดเห็นในการปรับปรุงข้อคำถาม หรือข้อเสนอแนะอื่นๆ ตามรายละเอียดในเอกสารที่แนบมา

ความสอดคล้องกับเนื้อหาที่ต้องการวัด ให้คะแนน ดังนี้

1	หมายถึง	ไม่สอดคล้อง (not relevant)
2	หมายถึง	ค่อนข้างไม่สอดคล้อง (somewhat relevant)
3	หมายถึง	ค่อนข้างสอดคล้อง (quite relevant)
4	หมายถึง	สอดคล้องมาก (highly relevant)

<u>Definitions</u>

การสูงวัยอย่างมีศักยภาพ (Active ageing) หมายถึง กระบวนการที่ผู้สูงอายุพัฒนาศักยภาพของตนเองให้มีสุขภาพที่ดี สามารถพึ่งพาตนเองได้ และช่วยเหลือผู้อื่นและสังคมได้ รวมทั้งมีความมั่นคงในชีวิตยามชรา ซึ่งประกอบด้วย ศักยภาพ 6 ด้าน คือ อยู่อย่างพึ่งพาตนเองได้ ไม่อยู่นิ่งเฉยในชีวิตประจำวัน มีวิถีชีวิตที่ส่งเสริมสุขภาพ เข้าร่วมกิจกรรมและทำประโยชน์กับสังคม มีความงอกงามทางปัญญา และมีการจัดการให้มีความมั่นคงในชีวิตยามชรา

อยู่อย่างพึ่งพาตนเองได้ (Being self-reliance) หมายถึง การดำเนินชีวิตของผู้สูงอายุ ที่สามารถอยู่โดยลำพังและพึ่งพาตนเองในกิจวัตรประจำวันได้ มีอิสระในการดำรงชีวิตโดยไม่ต้องพึ่งพาผู้อื่น มีศักดิ์ศรีและอิสระในการตัดสินใจในการกระทำของตนเอง และมีอิสระในด้านการเงิน รวมทั้งสามารถเรียนรู้สิ่งต่างๆเพื่อช่วยให้สามารถดำรงชีวิตอย่างมีคุณค่าได้

ไม่อยู่นิ่งเฉยในชีวิตประจำวัน (Keeping busy in daily living) หมายถึง การดำเนินชีวิตที่ไม่ได้อยู่นิ่งเฉยทั้งด้านกายและความคิด ได้ทำกิจกรรมที่ชอบหรือมีความหมายอยู่ตลอดในชีวิตประจำวัน ไม่ว่าจะเป็นการทำงาน การทำกิจกรรมภายในครอบครัว ทำงานบ้าน หรืองานอดิเรก เป็นต้น

มีวิถีชีวิตที่ส่งเสริมสุขภาพ (Maintaining healthy lifestyle) หมายถึง การปฏิบัติตัวในชีวิตประจำวันทีเป็นการสร้างเสริมให้มีสุขภาพที่ดี ทำให้ร่างกายแข็งแรง ไม่เป็นโรค หรือควบคุมโรคเรื้อรังประจำตัว ให้มีชีวิตอยู่ได้อย่างปกติสุขได้ เช่น การออกกำลังกาย รับประทานอาหารที่มีประโยชน์ หรือทำตัวไม่ให้เครียด และหลีกเลี่ยงสารเสพติด

เข้าร่วมกิจกรรมและทำประโยชน์กับสังคม (Being actively engaged with society) หมายถึง การเข้าร่วมหรือมีส่วนร่วมในกิจกรรมทางสังคมอย่างต่อเนื่อง ไม่ว่าจะเป็นกิจกรรมของส่วนรวม กิจกรรมกับเพื่อนหรือเพื่อนบ้าน การรวมกลุ่มกันในการทำกิจกรรมต่างๆ ทางสังคม การทำตัวเป็นประโยชน์ต่อครอบครัว ชุมชน และสังคม โดยการเป็นผู้ให้กับสังคมหรือช่วยเหลือคนอื่นๆตามศักยภาพของตนเอง

มีความงอกงามทางปัญญา (Growing spiritual wisdom) หมายถึง การแสดงออกถึงการมีความเจริญทางด้านจิตวิญญานหรือด้านปัญญาของผู้สูงอายุ ได้แก่ การทำบุญทำทาน การมีสติยอมรับ และปล่อยวาง การรู้จักพอ มองโลกในแง่บวก และการปฏิบัติ ยึดถือ เชื่อมั่นในหลักธรรมคำสอนของศาสนา

มีการจัดการให้มีความมั่นคงในชีวิตยามชรา (Managing later life security) หมายถึง การจัดการหรือเตรียมการของผู้สูงอายุเพื่อเป็นหลักประกันถึงความมั่นคงในชีวิตยามชรา ได้แก่ การจัดการด้านที่อยู่อาศัย ด้านการเงิน และด้านผู้ดูแลเมื่อยามชรา

แบบให้ข้อคิดเห็นเครื่องมือวิจัย

ข้อคำถาม	ความสอดคล้องกับเนื้อหาที่ต้องการวัด				ความซ้ำซ้อนของข้อคำถาม		ความชัดเจนของข้อคำถาม		ข้อคิดเห็นในการปรับปรุง
	1	2	3	4	ซ้ำซ้อน	ไม่ซ้ำซ้อน	ชัดเจน	ไม่ชัดเจน	
อยู่อย่างพึ่งพาตนเองได้									
อยู่ด้วยตนเองได้ในชีวิตประจำวัน 1.ท่านสามารถพึ่งพาตนเองได้ในการดำรงชีวิตประจำวัน									
2.ท่านพยายามทำกิจกรรมต่างๆด้วยตนเองก่อน โดยไม่หวังพึ่งพาบุตร หลาน หรือคนอื่นๆ									
3.ท่านสามารถช่วยเหลือตัวเองในเรื่องการกินอยู่ได้									
4.ท่านพยายามดูแลตนเอง ไม่ทำตัวให้เป็นปัญหากับครอบครัว บุตรหลาน									
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สร้างความผูกพันเพื่อมีผู้ดูแลยามชรา 79.ท่านมั่นใจว่าบุตรหลานจะดูแลท่านในยามชรา									
80.ท่านได้สร้างความรักความผูกพันกับครอบครัวเพื่อให้สามารถดูแลท่านในยามชรา									
81.ท่านได้สั่งสอนและปฏิบัติให้บุตรหลานเห็นถึงความกตัญญู กตเวที การดูแลบุพการี									

Appendix G

Guiding questions of think-aloud and probing questions (in Thai)

A GENERAL DRBRIFFING AND COGNITIVE INTERVIEWING GUILDING

โปรดแสดงความคิดเห็น หลังจากที่ท่านได้ตอบแบบสอบถาม

1. มี คำ ใดในแบบสอบถามที่ท่านไม่เข้าใจหรือเข้าใจยาก (โปรดระบุ.....)
   ท่านคิดว่าควรใช้คำอะไรแทน

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2. คำถามข้อใดเข้าใจยากหรือสับสน

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3. ข้อใดตอบยากหรือไม่รู้ว่าจะตอบอะไร

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4. คำถามข้อใดยาวเกินไป

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5. มีคำถามข้อใดอ่านแล้วรู้สึกไม่อยากตอบ

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แบบประเมินความเข้าใจ

1. คำถามข้อ 1 “ท่านสามารถพึ่งพาตนเองได้ในการดำรงชีวิตประจำวัน”
   คำว่า **พึ่งพาตนเองได้** ท่านคิดว่าหมายถึงอะไร

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2. คำถามข้อ 3 “ท่านสามารถคิดหรือตัดสินใจทำอะไรได้ด้วยตนเอง ได้อย่างอิสระ” ท่านคิดว่าหมายถึงอะไร

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3. คำถามข้อ 5 “ท่านชอบฝึกทำกิจกรรมใหม่ๆ หรือการหาประสบการณ์ใหม่ๆ” ช่วยเล่าสั้นๆในกิจกรรมที่ท่านทำ

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4. คำถามข้อ 16 “ท่านสามารถเรียนรู้การใช้เครื่องมือ อุปกรณ์ หรือเทคโนโลยีใหม่ๆ ได้” ท่านคิดว่าหมายถึงอะไร ชัดเจนหรือไม่ ท่านคิดว่าควรใช้คำอะไรแทน

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5. คำถามข้อ 10 “ท่านพยายามหากิจกรรมต่างๆ ทำในแต่ละวัน โดยไม่อยู่นิ่งเฉย”
   คำว่า **ไม่อยู่นิ่งเฉย** ท่านคิดว่าหมายถึงอะไร

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6. คำถามข้อ 17 “ท่านมักทำงานที่ก่อให้เกิดรายได้”
   คำว่า **งานที่ก่อให้เกิดรายได้** ท่านคิดว่าหมายถึงอะไร ท่านคิดว่าควรใช้คำอะไรแทน

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7. คำถามข้อ 23 “ท่านพยายามเคลื่อนไหวร่างกายอยู่เสมอ” ท่านทำอย่างไร ช่วยเล่าให้ฟังอย่างสั้นๆ

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8. คำถามข้อ 27 “ท่านพยายาม ดูแลจิตใจไม่ให้เคร่งเครียด” โปรด**ยกตัวอย่าง**สิ่งที่ท่านทำ

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9. คำถามข้อ 38 “ท่านมีความสุขที่ได้เข้ากลุ่มหรือทำกิจกรรมกับเพื่อน” ท่านคิดว่าหมายถึงอะไร

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10. คำถามข้อ 41 “ท่านทำงานเป็นอาสาสมัคร หรือจิตอาสา เพื่อช่วยเหลือสังคม อยู่เสมอ” คำว่า **จิตอาสา** ท่านคิดว่าหมายถึงอะไร ท่านคิดว่าควรใช้คำอะไรแทน

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11. คำถามข้อ 43 “ท่านเชื่อในกฎแห่งกรรม และการทำความดี” คำว่า **ทำความดี** หมายถึงอะไร

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12. คำถามข้อ 48 “ท่านพยายามไม่ยึดมั่นและถือมั่นกับสิ่งใด” ท่านคิดว่า **ไม่ยึดมั่นถือมั่น** หมายถึงอะไร

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13. คำถามข้อ 54 “ท่านได้เตรียมพร้อมสำหรับที่อยู่อาศัยในยามชรา” ท่านคิดว่าหมายถึงอะไร

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14. คำถามข้อ 57 “ท่านมีเงินทองหรือทรัพย์สินเพียงพอ เพื่อเป็นค่าใช้จ่ายในยามชรา” ท่านคิดว่าหมายถึงอะไร ถ้าไม่ชัดเจนท่านคิดว่าควรใช้คำอะไรแทน

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Appendix H

Pre-testing instrument of the third draft of AAS-Thai (in Thai)

แบบสอบถามการสูงวัยอย่างมีศักยภาพ

ส่วนที่ 1 ข้อมูลส่วนบุคคล

1. ท่านเกิดเมื่อใด (บันทึก วัน เดือน ปีเกิด) .....อายุ.....ปี
2. เพศของผู้ให้สัมภาษณ์ ☐ ชาย ☐ หญิง
3. ท่านนับถือศาสนาอะไร ☐ พุทธ ☐ อื่นๆ ระบุ.....
4. ท่านเชื้อชาติอะไร ☐ ไทย ☐ อื่นๆ ระบุ.....
5. สถานภาพสมรส

☐ โสด ☐ แต่งงาน และอยู่กับคู่สมรส ☐ หม้าย
☐ หย่า ☐ แยกกันอยู่ ☐ แต่งงาน แต่ไม่ได้อยู่กับคู่สมรส

6. ระดับการศึกษาชั้นสูงสุด

☐ ไม่ได้เรียน ☐ ต่ำกว่าประถมศึกษาปีที่ 4
☐ ประถมศึกษาปีที่ 4 ☐ มัธยมศึกษา / ปวช
☐ อนุปริญญา / ปวส ☐ ปริญญาตรี ☐ สูงกว่าปริญญาตรี

7. ท่านทำงานหรือไม่

☐ ทำงานระบุประเภทลักษณะของงาน .....
☐ ไม่ทำงาน

8. ท่านมีรายได้ต่อ เดือน ประมาณเท่าไหร่ (รวมรายได้ทั้งหมดจากทุกแหล่ง)

❑ ไม่มีรายได้ ❑ 5,001 – 10,000 บาท
❑ 500 – 1,000 บาท ❑ 10,001 – 20,000 บาท
❑ 1,001 – 2,000 บาท ❑ 20,001 – 50,000 บาท
❑ 2,001 – 5,000 บาท ❑ > 50,000 บาท

9. แหล่งที่มาของเงินรายได้ของท่านมาจากแหล่งใดบ้าง (ตอบได้มากกว่า 1 ข้อ)

❑ จากการทำงาน ❑ จากบุตร/หลาน
❑ เงินบำนาญ ❑ เบี้ยยังชีพผู้สูงอายุ
❑ กองทุนทหารผ่านศึก ❑ ค่าเช่าต่างๆ เช่น ค่าเช่าที่ ค่าเช่าบ้าน
❑ ดอกเบี้ยเงินฝาก ❑ อื่นๆ.....

10. ท่านมีหนี้สินที่เป็นภาระของท่านประมาณเท่าไร

❑ ไม่มีหนี้สิน ❑ 5,001 – 10,000 บาท
❑ 500 – 1,000 บาท ❑ 10,001 – 20,000 บาท

❑ 1,001 – 2,000 บาท ❑ 20,001 – 50,000บาท

❑ 2,001 – 5,000 บาท ❑ > 50,000 บาท

11. ท่านคิดว่ารายได้ทั้งหมดที่ได้รับ เพียงพอต่อการดำรงชีพหรือไม่

☐ ไม่เพียงพอ ☐ เพียงพอแต่ไม่มีเก็บ

☐ เพียงพอและเก็บได้บ้าง ☐เพียงพอและเก็บได้ตลอด

12. ท่านอาศัยอยู่ในเขต ☐ เทศบาล ☐ นอกเขตเทศบาล

13. ท่านมีโรคประจำตัวหรือไม่ ☐ ไม่มี ☐ มี (โรคอะไร – ตอบได้มากกว่า 1 ข้อ)

❑ โรคหัวใจ ❑ อัมพาต / อัมพฤกษ์

❑ โรคเบาหวาน ❑ โรคปวดข้อ ข้อเสื่อม รูมาตอย

❑ โรคความดันโลหิตสูง ❑ โรคทางสายตา ระบุ.....

❑ โรคปอดยืด หรือหอบหืด ❑ โรค หรืออาการ เกี่ยวกับทางเดินอาหาร โรคกระเพาะ

❑ มะเร็งหรือเนื้อร้ายอื่น ๆ ❑ การเจ็บปวดทางร่างกาย ปวดหลัง ปวดเอว ปวดกล้ามเนื้อ

❑ โรคหลอดเลือดสมอง ❑ อื่นๆ ระบุ .....

14. ในช่วง **6**เดือนที่ผ่านมา ท่านคิดว่าสุขภาพโดยทั่วไปของท่านอยู่ในระดับใด

☐ แย่มาก ☐ แย่ ☐ ปานกลาง ☐ ดี ☐ ดีมาก

15.ปัจจุบันท่านอยู่อาศัยกับใคร (ตอบได้มากกว่า 1 ข้อ)

☐ อยู่คนเดียว

☐ อยู่กับคู่สมรสเท่านั้น

☐ อยู่กับบุตรโสด จำนวน..... คน

☐ อยู่กับบุตรสมรส.....คน หลาน.....คน หรือ บุตรเขย/สะใภ้.....คน

☐ อยู่กับญาติ พี่น้อง ..... คน

☐ อยู่กับคนอื่นที่ไม่ใช่ญาติ ระบุ..... คน

รวมทั้งหมด.....คน

16. บ้านที่ท่านอยู่ในปัจจุบันเป็นของใคร

☐ ตัวท่านเอง/คู่สมรส ☐ บุตร

☐ บุตรเขย/สะใภ้ ☐ หลาน ☐ ญาติพี่น้อง

17. ท่านอยู่ในครัวเรือนในสถานะใด

☐ หัวหน้าครัวเรือน ☐ สามี/ภรรยาของหัวหน้าครัวเรือน

☐ บิดา/มารดาของหัวหน้าครัวเรือน ☐ ญาติ ☐ ผู้อยู่อาศัย

18. ใครเป็นผู้ดูแลหลักของท่านในชีวิตประจำวัน

☐ ไม่มีใคร ☐ คู่สมรส

☐ บุตร ระบุ ..... ☐ หลาน/บุตรเขย/สะใภ้ ระบุ.....

☐ ญาติ /พี่น้อง ระบุ ..... ☐ คนอื่นที่ไม่ใช่ญาติ ระบุ.....

19. ท่านมีบุตร (รวมทั้งบุตรบุญธรรม/บุตรเลี้ยง) กี่คน

☐ จำนวนบุตรทั้งหมด.....คน

☐ จำนวนบุตรที่ยังมีชีวิตอยู่.....คน

ส่วนที่ 2 แบบประเมินการสูงวัยอย่างมีศักยภาพ

<u>คำชี้แจง</u> โปรดพิจารณาว่า ข้อความในแต่ละข้อที่เกี่ยวกับตัวท่านเป็นจริงมากน้อยเพียงใดโดยขอความกรุณาทำเครื่องหมาย ✓ใน ☐ ของแต่ละข้อ และขอให้ท่านตอบตามความเป็นจริงที่เกิดขึ้นกับตัวท่าน

ไม่จริง	หมายถึง	เหตุการณ์นั้นไม่จริงเลย หรือแทบจะไม่จริงเลย
จริงบางครั้ง	หมายถึง	เหตุการณ์นั้นจริงเป็นบางครั้ง
ค่อนข้างจริง	หมายถึง	เหตุการณ์นั้นค่อนข้างจริง
จริงตลอดเวลา	หมายถึง	เหตุการณ์นั้นเป็นจริงตลอดเวลา

คำถาม	ไม่จริง	จริงบางครั้ง	ค่อน ข้างจริง	จริงตลอดเวลา
1.ท่านสามารถพึ่งพาตนเองได้ในการดำรงชีวิตประจำวัน				
2.ท่านพยายามทำกิจกรรมต่างๆด้วยตนเอง โดยไม่หวังพึ่งพาสมาชิกในครอบครัวหรือคนอื่นๆ				
3.ท่านสามารถคิดหรือตัดสินใจทำอะไรได้ด้วยตนเอง ได้อย่างอิสระ				
4.ท่านหาความรู้ หรือเรียนรู้สิ่งใหม่ๆ จากการอ่าน การค้นคว้า หรือติดตามข่าวสารตามสื่อต่างๆ				
5.ท่านชอบฝึกทำกิจกรรมใหม่ๆ หรือหาประสบการณ์ใหม่ๆ				
6.ท่านสามารถเรียนรู้การใช้เครื่องมือสื่อสาร อุปกรณ์อำนวยความสะดวกในชีวิตประจำวัน หรือเทคโนโลยีใหม่ๆ ได้				
7.ท่านหาความรู้เกี่ยวกับสุขภาพและการดูแลตนเองเพื่อให้มีสุขภาพดี				
8.ท่านสามารถพึ่งพาตนเองด้านการเงินได้				
9.ท่านสามารถให้การช่วยเหลือเกื้อหนุนคนในครอบครัวด้านการเงินได้				
10.ท่านพยายามหากิจกรรมต่างๆ ทำในแต่ละวัน โดยไม่อยู่นิ่งเฉย				
11.ท่านจะรู้สึกเบื่อถ้าต้องอยู่เฉยๆ โดยไม่ได้ทำอะไร				

คำถาม	ไม่จริง	จริงบางครั้ง	ค่อนข้างจริง	จริงตลอดเวลา
12.ท่านชอบออกนอกบ้านมากกว่าอยู่แต่ในบ้าน				
13.ท่านจะไม่รอคอยให้คนอื่นมาช่วยเหลือเวลาต้องการทำกิจกรรมต่างๆ				
14.ท่านมีเรื่องที่จะต้องคิดทำในแต่ละวัน				
15.ท่านมักวางแผนในการทำกิจกรรมต่างๆ ไว้ล่วงหน้า				
16.ท่านยังคงทำงานตามกำลังความสามารถของท่านอยู่เสมอ				
17.ท่านมักทำงานที่ก่อให้เกิดรายได้				
18.ท่านทำงานเพื่อสังคมโดยไม่ได้รับค่าตอบแทน				
19.ท่านช่วยเหลือครอบครัวในการทำกิจกรรมต่างๆ				
20.ท่านให้คำแนะนำปรึกษาแก่บุตรหลาน เมื่อบุตรหลานต้องการ				
21.ท่านหากิจกรรมยามว่างทำเพื่อให้คลายเหงา				
22.ท่านออกกำลังกายอย่างสม่ำเสมออย่างน้อย 3 ครั้งต่อสัปดาห์				
23.ท่านพยายามเคลื่อนไหวร่างกายอยู่เสมอ				
24.ท่านเลือกรับประทานอาหารที่เป็นประโยชน์ต่อร่างกาย				
25.ท่านงดรับประทานอาหารที่ หวาน มัน หรือเค็ม				
26.ท่านรับประทานเนื้อปลา ผัก และผลไม้ เป็นประจำ				
27.ท่านพยายาม ดูแลจิตใจไม่ให้เคร่งเครียด				
28.ท่านพยายามหาทางออก เมื่อมีปัญหา				
29.ท่านมีสติในการเผชิญกับปัญหาต่างๆได้				
30.ท่านหลีกเลี่ยงการดื่มอัลกอฮอล์ หรือสารเสพติดอื่นๆ				
31.ท่านไม่สูบบุหรี่หรือหลีกเลี่ยงการสัมผัสควันจากบุหรี่				
32.ท่านหลีกเลี่ยงการเกี่ยวข้องกับการพนัน				
33.ท่านเข้าร่วมหรือช่วยงานต่างๆ ของคนที่รู้จักหรือเพื่อนบ้านเช่น งานแต่งงาน ขึ้นบ้านใหม่หรืองานศพอยู่เสมอ				
34.ท่านร่วมกิจกรรมสาธารณะประโยชน์ หรือกิจกรรมพัฒนาชุมชนหรือหมู่บ้าน อยู่เสมอ				

คำถาม	ไม่จริง	จริงบางครั้ง	ค่อนข้างจริง	จริงตลอดเวลา
35.ท่านเข้าร่วมกิจกรรมทางวัฒนธรรม ประเพณี ของชุมชนหรือหมู่บ้านเป็นประจำ				
36.ท่านเข้าร่วมกิจกรรมของชมรมผู้สูงอายุ หรือชมรมอื่นๆ ที่เป็นสมาชิกอยู่เสมอ				
37.ท่านชอบพูดคุย หรือแลกเปลี่ยนเรียนรู้กับเพื่อนหรือเพื่อนบ้าน				
38.ท่านมีความสุขที่ได้เข้ากลุ่มหรือทำกิจกรรมกับเพื่อน				
39.ท่านบริจาคเงินทอง หรือทรัพย์สินให้กับชุมชนหรือสาธารณประโยชน์				
40.ท่านถ่ายทอดความรู้ ภูมิปัญญา ทักษะ ประสบการณ์ให้กับผู้อื่น				
41.ท่านทำงานเป็นอาสาสมัคร หรือจิตอาสา เพื่อช่วยเหลือสังคม อยู่เสมอ				
42.ท่านเป็นที่ปรึกษา เป็นผู้ทรงคุณวุฒิ หรือผู้มีภูมิรู้ภูมิปัญญาในชุมชนหรือหมู่บ้าน				
43.ท่านเชื่อในกฎแห่งกรรม และการทำความดี				
44.ท่านทำบุญทำทานอยู่เสมอ				
45.ท่านหมั่นทำความดี				
46.ท่านสบายใจ สุขใจเมื่อได้ทำความดี				
47.ท่านพยายามควบคุมตนเองให้มีสติอยู่เสมอ				
48.ท่านพยายามไม่ยึดมั่นและถือมั่นกับสิ่งใด				
49.ท่านยอมรับที่จะอยู่กับปัญหาแม้ว่ายังแก้ไขไม่ได้				
50.ท่านมักมองโลกในแง่บวกอยู่เสมอ				
51.ท่านเชื่อมั่นและศรัทธาในศาสนาที่ท่านนับถือ				
52.ท่านยึดถือและปฏิบัติตามหลักคำสอนของศาสนาอย่างเคร่งครัด				
53.ท่านปฏิบัติศาสนกิจ หรือเข้าร่วมกิจกรรมทางศาสนาเป็นประจำ				

คำถาม	ไม่จริง	จริงบางครั้ง	ค่อนข้างจริง	จริงตลอดเวลา
54.ท่านได้เตรียมพร้อมสำหรับที่อยู่อาศัยในยามชรา				
55.ท่านสามารถจัดการ ดูแลที่อยู่อาศัยได้ด้วยตัวเอง				
56.ท่านมีการเก็บออมเงินทองไว้เพื่อใช้ในยามชรา				
57.ท่านมีเงินทองหรือทรัพย์สินเพียงพอ เพื่อเป็นค่าใช้จ่ายในยามชรา				
58.ท่านได้เตรียมความพร้อมในการออมทรัพย์เพื่อการฌาปนกิจ หลังเสียชีวิต				
59.ท่านได้สร้างความรักความผูกพันกับครอบครัวเพื่อให้สามารถคงความรักต่อท่านในยามชรา				
60.ท่านได้สั่งสอนและปฏิบัติให้บุตรหลานเห็นถึงความกตัญญู กตเวที การดูแลบุพการี				

Appendix I

Multi-step sample selection and number of the elderly samples

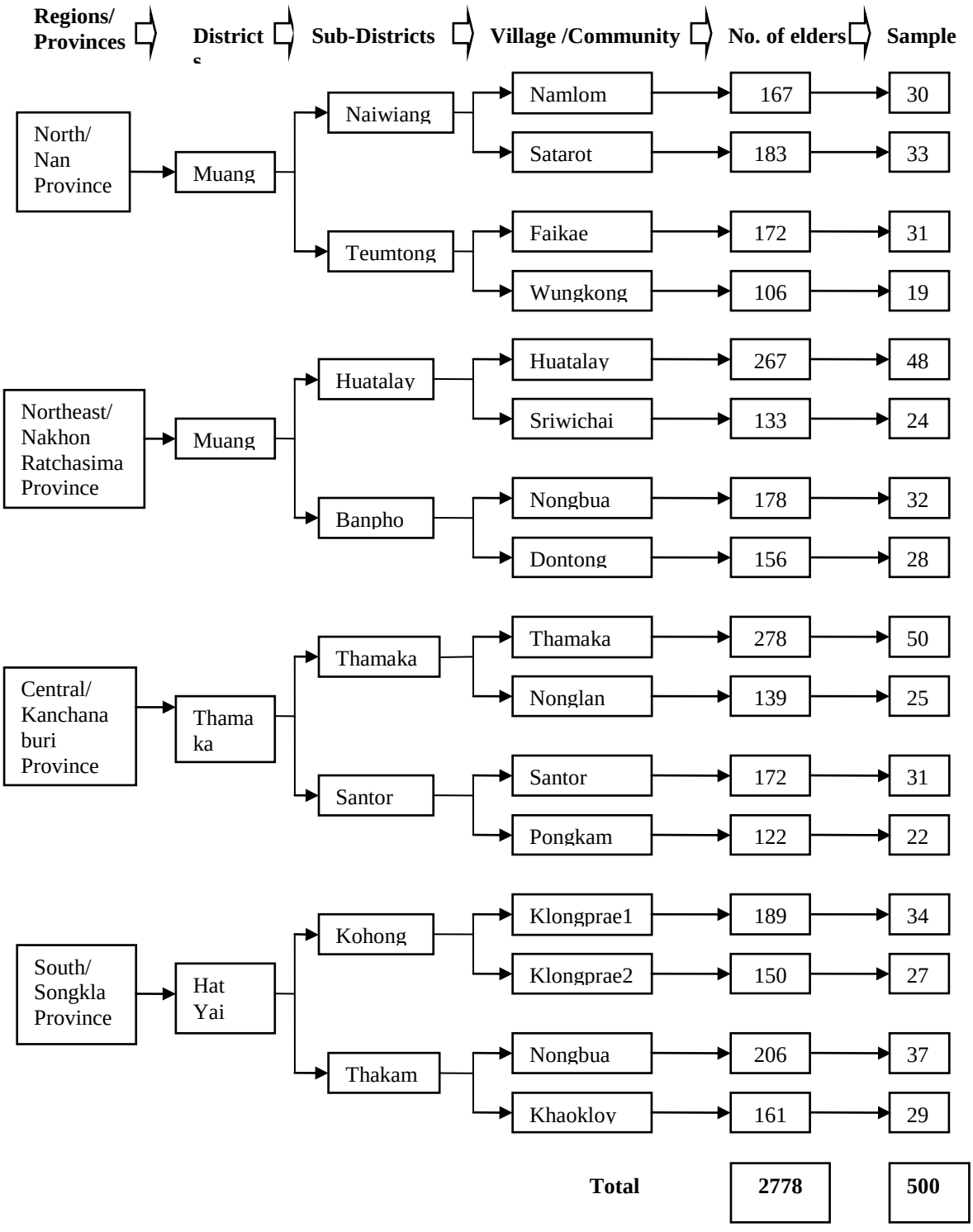

Figure 5 Multi-step sample selection and number of the elderly samples

Appendix J

Factor loading of each item and factor of the 45-item AAS-Thai

Table 22 Factor loading of each item and factor of the 45-item AAS-Thai

Item	**Factor**						
	1	**2**	**3**	**4**	**5**	**6**	**7**
1	0.783						
2	0.746						
3	0.651						
4						0.661	
5						0.763	
6						0.593	
7*	0.480		0.501				
8			0.536				
9	0.651						
10						0.572	
11	0.690						
12		0.631					
13	0.626						
14*	0.391				0.314		0.368
15	0.516						
16					0.450		
17					0.576		
18					0.689		
19					0.802		
20					0.676		
21*	0.332			0.350			0.408
24		0.738					
25		0.706					
26		0.727					

*Deleted Item (High loading on more than one factor)

Table 22 (cont.)

Item	Factor						
	1	**2**	**3**	**4**	**5**	**6**	**7**
27*	0.447	0.468					
28*	0.445	0.451					
29		0.624					
30		0.652					
31		0.681					
32		0.699					
33				0.589			
34*	0.357			0.309			0.340
35				0.541			
36				0.670			
37				0.901			
38				0.888			
39*	0.440			0.455			
40*	0.438	0.450					
41*	0.417		0.432				
42	0.593						
43			0.830				
44			0.854				
45			0.678				
46							0.734
47							0.714

*Deleted Item (High loading on more than one factor)

Appendix K

The final draft of the AAS-Thai

Table 23 *The final draft of Active Ageing Scale for Thai People (AAS-Thai)*

Direction Please indicate how TRUE each of the following statements is for you?

Statements	Not at all true	Slightly true	Some what true	Very true
Being self-reliant 1. I am self-reliant to do all activities in daily living				
2. I try to take care myself before asking others for help				
3. I still work depending upon my competency				
4. Each day, I try to do plenty of activities				
5. I can think or decide with my own autonomy				
6. I help family to do several activities				
7. I can manage for housekeeping with my own arrangement				
8. I like to do leisure time activities to diminish loneliness				
Being actively engaged with society 9. I usually participate in public activities or community development activities				
10. I actively participate in elderly club activities or other clubs in which I am a member				
11. I act as a consultant, expert, or local wisdom person within my community				
12. I join ritual or traditional activities within my community				
13. I work as a volunteer				
14. I transfer my tacit knowledge, wisdom, and skills to others				
15. I like to work for society without concerning for paid				
16. I donate money or materials for community or public benefits				
Growing spiritual wisdom 17. I usually look at anything in positive circumstances				
18. I trust in my religion				

Statements	Not at all true	Slightly true	Some what true	Very true
19. I accept about problems that I cannot solve				
20. I always do good deeds				
21. I try not to attach to anything				
Building up financial security 22. I have money or properties enough to meet expenses in later life				
23. I have saved money to use when I am getting old				
24. I have prepared about financial assurance to be used in my funerary activities				
25. I can provide financial assistance to my family				
Maintaining healthy lifestyle 26. I avoid eating sweat, fatty, and salty food				
27. I try to select healthful foods				
28. I regularly eat fish, vegetables, and fruits				
29. I always try to mobilize and stretch my body				
30. I regularly exercise at least 3 times a week				
Engaging in active learning 31. I can learn using new information technologies and facilitated equipment				
32. I like to do new things or search for new experiences				
33. I search information to use for taking care of my health				
34. I usually plan to do any activities beforehand				
Strengthening family ties for being cared for in the late life 35. I have strengthened family ties to maintain children's attachment when I am getting old				
36. I have taught about filial piety to my children concerning the filial obligation of caregiving to older parents				

แบบประเมินการสูงวัยอย่างมีศักยภาพ (Active ageing)

<u>คำชี้แจง</u> โปรดพิจารณาว่า ข้อความในแต่ละข้อที่เกี่ยวกับตัวท่านเป็นจริงมากน้อยเพียงใดโดยขอความกรุณาทำเครื่องหมาย ✓ใน ☐ ของแต่ละข้อ และขอให้ท่านตอบตามความเป็นจริงที่เกิดขึ้นกับตัวท่าน

ไม่จริง	หมายถึง	ข้อความ หรือเหตุการณ์นั้นไม่จริงเลย หรือแทบจะไม่จริงเลย
จริงบางครั้ง	หมายถึง	ข้อความ หรือเหตุการณ์นั้นจริงเป็นบางครั้ง
ค่อนข้างจริง	หมายถึง	ข้อความ หรือเหตุการณ์นั้นค่อนข้างจริง
จริงตลอดเวลา	หมายถึง	ข้อความ หรือเหตุการณ์นั้นเป็นจริงตลอดเวลา

คำถาม	ไม่จริง	จริงบางครั้ง	ค่อนข้างจริง	จริงตลอดเวลา
1.ท่านสามารถพึ่งพาตนเองได้ในการทำกิจกรรมต่างๆในชีวิตประจำวัน				
2.ท่านพยายามช่วยเหลือตัวเองในเรื่องต่างๆก่อนที่จะขอร้องให้สมาชิกในครอบครัวหรือคนอื่นๆช่วยเหลือ				
3.ท่านยังคงทำงานตามกำลังความสามารถของท่านอยู่เสมอ				
4.ในแต่ละวัน ท่านจะหากิจกรรมต่างๆ ทำ โดยไม่อยู่นิ่งเฉย				
5.ท่านสามารถคิดหรือตัดสินใจทำอะไรได้ด้วยตนเอง ได้อย่างอิสระ				
6.ท่านช่วยเหลือครอบครัวในการทำกิจกรรมต่างๆ				
7.ท่านสามารถจัดการ ดูแลที่อยู่อาศัยได้ด้วยตัวเอง				
8.ท่านมักหางานหรือกิจกรรมทำในยามว่างเพื่อให้คลายเหงา				
9.ท่านร่วมกิจกรรมสาธารณะประโยชน์ หรือกิจกรรมพัฒนาชุมชนอยู่เสมอ				
10.ท่านเข้าร่วมกิจกรรมของชมรมผู้สูงอายุ หรือชมรมอื่นๆที่เป็นสมาชิกอยู่เสมอ				
11.ท่านเป็นที่ปรึกษา เป็นผู้ทรงคุณวุฒิ หรือผู้มีภูมิรู้ภูมิปัญญาในชุมชน				

คำถาม	ไม่จริง	จริงบางครั้ง	ค่อนข้างจริง	จริงตลอดเวลา
12.ท่านเข้าร่วมกิจกรรมงานประเพณี งานบุญ ในชุมชนอยู่เสมอ				
13.ท่านทำงานเป็นอาสาสมัคร หรือจิตอาสา เพื่อช่วยเหลือสังคม อยู่เสมอ				
14.ท่านถ่ายทอดความรู้ ภูมิปัญญา ทักษะ ประสบการณ์ให้กับผู้อื่น				
15.ท่านทำงานเพื่อสังคมโดยไม่ได้คำนึงถึงค่าตอบแทน				
16.ท่านบริจาคเงินทอง หรือทรัพย์สินให้กับชุมชนหรือสาธารณประโยชน์				
17.ท่านมักมองโลกในแง่บวกอยู่เสมอ				
18.ท่านเชื่อมั่นและศรัทธาในศาสนาที่ท่านนับถือ				
19.ท่านยอมรับที่จะอยู่กับปัญหาแม้ว่ายังแก้ไขไม่ได้				
20.ท่านหมั่นทำความดีอยู่เสมอ				
21.ท่านพยายามไม่ยึดมั่นและถือมั่นกับสิ่งใด				
22.ท่านมีเงินทองหรือทรัพย์สินเพียงพอ เพื่อเป็นค่าใช้จ่ายในยามชรา				
23.ท่านมีการเก็บออมเงินทองไว้เพื่อใช้ในยามชรา				
24.ท่านได้เตรียมความพร้อมในการออมทรัพย์เพื่อการฌาปนกิจหลังเสียชีวิต				
25.ท่านสามารถให้การช่วยเหลือเกื้อหนุนคนในครอบครัวด้านการเงินได้				
26.ท่านงดหรือหลีกเลี่ยงการรับประทานอาหารที่หวาน มัน หรือเค็ม				
27.ท่านเลือกรับประทานอาหารที่เป็นประโยชน์ต่อร่างกาย				
28.ท่านรับประทานเนื้อปลา ผัก และผลไม้ เป็นประจำ				
29.ท่านพยายามเคลื่อนไหวร่างกายอยู่เสมอ				
30.ท่านออกกำลังกายอย่างสม่ำเสมออย่างน้อย 3 ครั้งต่อสัปดาห์				
31.ท่านสามารถเรียนรู้การใช้เครื่องมือสื่อสาร อุปกรณ์อำนวยความสะดวกในชีวิตประจำวัน หรือเทคโนโลยีใหม่ๆ ได้				

คำถาม	ไม่จริง	จริงบางครั้ง	ค่อนข้างจริง	จริงตลอดเวลา
32.ท่านชอบฝึกทำกิจกรรมใหม่ๆ หรือการหาประสบการณ์ใหม่ๆ				
33.ท่านแสวงหาความรู้ในการดูแลตนเองเพื่อให้สุขภาพดี				
34.ท่านมักวางแผนในการทำกิจกรรมต่างๆ ไว้ล่วงหน้า				
35.ท่านได้สร้างความรักความผูกพันกับครอบครัวเพื่อให้สามารถคงความรักต่อท่านในยามชรา				
36.ท่านได้อบรมสั่งสอนและปฏิบัติเป็นแบบอย่างที่ดีให้บุตรหลานเห็นถึงความกตัญญู กตเวที ในการดูแลบุพการี				

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Educational Attainment

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Bachelor of Science (Nursing and Midwifery)	Sawanpracharak Nursing College	1991
Master of Education (Health Promotion)	Chaing Mai University	2002
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Doctor of Philosophy (Demography)	Mahidol University	2008

Scholarship Awards during Enrolment

1. The dissertation grant, Faculty of Graduate Studies, Prince of Songkla University
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2. K**attika Thanakwang**. Hypertension among the elderly populations in rural communities, Thailand. *Proceeding at the National Annual Conference of Demography, Bangkok, Thailand, November 18-19, 2005.* (in Thai)

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5. **Kattika Thanakwang**. Attributions for Active Ageing among the Thai Elderly. *Proceeding at the International Conference on Population and Development in Asia: Critical Issues for a Sustainable Future. Organiser: Asian MetaCentre for Population and Sustainable Development Analysis, March 21-24, 2006, Phuket, Thailand.*

6. **Kattika Thanakwang**. Affecting of pregnant women's migration on iodine deficiency disorder in newborns in Thailand. *Proceeding at the International Conference "The 38th Asia-Pacific Academic Consortium for Public Health (APACPH) Conference" on December 3-6, 2006, the Rama Gardens Hotel, Bangkok, Thailand.*

7. **Kattika Thanakwang**. Adjusted prevalence, unawareness, and uncontrolled blood pressure of hypertension in rural communities, Thailand. *Proceeding at the International Conference "Emerging Population Issues in the Asia Pacific Region: Challenges for the 21th Century" on December 10-13, 2006, Grand Hyatt, Mumbai, India.*

8. **Kattika Thanakwang**. Maternal Factors Associated with Iodine Deficiency Disorder in Newborns in Nan Province, Thailand**.** *Proceeding at the International 46th Siriraj Medical Conference "Excellent Medical Practice with Sufficiency Economy" on March 5-9, 2007, Royal Thai Navy Convention Hall, Bangkok, Thailand.*

9. **Kattika Thanakwang**. Determinants of Economic Security among Thai Elderly: Evidence from a Cross-Sectional National Survey. *Proceeding at the International Conference "Human Security in Asia: Emerging Issues and Challenges" on March 24-25, 2007, Jeonju University, Seoul, South Korea.*

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11. **Kattika Thanakwang**. Social Relations and Healthy Aging: Evidence from the 2002 Elderly Survey in Thailand. *Proceeding at the International Open Day for Ph.D. Programme (Health System and Policy) On June 19, 2007, Naresuan University, Phitsanulok, Thailand.*

12. **Kattika Thanakwang**. Socio-Cultural Aspects of Iodine-Supplemented Consumption among Pregnant Women in Nan Province, Thailand. *Proceeding at the 13th International Annual Qualitative Health Research Conference 2007 on June 20-23, 2007, Ewha Womans University, Seoul, South Korea.*

13. **Kattika Thanakwang**. A Causal Relationship of Social Relations Influencing Health Promoting Behavior among the Elderly in Nan Province, Thailand. *Proceeding at the International Conference on "New Frontiers in Primary Health Care: Role of Nursing and Other Professions" On February 4-6, 2008, Lotus Pang Suan Kaew Hotel, Chiang Mai, Thailand.*

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17. Kattika Thanakwang. Healthy aging of Thai elderly: A multidimensional composite index and its variation. *Proceeding at the International Conference on "Health and the Changing World" On November 11-13, 2008, The Rama Garden Hotel, Bangkok, Thailand.*

18. **Kattika Thanakwang**. Knowledge Management toward Quality Improvement of Home Health Care Service, Pua Crown Prince Hospital: Changing, Integrating, and Sharing. *Proceeding at the International Conference on Health Promotion and Quality in Health Services "Global sharing: People and Integration as Key to Success" On November 19-20, 2008,* Centara Grand & Bangkok Convention Centre*, Bangkok, Thailand.*

19. **Kattika Thanakwang**, Berit Ingersoll-Dayton. Family Relationship, Friendship**s**, and Psychological Well-being among Thai Elderly. *Proceeding at International Conference at the 61st Annual Scientific meeting on "Resilience in an Aging Society: Risks and Opportunities" On November 21-25, 2008, Gaylord National Resort & Conference Center, National Harbor, Maryland, USA.*

20. Kattika Thanakwang, Berit Ingersoll-Dayton. Social Support Exchanges and Psychological Well-Being among Thai Older People: Does Gender Make a Difference. *Proceeding at the 1st International Nursing Research Conference of World*

Academy of Nursing Science On September 21-25, 2009, Kobe International Exhibition Hall, Kobe, Japan.

21. กัตติกา ธนะขว้าง พิมลพรรณ คุณสิทธิ์ จินตนา รัตนวิฑูรย์ จามจุรี ทนุรัตน์. การพัฒนาเครือข่ายเพื่อนช่วยเพื่อนในการพัฒนาศักยภาพการดูแลตนเองของผู้สูงอายุในชุมชน ตำบลวรนคร อำเภอปัว จังหวัดน่าน: ข้อค้นพบจากการศึกษาระยะที่ 1. *Proceeding ในการประชุมวิจัยทางการ พยาบาลแห่งชาติ ครั้งที่ 4 เรื่อง "การวิจัยทางการพยาบาล : ความท้าทายฝ่าวิกฤติสู่สังคมสุขภาวะ" วันที่ 2 – 4 พฤศจิกายน 2552. ณ โรงแรมแอมบาสเดอร์ กรุงเทพมหานคร.*

22. Kattika Thanakwang. Effects of poverty and financial support on economic strain and psychological well-being among Thai elders. *Proceeding at the International Conference on Economic Stress, Human capital, and Families in Asia: Research and Policy Challenges On June 3 – 4, 2010, Asia Research Institute, National University of Singapore, Singapore.*

23. กัตติกา ธนะขว้าง. การพัฒนารูปแบบการออกกำลังกายด้วยการรำไม้พลองประยุกต์กับการฟ้อนมองเชิงเมืองน่านสำหรับผู้สูงอายุ. *Proceeding ในการประชุมวิชาการประจำปี 2554 สมาคมพฤฒาวิทยาและเวชศาสตร์ผู้สูงอายุ เรื่อง "การออกแบบและปฏิบัติเพื่อสูงวัยด้วยคุณภาพ" วันที่ 18 – 20 มกราคม 2555. ณ โรงแรมตวันนา กรุงเทพมหานคร.*

24. Kattika Thanakwang. Family Support, Anticipated Support, Negative Interaction, and Psychological Well-Being of Older Adults in Thailand. *Proceeding at the International Conference of International Psychogeriatric Association International Meeting 2012 On September 7 – 11, 2012, Cairns, Australia.*

25. Kattika Thanakwang. Productive engagement among older adults: A concept analysis. *Proceeding at* The 2012 Kunming International Nursing Conference *On October 18 – 20, 2012, Kunming, China.*

26. Kattika Thanakwang. Effects of Lanna Folkloric Dance Program Applied with Wand Stick on Physical Fitness and Health-Related Quality of Life in Sedentary Older Women. *Proceeding at* The ICOWHI 19thInternational Congress on "Women's Health 2012: Partnering for a Brighter Global Future *On November 14 – 16, 2012, Bangkok, Thailand.*

26. **Kattika Thanakwang**, Sang-arun Isalamalai, and Urai Hattakit, A Conceptual Structure of Active Ageing among Thai Elderly. *Proceeding at* The 16th EAFONS *On February 21 – 22, 2013, Bangkok, Thailand.*

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28. **Kattika Thanakwang**, Sang-arun Isaramalai, and Urai Hatthakit. (2013*). Measuring active ageing in Thai context: Insights from older adults.* Oral Presentation at the Third Global Congress for Qualitative Health Research "Holistic caring in the global context: Evidence from qualitative health research" on December 4-6, 2013, Khon Kaen, Thailand.