Exploring Factors Influencing Chinese American Older Adults' Intentions to Plan for End-of-Life Care

by

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ABSTRACT

This study aimed to understand the factors that influence Chinese American older adults' advance care planning (ACP) on end-of-life care. The Theory of Planned Behavior (TPB) and Health Belief Model (HBM) were primarily applied to explain Chinese American older adults' intentions toward two behaviors: 1) discussion of end-of-life care plans with family members and 2) completion of an advance directive (AD). Additionally, acculturation and family cohesion were considered to examine their impacts on the TPB and HBM. A cross-sectional survey was conducted through face-to-face interviews on a sample of 298 community-dwelling Chinese-American adults aged 55 and older living in the metropolitan Phoenix area of Arizona. Based upon random assignment, 161 participants answered questions regarding discussing end-of-life care plans with family members, while 137 participants answered questions related to the completion of an AD. Hierarchical multiple regression analysis was used to focus on the influence of TPB and HBM measures on behavioral intentions toward the two behaviors. Results indicated that both the TPB and HBM had predictive power to explain the target population's intentions. However, the predictability of TPB and HBM measures varied across the two behaviors. Acculturation moderated the relationship between attitudes and intentions to complete an AD negatively. Family cohesion moderated the relationship between perceived benefits and intentions to discuss end-of-life care plans with family members negatively. These findings would help inform future interventions for improving the target population's ACP awareness and engagement.

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CHAPTER 1: INTRODUCTION

Background

The growth of aging population has become an important demographic trend in the U.S. (Ortman, Velkoff, & Hogan, 2014; Shrestha & Heisler, 2011). According to the U.S. Census Bureau (2017c), residents aged 65 and older increased from 35 million in 2000 to 49.2 million in 2016, accounting for 12.4% and 15.2 % of the total population respectively. The baby-boom generation is mainly responsible for this demographic trend. Baby boomers began turning 65 in 2011 and would continue to do so for many years to come. The projected population of people aged 65 and older will reach to 98.2 million in 2060 (U.S. Census Bureau, 2017b).

The increase of aging groups is accompanied by challenges to the U.S. health care system due to this population's complex health conditions. Given that aging groups utilize health care system more frequently than other age categories (Nussbaum & Fisher, 2009), it is crucial for elders to plan for health care decisions in advance to ensure that they will receive medical care that can reflect their values, wishes, and preferences.

Advance care planning (ACP) serves as an important component in end-of-life care. It is conceptualized as a decision-making process regarding considering what care people would like to receive in the future if they become unable to speak for themselves due to a life-threatening event (National Hospice and Palliative Care Organization, 2016). ACP involves ongoing processes including discussions about goals of care, resuscitation and life support, palliative care options, surrogate decision making, and advance directives (Houben, Spruit, Groenen, Wouters, & Janssen, 2014). The main goal of ACP on end-of-life care is to let others know about a person's medical treatment preferences in advance and selecting a health care proxy when a person does not have the capacity to make decisions on his or her own. A growing body of research suggests that ACP is helpful for doctors and family members to know about patients' medical treatment preferences when patients are not able to speak for themselves (National Institute of Aging, 2016; Sudore & Fried, 2010).

The previous literature has demonstrated the benefits of successful ACP (Brinkman-Stoppelenburg, Rietjens, & van der Heide, 2014; Houben et al., 2014; Kononovas & McGee, 2017). ACP has been associated with the improvement of quality of life for patients and their families (Bischoff, Sudore, Miao, Boscardin, & Smith, 2013; Heyland et al., 2013; Wright et al., 2008). Wright et al. (2008) found that end-of-life care discussions were related to lower rates of ventilation, resuscitation, ICU admission, and earlier hospice enrollment. More aggressive medical care was associated with worse quality of life in patients and higher risk of major depressive disorder in bereaved caregivers, while longer hospice stays were associated with better quality of life in patients. Better patients' quality of life was associated with better bereaved caregivers' quality of life. Also, ACP was found to have positive impacts on lowering health care costs in patients' last week of life (Zhang et al., 2009), increasing patients' satisfaction with overall care in the hospital and reducing surviving relatives' stress, anxiety, and depression (Detering, Hancock, Reade, & Silvester, 2010).

It is recommended that people discuss with their family members and health providers and then document their ACP preferences through advance directive (Enguidanos & Ailshire, 2017). Advance directive (AD) refers to a legal health care document that provides written directions about people's medical treatment preferences related to end-of-life care and goes into effect only when people are unable to speak for themselves (Durbin, Fish, Bachman, & Smith, 2010; National Institute of Aging, 2016). ADs become legally effective in the U.S. once people sign them in front of the required witnesses (National Institute of Aging, 2016). It is implied that ADs remain in effect until people would like to complete a new AD and invalidate their previous ones.

An AD includes two primary elements (i.e., a living will and durable power of attorney for health care) and other documents like a do not resuscitate (DNR) order and the Five Wishes. A living will is a written document that states how people want to be treated when they become unable to speak for themselves. This document can guide health providers to withhold specific life-sustaining treatments such as cardiopulmonary resuscitation (CPR), mechanical ventilation for breathing, and artificial feeding. Durable power of attorney for health care is a legal document appointing a health care proxy to make medical decisions on behalf of people when they become unable to make decisions on their own. A DNR order provide directions for physicians whether or not to perform cardiopulmonary resuscitation. Created by a non-profit organization, Aging with Dignity, the Five Wishes is an advance directive document includes:

> wishes for the person I want to make care decisions for me when I can’t, the kind of medical treatment I want or don’t want, how comfortable I want to be, how I want people to treat me, and what I want my loved ones to know. (Aging with Dignity, 2011)

These documents provide guidance for physicians and family members when a patient does not have decisional capacity to communicate their decisions.

The AD development began in the U.S. in the late 1960s for end-of-life care planning (Wilkinson, Wenger, & Shugarman, 2007). One of the primary milestone events in the history of ADs was the enactment of the Patient Self-Determination Act (PSDA) in 1990 (Sabatini, 2010). To inform patients of their rights regarding decisions toward their medical care, the PSDA was designed to ensure that patients are provided information about ADs and can accept or refuse medical treatments (Brown, 2003; Sabatino, 2010). The PSDA requires health care providers in hospitals, skilled nursing facilities, and other health care settings to take the following steps, including informing patients' rights to participate in and directing their own medical care decisions, developing written policies regarding ADs, asking new patients whether they have had an AD and having this information in the patients' records, providing patients written information regarding the facility's policies on ADs and patients' rights to prepare these documents, and educating staff and communities about ADs (Greco, Schulman, Lavizzo-Mourey, & Hansen-Flaschen, 1991; Miller, 2017).

Although the PSDA protects patients' rights to make their end-of-life care decisions, this legislation relies heavily on inpatient facilities and does not encourage people to prepare for their ADs before the need for hospitalization or long-term care arises (Greco et al., 1991). Also, it does not specify that doctors must discuss ADs with patients and their family members. Furthermore, a wide variety of medical and legal literature have criticized the PSDA's failure to meet the needs of patients with limited English proficiency (Pope, 2013). These limitations have driven policy makers and health professionals to explore the ways how ACP should be promoted. Since January 1, 2016, Medicare has begun to pay health care providers for face-to-face conversations with

Medicare patients and/or their surrogates regarding their ACP (Centers for Medicare & Medicaid Services, 2016). This updated policy acknowledges the value of ACP discussions to improve the quality of delivering end-of-life care.

Although the previous literature has considered the AD completion as a primary objective of ACP (Sudore & Fried, 2010), having ACP conversations regarding end-of-life care between patients, family members, and doctors has become increasingly important (Fried, Bullock, Iannone, & O'Leary, 2009). Both the AD completion and ongoing discussions are viewed as important components for the design of effective ACP interventions (Houben et al., 2014). ACP should be considered as a multifaceted decision-making process that involves discussions in which patients, family members, and doctors explore care goals under current and hypothetical illness conditions, discuss treatment options in the context of these care goals, and finally articulate and document treatment and care preferences (Morrison & Meier, 2004).

Medicare has begun reimbursing health providers for ACP discussions since January 1, 2016. However, it does not necessarily indicate that health providers will talk to their patients. A national survey of physicians who regularly treat patients aged 65 and older found that 95% participants supported this new Medicare benefit that reimburses health providers for ACP discussions, but only 14% participants who have fee-for-service patients had actually billed Medicare for this conversation (PerryUndem Research/Communication, 2016). Volandes (2015) suggested that patients start the conversation on their own with family members instead of waiting for their doctors to start the conversation. He explained that physicians' medical trainings focus on medical technology rather than communication skills and they do not have sufficient structural supports to be encouraged to start the ACP process. At the same time, when patients are not able to communicate their medical treatment preferences due to illnesses, doctors typically seek guidance from patients' family members. It is possible that family members make choices that a patient would have disagreed, without knowing a patient's thoughts in advance.

Statement and Significance of the Problem

Asian Americans grew faster than any other ethnic population over the last two decades in the U.S. (U.S. Census Bureau, 2012; U.S. Census Bureau, 2017c). The estimated number of Asian alone or in combination residents in the U.S. in 2015 was 21 million (U.S. Census Bureau, 2017a). By 2060 this population is projected to grow to 10% of the total U.S. population (Colby & Ortman, 2015). As the largest groups of Asian Americans, there are approximately five million Chinese Americans in the U.S. (U.S. Census Bureau, 2016). According to Pew Research Center (2017), people aged 50–64 and 65 and older accounted for 19% and 12% of the Chinese population in the U.S. Given the fast growth of Chinese American aging population in the U.S., it would increasingly become common for health providers to work with their Chinese American patients toward their ACP decisions on end-of-life care. However, it is rare to find the literature specifically examining Chinese Americans aging population's use of ACP on their end-of-life care.

The previous literature indicated the 26.3% (*n* = 2093) AD completion rate among U.S. adults in a national survey, and non-Hispanic Whites (30.7%; *n* = 1605) accounted for most of those who completed one AD than African Americans (17%; *n* = 169) and Latinos (16.7%; *n* = 175) in this survey (Rao, Anderson, Lin, & Laux, 2014). Similarly, Huang, Neuhaus, & Chiong (2016) showed that non-Hispanic White participants were significantly more likely to possess ADs (44%; *n* = 758) than African older Americans (24%; *n* = 48) and Hispanic older Americans (29%; *n* = 30). Ethnic minority populations were found to be less likely to complete an AD than their White counterparts.

Chinese Americans are not active in planning for end-of-life care. Gao, Sun, Ko, Kwak, and Shen (2015) surveyed 385 Chinese Americans aged 55 and older and found that 80 participants had heard about AD and only 38 of them had completed one AD. In another study focusing on Chinese Americans, Hsiung (2011) found that approximately 67% of 206 Chinese Americans aged 45 years and older were not aware of ACP importance. These findings indicated low ACP awareness and engagement.

The barriers that influence the ACP promotion among Chinese Americans are multidimensional. For health providers, they may not be willing to initiate ACP processes (Blackford & Street, 2016). De Vleminck et al. (2013) identified the potential barriers to health providers' unwillingness in a systematic review, including a lack of knowledge and communication skills, difficulties in defining the right moment for initiating conversations and advising patients to express their wishes, concern about causing patients and family members' emotional reactions when raising this topic, doubt about pragmatic availability of ADs, and thinking patients should initiate discussions. Meanwhile, De Vleminck et al. examined the barriers to patients' ACP involvement. For example, patients are reluctant to think about future health care problems. They may lack knowledge about ACP processes and be afraid of upsetting their family members. Also, an AD document can be challenging for them to understand and complete due to its complexity and length.

For Chinese Americans, ACP is an unfamiliar concept in public discourse (Lee, Hinderer, & Kehl, 2014). A large amount of them may lack sufficient ACP knowledge or language proficiency to understand the importance of ACP. Furthermore, under the influence of traditional Chinese culture, people rarely plan for their future illness conditions and talk about death and dying (Lee, Cheng, Dai, Chang, & Hu, 2016). It is common that discussions about a Chinese patient's medical treatment is postponed until the occurrence of a medical crisis. Without informing others in advance, patients may receive medical treatments that do not reflect their treatment preferences during their end-of-life periods. Also, crisis-oriented decision-making processes may cause emotional distress in loved ones.

A low ACP awareness may not be directly associated with having aggressive care treatments. However, when patients do not properly articulate their medical treatment preferences, they are more likely to be overtreated than undertreated, contributing to the high costs of medical care in their last months of life (Boerner, Carr, & Moorman, 2013). The previous literature has shown that patients with ADs completed in the last months of life had higher rates of election of aggressive care, compared to those who completed earlier (Enguidanos & Ailshire, 2017). It may also cause health care proxies emotional distress when important health decisions are made without knowing about patients' medical treatment preferences (Detering et al., 2010). More studies are needed to focus on Chinese Americans' ACP behaviors to inform future educational interventions to encourage them to take responsibilities for their health and improve their ACP awareness and engagement.

In terms of involving in the ACP processes, the previous studies showed that Chinese older adults feel more comfortable to discuss their end-of-life care with family members. In a study by Zhang et al. (2015), Chinese elders living in Beijing reported being comfortable with initiating the topics of end-of-life care with their family members (70.7%) than physicians (62.9%). In another study, Gao et al. (2015) found that Chinese American elders tended to discuss their preferences for the use of life-sustaining treatments with their family members (23%) more than their physicians (6%). These studies implied the importance of having ACP discussions with family members, when Chinese older adults can communicate their wishes and values. These findings would guide this dissertation to partially focus on participants’ behavior of discussing end-of-life care with family members.

The Purpose of Study

This dissertation will focus on both the AD completion and ongoing conversations and understand two relevant behaviors (i.e., discussing end-of-life care plans with family members and completing an AD) to provide a comprehensive analysis of the importance of ACP on end-of-life care. Although both are related to ACP on end-of-life care and share similar characteristics, people may have different understandings of these two behaviors. This comparison would drive us to think more about how we can identify behavioral recommendations for the future ACP interventions among Chinese American elderly. Given Chinese American aging groups’ low engagement in planning for end-of-life care, it is challenging to measure actual behaviors that participants may not perform until later in their lives. Therefore, the primary outcomes in this dissertation are behavioral intentions instead.

The purpose of this study is to understand the factors that influence community-dwelling (i.e., living in the community independently) Chinese American older adults' intentions to plan for end-of-life care through the Theory of Planned Behavior (TPB) and the Health Belief Model (HBM) in the metropolitan Phoenix areas. To achieve the research goal, this study includes in-depth interviews as formative research and cross-sectional survey as primary data collection technique. In formative research, participants were asked to answer open-ended questions during the in-depth interviews and their responses were used to develop the items in a cross-sectional survey. Later, participants were asked to complete a survey consisting of questions regarding the TPB and HBM, as well as their demographic information. It is noted that both theories apply an individual-level approach to predict health behaviors. However, factors from interpersonal, community, and societal levels may influence the predictability of the two theories. Considering the collective and multicultural characteristics of Chinese populations in the U.S., my dissertation examines the moderating impacts of acculturation and family cohesion on the TPB and HBM.

CHAPTER 2: LITERATURE REVIEW

Advance Care Planning

The previous systematic reviews have evaluated the advance care planning (ACP) effectiveness in different health conditions. Improving the advance directive (AD) completion rate has been considered as the main goal for ACP-related research (Brinkman-Stoppelenburg et al., 2014; Durbin et al., 2010; Houben et al., 2014). Given that ACP has been considered as a communication process, the previous systematic reviews have also evaluated the role of communication on ACP processes and communicating about end-of-life care has been considered as an important component (Durbin et al., 2010; Houben et al., 2014; Sharp, Moran, Kuhn, & Barclay, 2013).

Durbin et al. (2010) searched 2,000 potential studies published in CINAHL, EBSCO, Medline, and Science Direct between 1991 and 2009 and selected 12 randomized and four nonrandomized studies published from the nursing, medical, and social work literature. The analysis included two inpatient hospital-based studies, nine outpatient hospital-based studies, and one community-based study. The authors systematically analyzed evidence about one outcome, the percentage of newly completed ADs (i.e., number of completed ADs postintervention minus number of completed ADs at baseline divided by number of participants per group).

The results showed that most studies examined combined written and verbal educational interventions (i.e., giving written materials to subjects with verbal reinforcement of the material either simultaneously or over specific time periods). They did not find sufficient evidence to support the effectiveness of a single written or a single verbal educational intervention in significantly increasing the percentage of newly completed ADs. However, three randomized studies consistently showed that combined written and verbal educational interventions were significantly more effective than single written interventions in increasing the percentage of newly completed ADs.

Later, Brinkman-Stoppelenburg et al. (2014) systematically searched PubMed, EMBASE, and PsycINFO databases for experimental and observational studies on the effects of ACP published January 2000 until December 2012 and hand searched the *Journal of the American Geriatric Society and the Journal of Palliative Medicine* from 2009 to December 2012. They incorporated 113 papers in the review, including 95% observational design and 5% experimental design. There were 48% studies conducted in hospital, 32% in nursing home, 11% in a mixed setting, 8% in community, and 1% in outpatient clinic. This review encompassed 52 studies on do-not-resuscitate (DNR) orders, 45 studies on the completion of ADs (i.e., living wills and durable powers of attorney), 16 studies on do-not-hospitalize (DNH) orders and 20 studies on complex ACP interventions (communication components included).

In the review of Brinkman-Stoppelenburg et al. (2014), most studies on the effects of DNR orders showed that these were associated with a decreased use of CPR (four of five studies) and an increased use of hospice and/or palliative care (six out of six studies). Most studies showed a decreased use of life-sustaining treatments (12 of 21 studies). Studies on DNH orders (16 studies) showed a decrease in hospitalization (eight of nine studies), a decrease in life-sustaining treatments (three of three studies) and an increase in hospice and/or palliative care (five of five studies). Among 45 studies on ADs, life-sustaining treatment use was the outcome in 22 studies and 10 of them reported that ADs were associated with a decrease in the use of life-sustaining treatments. In five of seven studies, patients with the completion of ADs were more frequently enrolled in hospice care and/or palliative care service than those without ADs. Four of six studies found that ADs were associated with an increase in the use of comfort plans.

Furthermore, a total of 20 studies on the effects of complex ACP interventions showed that three of four studies reported increased compliance with patients' end-of-life wishes. Three of five studies reported a decrease in the use of life-sustaining approach and four of eight studies reported an increase in participants' satisfaction or quality of life. Brinkman-Stoppelenburg et al. (2014) suggested that extensive ACP interventions may be more effective to result in an increased frequency of out-of-hospital and out-of-ICU care and in increased compliance with patients' care satisfaction than written documents alone.

Houben et al. (2014) conducted a literature search including Medline/PubMed and Cochrane Central Register of Controlled Trials from 1966 through September 2013. They systematically reviewed 26 trials focusing on ADs and 30 trials focusing on both ADs and communication to identify the efficacy of ACP in different adult populations. These studies were published between 1992 and 2012, including 15 studies in an inpatient setting, 37 studies in an outpatient setting, and four studies in both settings.

It is found that patients in the intervention groups completed an AD more often in comparison with control groups (odds radio = 3.26; 95% CI = 2.00–5.32; *p* < .001). The results also showed a more likelihood for the occurrence of discussions about end-of-life preferences between patients and health professionals in the intervention groups than control groups (odds ratio = 2.82; 95% CI = 2.09–3.79; *p* < .001). In other words, interventions focusing on ADs, as well as interventions that included both ADs and end-of-life care communication, increased the AD completion and the occurrence of end-of-life care discussions between patients and health care professionals.

Additionally, patients in the intervention groups had an increased likelihood of delivered end-of-life care consistent with their end-of-life care preferences compared with control groups (odds ratio = 4.66; 95% CI=1.20–18.08; *p* = .03). However, this study did not find the supporting evidence showing whether the interventions that included both ADs and communication worked more effectively that the interventions that included only ADs.

These reviews have showed that both end-of-life care communication and AD completion are important components for ACP promotion. This implication would guide this dissertation to include both end-of-life care communication and AD completion and examine the factors that influence these two recommended behaviors. In addition, most reviewed studies were conducted in clinical or nursing home settings. More community-based studies would be needed to help more senior community members understand the importance of ACP awareness and engagement. This dissertation will address this research gap by focusing on community-dwelling participants.

Advance Care Planning in Chinese Communities

Researchers have become increasingly interested in ACP among Chinese communities during the past decades (Lee et al., 2014). The topics include ACP awareness (Gao et al., 2015; Yap, Chen, Detering, & Fraser, 2017), end-of-life care preferences (Ni et al., 2014; Zhang et al., 2015), factors affecting AD and ACP (Gao et al., 2015; Tang, Lam, and Chiu, 2007; Zhang et al., 2015), palliative and hospice care (Enguidanos, Yonashiro-Cho, & Cote, 2013; Kang et al., 2012), Chinese cultural consideration of ACP (Chan & Yau, 2009; Lee, Cheng, Dai, Chang, & Hu, 2016), and ACP interventions (Cheng, Lo, Chan, & Woo, 2010; Ho et al., 2016). ACP awareness and factors affecting AD and ACP preferences were frequently examined.

Advance Care Planning Awareness

Chinese respondents commonly indicate low ACP awareness and knowledge. Most people do not know about the definitions of ACP and AD or have not heard of AD in both Eastern (Chu et al., 2011; Low, Ng, Yap, & Chan, 2000; Ni et al., 2014; Ting & Mok, 2011; Zhang et al., 2015) and Western countries (Gao et al., 2015; Yap et al., 2017). Gao et al. (2015) surveyed 385 Chinese Americans aged 55 and older living in the metropolitan Phoenix areas and found that 79% had not heard of AD before. Only 10% of them had completed one. Among those who had heard of AD, they tended to know more about the role of an AD in medical treatment decision (95.1% accuracy rate) and less about its role in financial affairs (59.3% accuracy rate).

Hsiung (2011) applied the Transtheoretical Model to study Chinese American adults' readiness for advance care planning. She identified six stages of change for the target population, including precontemplation (non-believers; show no interest), precontemplation (believers; unaware of ACP and not take changing seriously), contemplation (seriously consider changing within the next six months), preparation (seriously consider changing within the next month), action (have given oral directives or made legal ADs within the six months), and maintenance (have completed an AD more than six months and communicate with others continuously).

The results showed that among the 206 participants, 68% of the participants were classified as believers at the stage of precontemplation and intended to initiate advance care planning, followed by 12.13% at the action stage, 9.7% at the preparation stage, 5% at the maintenance stage, 2.9% showing no interest in and willingness in ACP, and 1.94% at the contemplation stage. People at the precontemplation-believer stage thought that it was necessary and enthusiastic to receive additional information about ACP but they were unclear about the most appropriate time to do it. Compared with precontemplators and contemplators, participants at the action and maintenance staged seemed to be relatively less traditional in cultural beliefs, better in English, and more knowledgeable about ACP. Different from actioners showing no interest in updating their ADs, maintainers have either given a copy of their completed ADs to family members, renewed their ADs at least once, or promoted the AD completion with relatives and friends. Overall, this study showed that most participants had low ACP awareness and were still in the precontemplation stage.

Factors Affecting Advance Care Planning

To improve low ACP awareness, the researchers focused on the factors influencing Chinese individuals' AD and ACP preferences in different regions and countries (Chu et al., 2011; Yap et al., 2017; Zhang et al., 2015). Zhang et al. (2015) conducted a study among elders in Beijing and suggested education levels and age served as predictors for ACP preferences. In other words, participants with higher education levels were more likely to have heard of ACP and would prefer to document their ACP decisions than those with lower education. Those aged less than 70 years were more likely to have heard of ACP and refuse life-sustaining treatments than those aged 70 years and older.

In contrast, Chu et al. (2011) examined factors that may influence participants' preferences for ADs and for community-based end-of-life care in Hong Kong respectively, adjusting for the influence of age and sex. Significant predictors of the AD preference included asking for relatives' advice in medical decisions, wishing to be informed of their terminal diagnoses, absence of stroke, and having no problems in self-care in European Quality of Life-5 Dimensions. For the preferences for community-based end-of-life care, the independent predictors included older age, not having siblings in Hong Kong, Catholic religion, nonbeliever of traditional Chinese religion, not receiving any old age allowance, lower Geriatric Depression Scale score, and being residents of government-subsidized nursing homes.

For Chinese elders living in Western countries, having high-level language proficiency becomes important. Yap et al. (2017) found that in-language materials, key support networks (i.e., general practitioners, families, and Chinese community groups) were useful tools for ACP promotion because older Chinese-speaking community members have language barriers and rely on families, general practitioners, community friends and volunteers, and medical interpreters to access health care.

In addition to language proficiency, it is necessary to consider the influence of cultural adjustment among Chinese elders living in Western countries. Gao et al. (2015) conducted a binary logistic regression to examine the impact of acculturation on AD awareness. Gender, age, education, monthly income, self-rated health, and previous experiences of end-of-life care were entered into the first block. Those with higher education levels, higher monthly incomes, and experience with ventilators were more likely to know about ADs. In the second model, the acculturation levels and years of U.S.

residency were entered. Education levels and experiences with ventilators remained significant. Participants with higher acculturation levels and those residing more than 20 years in the U.S. were more likely to have AD awareness. It is also found that concerns about causing family burdens was the most important factor that influenced Chinese American elderly's preference for end-of-life care, followed by pain relief, best interests in the eyes of family members, the possibility of being cured, and financial cost.

It is implied that many ACP-related studies focusing on Chinese populations are not theory-driven and factors that predict the target population' AD and ACP preferences vary across different settings. Lacking theory as the ground can limit the generalizability of these studies in Chinese communities. This limitation would guide this dissertation to be theory-based to better inform future ACP interventions for the target population.

Acculturation and Advance Care Planning

Acculturation is conceptualized as "the dual process of cultural and psychological change that takes place as a result of contact between two or more cultural groups and their individual members" (Berry, 2005, p. 698). It is commonly measured by migrants' language use, media preferences, social affiliations, cultural customs/manners, belief systems associated with a specific context or group, attachments to cultural groups, and the positive esteem drawn from these attachments (Schwartz, Unger, Zamboanga, & Szapocznik, 2010). A higher level of English proficiency is frequently associated with a higher level of acculturation (Hsiung, 2011).

The previous literature has indicated the relationship between acculturation and ACP among immigrant elders (Bito et al., 2007; Gao et al., 2015; Matsumura et al., 2002; Wittenberg-Lyles, Villagran, & Hajek, 2008). Wittenberg-Lyles et al. (2008) revealed that Latinos with higher levels of acculturation were significantly more likely to recall hearing about ADs and significantly more likely to have completed an AD.

For Asian Americans, Matsumura et al. (2002) surveyed 539 English-speaking Japanese Americans, 340 Japanese-speaking Japanese Americans, and 304 Japanese living in Japan and found that acculturation was associated with a greater preference for respondents to participate in decision making. Furthermore, English-speaking Japanese Americans, who had higher acculturation levels, expressed more positive attitudes toward ACP than Japanese-speaking Japanese Americans and respondents living in Japan. Gao et al. (2015) found that Chinese American elders with higher acculturation levels and those residing more than 20 years in the U.S. were more likely to have heard of AD after controlling for the effects of demographics, health, and experiences of end-of-life care. Given the influence of acculturation level on multicultural populations, this dissertation will examine the role of acculturation in the theoretical frameworks. The research questions will be asked after theoretical frameworks are discussed.

Family Influence and Advance Care Planning

The quality of the relationships within the family can affect the effectiveness of ACP (Blackford & Street, 2016; Boerner et al., 2013; Kramer, Boelk, & Auer, 2006). Boerner et al. (2013) surveyed 293 participants aged 55 and older and found that better overall family functioning (e.g., sharing thoughts and feelings with one another and collaborative problem solving) increased the odds of discussions about end-of-life care. Furthermore, this study found a stronger effect of family functioning on discussions about end-of-life care (odds ratio = 2.79) compared with the two-pronged approach (i.e., having both formal ADs and informal ACP discussions). Emotional support from spouse increased the odds of having discussions about end-of-life care (odds ratio = 1.88).

Different from Boerner et al. (2013) focusing on older adults in the U.S., Lee et al. (2014) systematically reviewed the 15 empirical studies (published from 1996 to 2012) regarding ACP and AD among Chinese population in Eastern (e.g., Hong Kong) and Western cultures (e.g., U.S. and Canada). This review suggested that family was an important topic for Chinese individuals and a family decision-making model may be more appropriate for discussions with patients and families rather than focusing on individuality, autonomy, and self-determination.

The importance of family on Chinese depends on the influence of collectivism (Sun, Gao, & Coon, 2015). This cultural orientation encourages people to prioritize family responsibilities over individual independence. China has been a predominantly agricultural country, which emphasizes working labor groups on which individuals depend. Individuals are organized to cooperate and support each other to survive. De Bary (1998) considered a family as “the predominant social and economic institution in an agricultural society and in many aspects it furnished the theoretical model for other institutions such as the patriarchal dynastic state” (p. 17). Take family responsibilities has been embedded in Chinese individuals’ value system. Because individual autonomy is not given a priority in Chinese culture, it is common that older adults would like to rely on their family members for health decision making. In this regard, it is helpful to consider family dynamics when we examine older adults’ ACP behaviors.

As an important indicator of family functioning, family cohesion is defined as shared affection, support, helpfulness, and caring among family members (Barber &

Buehler, 1996). It has been developed to examine the relationship with psychological adjustments and the previous literature showed that family cohesion may serve as a buffer to psychosocial stressors among multicultural populations in the U.S. such as Latinos (Baer & Schmitz, 2007; Dillon, De La Rosa, & Ibañez, 2013; Guo, Li, Liu, & Sun, 2014; Rivera et al., 2008; Ta, Holck, & Gee, 2010). For example, Dillon et al. (2013) showed that more acculturative stress had a significantly greater decline in family cohesion among Latinos and implied that high levels of cohesion may help protect participants from acculturative stress. Rivera et al. (2008) found that higher family cohesion was significantly associated with lower psychological distress among Latinos. Furthermore, there was a significant interaction between family cohesion and family cultural conflict, which suggests that although higher-level family cohesion was associated with lower psychological distress, having strong family cohesion in the face of family cultural conflict relates to greater psychological distress.

Although the values of family cohesion (e.g., loyalty and solidarity) are favored among Chinese, it is scarce to apply family cohesion to examine Chinese American older adults' health-related behaviors. To my knowledge, the only existing study with family cohesion as a variable for Chinese American older adults was used to examine the influence of cohesion level on perceived threat of Alzheimer's Disease (Sun et al., 2015). Sun et al. showed that family cohesion served as a nonsignificant predictor of perceived threat of Alzheimer's Disease, but their findings indicated that family cohesion ($r = -.14$, $p < .01$) was negatively associated with perceived threat of Alzheimer's Disease among 385 Chinese Americans aged 55 and older. Given that the importance of family cohesion on Chinese communities, this study will consider the influence of family cohesion on the target population's ACP behaviors. The research questions would be asked after theoretical frameworks are discussed.

Theory of Planned Behavior

The Theory of Planed Behavior (TPB) follows a reasoned action approach to focus on individual determinants that influence behavioral performance. Fishbein and Ajzen (2010) did not assume that people are rational. Instead, the TPB includes both deliberate and spontaneous decision-making process. They assumed that people's attitude, subjective norms, and perceptions of control follow in a reasonable and consistent ways from their beliefs.

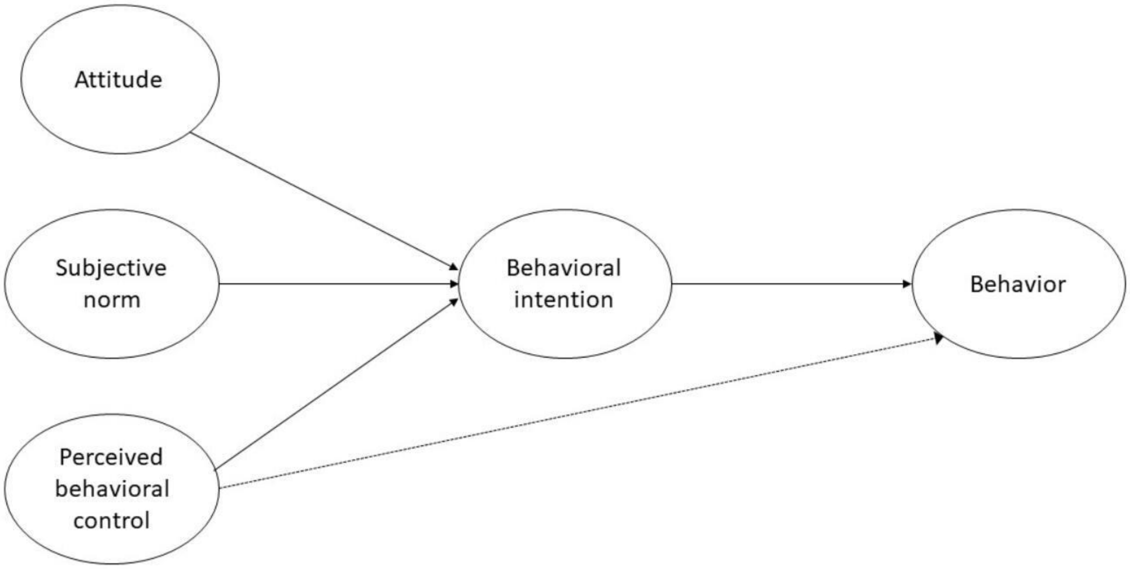

Figure 1. The Theory of Planned Behavior.

The TPB emphasize that individual's behavioral intention serves as the most immediate predictor for behavior. The previous meta-analyses showed the positive correlation between behavioral intention and actual behavior (Alberracian, Johnson, Fishbein, & Muellerleile, 2001). Behavioral intention is conceptualized as "indication of a person’s readiness to perform the behavior” (Fishbein & Ajzen, 2010, p. 39). Researchers measure behavioral intention by asking participants to estimate how likely they will perform a behavior. To test the relationship between behavioral intention and behavior, whether participants perform a specific behavior should be measured sometime after behavioral intention is measured. However, a variety of the TPB studies did not measure behavior prospectively. Instead, these studies excluded behavior from this model or measured behavior retrospectively because past behavior is highly correlated to future behavior (Fishbein & Ajzen, 2010).

The TPB was based upon the development of Theory of Reasoned Action (TRA). The TRA postulates that attitudes and subjective norms jointly predict an individual’s behavioral intention that may lead to behavioral performance (Fishbein & Ajzen, 1975; Fishbein & Ajzen, 2010). Attitude is defined as “a latent disposition or tendency to respond with some degree of favorableness or unfavorableness to a psychological object” (Fishbein & Ajzen, 2010, p. 76). It is measured through the overall evaluation that reflect the instrumental (i.e., the usefulness of the recommended behavior) and experiential (i.e., how enjoyable the behavior is) aspects toward a specific behavior (Yzer, 2013). Behavioral beliefs (i.e., perceived consequences of performing the behavior) weighted by outcome evaluations (i.e., evaluations of those consequences) are determinants of individuals’ attitude. When individuals consider the importance of performing a behavior on positive outcomes, it is likely for them to have a positive attitude toward specific behaviors. In this regard, attitudes can be measured indirectly through behavioral beliefs and outcome evaluations.

Subjective norms are another predictor of people’s behavioral intention in the TRA. They are conceptualized as a person’s perception that most people who are important to him or her think he or she should or should not perform a behavior (Fishbein & Ajzen, 2010). Subjective norms refer to “a specific behavioral prescription or proscription attributed to a generalized social agent” (Fishbein & Ajzen, 2010, p. 131). They are used to deal with the influence of social environment on individuals’ behavior (Fishbein & Ajzen, 1975). Two types of norms, injunctive (i.e., how likely important others think I should perform a recommended behavior) and descriptive norms (i.e., how likely significant others perform this recommended behavior themselves) are included in the measurement of normative influence. The original use of subjective norms emphasizes the injunctive nature. However, as well as the injunctive normative influence, we may also experience normative pressure when we know important others perform a behavior or not. Subjective norms are determined by normative beliefs weighted by motivation to comply. Normative beliefs illustrate the perceptions certain important others have about a person’s behavioral performance. Motivation to comply refers to the extent to which people want to behave as important others prescribe. Knowing about people’s normative beliefs may not be sufficient to understand the perceived norms, because people may ignore what important others prescribe. Fishbein and Ajzen (2010) believed that when people care about important others’ approval or disapproval of their behavioral performance, they would be likely to intend to perform a behavior. Therefore, Fishbein and Ajzen (2010) argued that it was necessary to measure normative beliefs weighted by the motivation to comply. However, the previous literature suggested that multiplying normative beliefs by motivation to comply added little or nothing to the prediction of perceived norms (Fishbein & Ajzen, 2010).

The TRA helps explain the motivational factors that predict intentions and behaviors under volitional control (i.e., the degree to which a person can exercise control over the behavior; Ajzen, 1991). However, sometimes individuals' intention to perform a behavior are thwarted by a lack of perceived capability of performing the behavior (Stiff & Mongeau, 2016). To increase the predictive power of behavioral intentions and behavior, Ajzen (1985) developed the TRA into the TPB through the inclusion of perceived behavioral control to accommodate the nonvolitional nature of behaviors.

The concept of perceived behavioral control is based on Bandura's concept of self-efficacy. Fishbein and Ajzen (2010) said that perceived behavioral control and self-efficacy are conceptualized similarly. Perceived behavioral control is defined as "people's perceptions of the degree to which they are capable of, or have control over, performing a given behavior" (Fishbein & Ajzen, 2010, p. 64), while self-efficacy is conceptualized as "people's beliefs about their capabilities to exercise control over their own level of functioning and over events that affect their lives" (Bandura, 1991, p. 257). Both concepts are concerned with perceived ability to perform a behavior.

TPB is based upon the assumption that people's confidence level in their capability of performing a behavior has a positive influence on individuals' intention to perform a behavior. In addition to behavioral intention, perceived behavioral control is used to predict behavior directly in the TPB (Ajzen, 1991). Holding intention equal, the more perceived behavioral control people have, the more likely it is that people will perform a behavior. According to Fishbein and Ajzen (2010), perceived behavioral control consists of capacity and autonomy. Capacity represents people’s perceptions of their ability to perform a behavior and autonomy illustrates people’s perceptions of their control over performing a behavior. Perceived behavioral control is determined by control beliefs (i.e., people’s perceptions of having resources available to perform a behavior) weighted by power beliefs (i.e., the extents to which having resources available to perform a behavior is sufficient to overcome barriers to perform the behavior). It is assumed that when people are confident that they have resources to overcome challenges and perform a behavior, they have perceived behavior control towards behavioral performance. In TPB, attitude, as well as subjective norms, and perceived behavioral control work as a set of predictors for behavioral intention that may cause actual behavior. Adding perceived behavioral control helps explain individuals’ behavioral intention and behavior significantly better than the TRA (Cooke & French, 2008).

Perceived behavioral control and self-efficacy have been used interchangeably (Armitage & Conner, 2001). Despite the conceptual similarities between perceived behavioral control and self-efficacy, Ajzen (2002) explained perceived behavioral control as a combination of perceived self-efficacy (i.e., ease or difficulty of performing a behavior) and control (i.e., beliefs about the extent to which performing the behavior is up to the actor) and mentioned that several studies provided consistent support for the distinction between perceived self-efficacy and control. He also found that whereas the addition of perceived self-efficacy improved the prediction of intentions, perceived control had no significant effects on intentions. Perceived control may predict intentions only when combined with self-efficacy items. In other words, perceived behavioral control and self-efficacy can have different predictive power of intentions and behaviors.

Distinguishing perceived behavioral control and self-efficacy, Downs and Hausenblas (2005) conducted a meta-analytic review of 111 TRA/TPB studies and found that the association for perceived behavioral control–behavior (effect size = 0.67, standard deviation = 0.07, $n = 92$) was not significantly different than self-efficacy–behavior (effect size = 0.49, standard deviation = 0.04, $n = 33$) [QB (2) = 10,206.51, $p < 0.01$]. The association for self-efficacy–intention (effect size = 1.17, standard deviation = 0.05, $n = 25$) was significantly greater than perceived behavioral control–intention (effect size = 1.04, standard deviation = 0.05, $n = 103$) and perceived-barriers intention (effect size = -0.36, standard deviation = 0.06, $n = 17$) [*QB* (2) = 43,410.11, $p < 0.01$]. That is, self-efficacy serves as a stronger predictor for intentions.

The current study would use self-efficacy in the TPB instead of perceived behavioral control. Firstly, it is quite challenging to translate perceived control measures from English to Mandarin. In Mandarin self-efficacy focuses on people's abilities, while perceived control items seemed to be abstract, Westernized, and hard to understand. Secondly, Fishbein and Ajzen (2010) conceptualized perceived behavioral control as consisting of capacity and autonomy. Given the interdependent nature of the Chinese culture, older adults' health promotive behaviors are frequently performed beyond individual autonomy. It would be helpful to focus on capacity rather than autonomy. In this dissertation, attitudes, subjective norms, and self-efficacy[1] would be used to predict participants' intentions to plan for end-of-life care. The hypotheses would be addressed after the review of TPB literature.

Theory of Planned Behavior in Health Topics

The TPB have been widely used in the correlational studies to understand and predict human behavior across various health-related topics such as smoking, alcohol consumption, healthy eating, physical activity, condom use, and sun screening (Alberracian et al., 2001; Cooke & French, 2008; Cooke, Dahdah, Norman, & French, 2014; McEachan, Conner, Taylor, & Lawton, 2011; Riebl et al., 2015; Topa & Moriano, 2010). The TPB is considered a useful theoretical framework to help people understand the importance of promoting health and well-being.

Armitage and Conner (2001) reviewed 161 articles that included 185 independent empirical tests of the TPB. They found that the average multiple correlation of intention and perceived behavioral control with behavior was .52, accounting for 27% of the variance. The average multiple correlation of attitude, subjective norms, and perceived behavioral control with intention was .63, which accounts for 39% of the variance. The subjective norms-intention correlation was significantly weaker than attitude-intention and perceived behavioral control-intention correlations. Perceived behavioral control added around 6% to the prediction of intention above attitude and subjective norms and this implied the unique contribution of perceived behavioral control to the TPB.

McEachan et al. (2011) reviewed 206 articles that included 237 prospective tests of health-related behaviors. They found that intention had the strongest relationship with prospective behaviors (mean $\rho = .43$), and this represented a medium-large effect size. Direct measures of attitude and perceived behavioral control showed medium-sized relationships with behavior (both mean $\rho = .31$) as well. In terms of predicting intention, direct attitude showed the strongest correlation with mean ρ of .57, followed by perceived behavioral control (direct mean $\rho = .54$) and subjective norms (direct mean $\rho = .40$). It is also found that intention and perceived behavioral control accounted for 19.3% of the variance in behavior and intention was the main predictor of behavior contributing three times more to the final equation (B =.37) than perceived behavioral control (B = .11). With regard to the prediction of intention, attitude (B = .35) served as the strongest predictor, followed by perceived behavioral control (B =.34) and subjective norms (B = .15). These three predictors accounted for 44.3% of the variance in intention. The findings were consistent with the previous literature showing that attitude served as a strong predictor. The inclusion of perceived behavioral control increased a significant amount of variation in intentions and behaviors in the TPB. Intention worked as the primary predictor of behavior.

Theory of Planned Behavior in Advance Care Planning

Although the TPB has been widely used across different health contexts, only a few ACP applied the TPB qualitatively (Kataoka-Yahiro, Yancura, Page, & Inouye, 2011; Lee, Byon, Hinderer, & Alexander, 2017) and quantitatively (Hong, Casado, & Lee, 2018; Nahapetyan, Orpinas, Glass, & Song, 2017). Qualitative studies focused on the examination of behavioral, normative and control beliefs, while quantitative studies used cross-sectional survey to study the relationships among TPB measures. In general, the TPB was found to provide strong support to guide future educational interventions in ACP-related topics.

Kataoka-Yancura et al. (2011) conducted four focus group sessions (field notes of focus groups included) among 14 Asian Pacific Islander family caregivers of patients receiving hemodialysis for Stage 4 to 5 chronic kidney disease. Attitude, subjective norms, and perceived behavioral control were the three major measures with linkages to categories and subcategories. In their descriptive analysis, attitude included three major categories: benefits of completing ACP and AD (e.g., minimizing burden and family disputes, and foreseeing problems ahead of time), barriers (e.g., unwillingness to think of death, denial of negative consequences, and lack of knowledge), and triggers (e.g., diagnosis with a terminal illness). Subjective norms included information related to participants' perception of the social prevalence and desirability of AD completion and had two major categories: people outside the family (e.g., health professionals) and social opinion. The participants believed that family was primary in decision making followed by the opinions of others based on different viewpoints of health care professionals. Social opinion included social norms expressed by the participants such as "Those who have ACP are cared for well" and "Most people have AD." Perceived behavioral control depends on family dynamics and was linked to family member's role and family member's communication style (e.g., lack of consensus building was associated with inability to complete an AD).

Similarly, Lee et al. (2017) applied a qualitative descriptive design to examine behavioral, normative, and control beliefs in the ACP discussion among 60 community-dwelling Chinese Americans. The participants were divided into two groups by age. The authors grouped 30 participants aged 65 years and older in the older group and another 30 participants in the younger group. Through focus groups, observation of group interaction, and the non-verbal communication, Lee et al. focused on the similarities and differences of beliefs and cultural implications in ACP among different generations.

This study found that most of the participants in both groups had positive attitudes towards ACP and believed that ACP produced good outcomes for patients and their families and lessened the burden of others in making end-of-life care decisions. In terms of normative beliefs, participants in both groups believed that the discussing death and dying and planning for end-of-life are taboos in Chinese society. The younger group perceived that the discussion of ACP would be unpleasant and difficult and would upset the senior members in their families, while the older group participants perceived that the discussion of ACP would be unwelcome and upsetting to their children. Interestingly, participants in the younger group found it easier to have ACP conversations among their generation or with their children. When it comes to control beliefs, both groups expressed that the biggest barrier to ACP discussions is lack of an appropriate opportunity. The older group participants expressed lack of knowledge about ACP. Some of them had never heard of ACP and felt confused this with making a will, euthanasia, or making a funeral arrangement. After understanding the definition of ACP participants in this group believed that it was difficult to discuss ACP because they lacked personal support and necessary materials such as specific ACP information, Chinese language support, appropriate translated forms, and counseling services. For the younger group, it is quite challenging to be the surrogate because they did not know their parents' wishes.

To complement qualitative TPB-based studies, Hong et al. (2018) applied the TPB and prior research to examine the relationships between acculturation, attitudes, subjective norms, perceived control, and intention to discuss ACP for a family member with Alzheimer's disease. The authors conducted path analyses by using a cross-sectional convenience sample of 261 Korean Americans aged 40 and older. Age, gender, education, and knowledge about Alzheimer’s disease and ACP were included as covariates. It is found that attitude ($\beta = .271$, $p < .001$) and subjective norms ($\beta = .412$, $p < .001$) were associated with intention for ACP discussion for a family member with Alzheimer’s disease. However, perceived control was not associated with intention for ACP discussion either directly or indirectly. Acculturation was not associated with any of the three determinants of the TPB or intention for ACP discussion for a family member with Alzheimer’s disease. Among covariates, only knowledge about Alzheimer’s disease ($\beta = .137$, $p = .010$) was associated with intention for ACP discussion.

Different from Hong et al. (2018) focusing on discussing ACP for a family member with Alzheimer’s disease, Nahapetyan et al. (2017) surveyed 146 Caucasian Americans aged 60 and older and found that intentions to use hospice was significantly correlated with hospice knowledge, attitude, subjective norms, perceived control to use hospice, and preferences for comfort care. The multiple regression analyses showed that higher hospice knowledge ($\beta = .23$, $p < .001$), higher subjective norms that support hospice utilization ($\beta = .21$, $p = .004$), higher perceived control to use hospice ($\beta = .41$, $p < .001$), and preferences for end-of-life care ($\beta = .15$, $p = .019$) were significantly associated with intentions to use hospice. Together, these variables explained 54% of the variance in intentions to use hospice.

These studies have demonstrated the effectiveness of the TPB regarding ACP behaviors, but none of them addressed the needs for Chinese American older adults. To provide recommendations to design educational interventions to increase Chinese American older adults’ ACP awareness and engagement, it is crucial to examine how the

TPB influences Chinese Americans' intentions to discuss end-of-life care plans with family members and complete an AD respectively:

RQ1a-b: What are participants' attitudes, subjective norms, self-efficacy, and behavioral intentions toward (a) discussing end-of-life care plans with family members and (b) completing an advance directive?

RQ2: Are participants' attitudes, subjective norms, self-efficacy, and behavioral intentions toward (a) discussing end-of-life care plans with family members and (b) completing an advance directive different from each other?

H1a-b: Participants' attitudes, subjective norms, and self-efficacy will positively predict behavioral intentions toward (a) discussing end-of-life care plans with family members and (b) completing an advance directive.

RQ3a-b: Does acculturation moderate the relationships between TPB measures (i.e., attitude, subjective norm, and self-efficacy) and behavioral intentions toward (a) discussing end-of-life care plans with family members and (b) completing an advance directive.

RQ4a-b: Does family cohesion moderate the relationships between TPB measures and behavioral intentions toward (a) discussing end-of-life care plans with family members and (b) completing an advance directive.

Health Belief Model

The Health Belief Model (HBM) has been extensively used in health behavior research to explain preventive health behavior and provide recommendations for health behavioral intervention (Champion & Skinner, 2008). The HBM provides a connection between beliefs and behaviors and explains what beliefs should be considered for the targeted population in health interventions. The original HBM model emphasizes that some factors can explain why people behave to prevent and control health problems, including perceived susceptibility, perceived severity, perceived benefits, perceived barriers, self-efficacy, and cues to action.

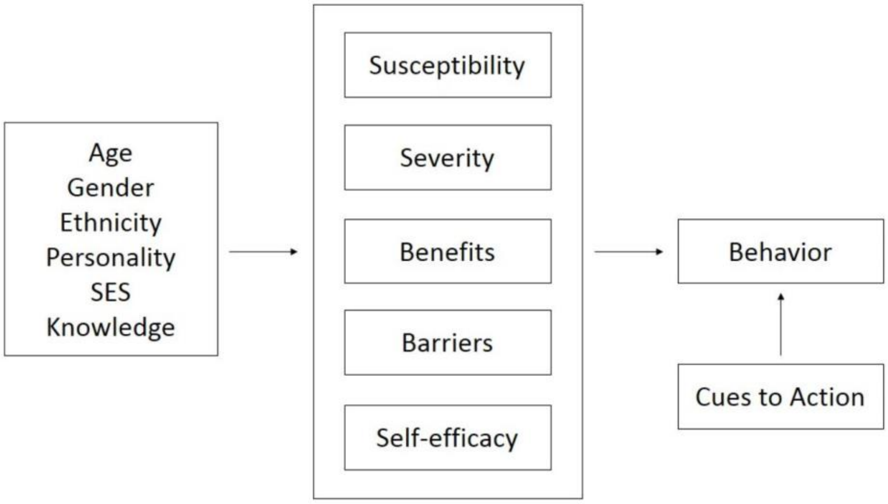

Figure 2. The Health Behavior Model.

The original HBM includes the four components: perceived susceptibility, perceived severity, perceived benefits, and perceived barriers (Bartholomew, Parcel, Kok, & Gottlieb, 2006). It emphasizes that people are likely to take action to reduce the threats they have, if the following conditions are met: 1) they believe that they are susceptible to an illness condition (perceived susceptibility), 2) they believe that this condition may have serious negative impacts on their life (perceived severity), 3) they believe that taking certain actions may help them reduce the susceptibility or severity of the condition or produce other positive outcomes (perceived benefits), 4) they believe that the anticipated benefits of taking action outweigh the potential costs to take action (perceived barriers). Here perceived susceptibility refers to people’s perceived likelihood of getting an illness condition. Perceived severity refers to people’s perceived seriousness of the illness condition as well as the sequential negative consequences. Perceived benefits refer to people’s perceived benefits of taking actions for the threat reduction. Perceived barriers refer to people’s perceived negative aspects of taking actions.

The original HBM highlights that whether people decide to take actions is influenced by their perceived susceptibility to and perceived severity of an illness condition as well as perceived benefits and barriers. This decision-making process is driven by cues to action (Rosenstock, 1974). Here cues to action refer to the strategies or reminders to trigger the readiness to take actions internally (e.g., body pain and symptoms of a disease) and externally (e.g. media exposure and a friend’s experience with the illness condition). Although it is necessary to consider cues to action in the HBM, this variable has been rarely studied due to the fleeting nature and cues to action vary across different contexts (Champion & Skinner, 2008).

In the earlier stage of the HBM development, researchers focused on circumscribed preventive actions, such as accepting immunizations (Rosenstock, Strecher, & Becker, 1988). It was common that participants had sufficient capabilities to perform the recommended behavior. However, when researchers considered more complicated problems associated with certain behaviors like healthy eating and exercise, an appropriate amount of efficacious influence might be required for people to take actions. Later, Rosenstock et al. (1988) added self-efficacy in the original HBM to account for initiation and maintenance of behavioral change. As addressed earlier in this chapter, self-efficacy is defined as “people’s beliefs about their capabilities to exercise control over their own level of functioning and over events that affect their lives”

(Bandura, 1991, p. 257). That is, people must feel self-efficacious to take actions to achieve behavior change, when they perceive susceptibility and severity and believe that performing a recommended behavior can lead to a positive outcome.

Health Belief Model in Health Topics

Researchers have conducted several systematic reviews to examine the effectiveness of the HBM to predict behaviors (Carpenter, 2010; Harrison, Mullen, & Green, 1992; Janz & Becker, 1984; Zimmerman & Vernberg, 1994). The previous studies have been found to provide substantial empirical evidence to support the HBM to explain and predict health-related behaviors.

Janz and Becker (1984) found studies with prospective design yielded significance ratios as good as or better than those with retrospective design. Janz and Becker categorized the included studies into three topics, preventive health behaviors (action taken to prevent illness), sick-role behaviors (action taken after the medical diagnosis to prevent further illness progress), and clinic visits (clinic utilization for a variety of reasons). Overall, perceived susceptibility, benefits, and barriers were good predictors of behavior, while severity was weak. The results suggested that perceived barriers served as the most powerful variable in the HBM across different behaviors and designs. Perceived susceptibility was a stronger predictor to understand preventive health behaviors rather than sick-role behaviors, while perceived benefits remained a stronger predictor to sick-role behaviors rather than preventive health behaviors. This review focused mainly on statistical significance test and failed to provide specific estimates of the strength of the relations between HBM dimensions.

To estimate the strength of the relationship between HBM dimensions and health-related behaviors, Harrison et al. (1992) reviewed 16 studies that included reliability measures, all the four major dimensions (i.e., susceptibility, severity, benefits, and costs) in the original model, and a behavioral dependent variable to evaluate the predictive validity of the HBM. They found that 22 of the 24 mean effect sizes were positively significant and the effect sizes for the four dimensions varied across different studies. The results yielded low to moderate effects of participants' susceptibility (r = .15), severity (r = .08), benefits (r = .13), and costs (r = -.21). The results indicated that retrospective studies had significantly larger effect sizes for perceived benefits and costs and smaller effect sizes for severity than prospective studies.

Different from the previous reviews, Carpenter (2010) exclusively incorporated studies that measured HBM variables at time one and measured health-related behaviors associated with those variables at time two to decide whether HBM variables could predict behaviors longitudinally. The results yielded low to moderate relationships between participants' perceived severity, benefits and barriers, and likelihood of performing the target behavior. Benefits and barriers worked as stronger predictors of behavior, while severity provided a low estimate for behavior and susceptibility served as the weakest predictor in this meta-analysis. However, the author did not explain why susceptibility–behavior relationship was so small. In terms of time between measures as a moderator, the longer periods of time were associated with the weaker effects of HBM variables except barriers. In other words, HBM variables were more likely to be positively related to health-related behaviors when these behaviors were measured shortly after HBM variables were measured. Barriers were not likely to be influenced by the time length as many of them may change little over time. When it comes to the type of outcome (treatment vs. prevention), benefits and barriers were better predictors of prevention behaviors rather than treatment behaviors.

Health Belief Model in Advance Care Planning

The HBM may provide a reasonable explanation regarding what cognitive beliefs influence the ACP-related behaviors (Hamel, Guse, Hawranik, & Bond, 2002; Kent, 1996; VandeCreek & Frankowski, 1996). Ko (2008) examined the ethnic differences in ACP in terms of the completion of AD and end-of-life communication and compared 112 Korean American and 105 non-Hispanic White adults aged 65 and older. Hierarchical multiple regression and logistic regression analysis were conducted to test the relationship among the primary HBM variables, knowledge, completion of an AD, and end-of-life communication.

The results indicated that Korean Americans were significantly less likely than non-Hispanic Whites to complete an AD and have end-of-life care discussions. Non-Hispanic Whites were more likely to perceive susceptibility, severity, and benefits about ACP than Korean Americans, while Korean Americans were more likely to perceive barriers about ACP than non-Hispanic Whites. After controlling for the effects of demographic variables, knowledge had a direct positive effect and perceived barriers had a direct negative effect on the completion of an AD, while perceived susceptibility, severity, and benefits did not predict the completion of an AD. Also, knowledge and perceived severity had a direct positive effect, and perceived barriers had a direct negative on end-of-life communication after controlling for the effects of social-demographic variables, while perceived susceptibility and benefits did not predict end-of-life communication. Ethnicity had a significant indirect effect on the completion of an AD and end-of-life communication through ACP knowledge, but not through any of HBM variables. This study indicated the important role of ethnicity on ACP and its effect on knowledge as a mediator. However, the results of this study did not fully support the HBM and this suggested a combination of HBM and other models to explain ACP-related behaviors.

Szalai (2015) developed a difficult conversation model that included individual and relational predictors of communicative behaviors to identify college students' engagement to have ACP conversations about their own preferences through formative research and additional two studies. Although college students and the target population of the current study have different demographic characteristics, Szalai's study would inform the current study in terms of theoretical framework and research topic.

In formative stage, Szalai conducted six focus groups among college students and asked about their ACP knowledge, personal experience, and willingness to participate to ACP as well as perceived self-efficacy, perceived severity, perceived susceptibility, perceived barriers, perceived benefits, anticipated response (e.g., individuals are more likely to discuss ACP with a family member when they anticipate this family member's positive reaction), and relational closeness regarding ACP conversations. Here perceived severity was evaluated based upon an imaginary condition regarding how serious a concern it was to be in a situation where the participant could not communicate his or her treatment wishes, but he or she had not done ACP ahead of time. The benefits of having ACP conversations included allowing individuals' wishes to be respected, decreasing familial burden, and preventing conflict. The barriers to having ACP conversations included families’ negative reactions, unawareness of ACP conversations, lacking knowledge of having ACP conversations, and unimportance of ACP conversations for healthy young people. The results showed that the majority of participants were not aware of ACP, but they were willing to have ACP conversations. People with greater perceived susceptibility, greater perceived severity, more frequent cues to action, greater self-efficacy, fewer perceived barriers, more positive anticipated responses, and greater relational closeness will be more likely to have ACP conversations.

Based on the results of focus group in informative research, Szalai tested HBM variables and relational closeness to predict college students’ intentions to have ACP conversations with a family member through hierarchical regression analysis in Study One. The results indicated that participants with greater perceived susceptibility, greater perceived self-efficacy, and greater perceived benefits were more likely to have ACP conversations. Study Two integrated the HBM, the TPB, and the disclosure decision-making model (DD-MM) constructs and conducted path analysis to evaluate the effectiveness of the difficult conversation model. Based on the results, this study speculated a model suggesting that a combination of the HBM, TPB, and DD-MM variables can predict participants’ intent to have ACP conversations. The findings provided empirical support for the contribution of relational variables to ACP conversations. However, given the potential unimportance of ACP conversations for healthy young people, the findings from this study may not be generalized to nonstudent populations. Research focusing nonstudent populations is needed to examine the effectiveness of the HBM and TPB.

Guided by the previous studies, the following questions and hypotheses are proposed:

RQ5a-b: What are participants' perceived susceptibility, perceived severity, perceived barriers, and perceived benefits toward (a) discussing end-of-life care plans with family members and (b) completing an advance directive?

RQ6: Are participants' perceived susceptibility, perceived severity, perceived barriers, and perceived benefits toward (a) discussing end-of-life care plans with family members and (b) completing an advance directive different from each other?

H2a-b: Participants' perceived susceptibility, perceived severity, perceived barriers, perceived benefits, and self-efficacy will predict behavioral intentions toward (a) discussing end-of-life care plans with family members and (b) completing an advance directive.

RQ7a-b: Does acculturation moderate the relationships between HBM measures (i.e., perceived susceptibility, perceived severity, perceived barriers, perceived benefits, and self-efficacy) and behavioral intentions toward (a) discussing end-of-life care plans with family members and (b) completing an advance directive?

RQ8a-b: Does family cohesion moderates the relationships between HBM measures and behavioral intentions toward (a) discussing end-of-life care plans with family members and (b) completing an advance directive?

Comparing Theory of Planned Behavior and Health Belief Model

Both the TPB and HBM have been extensively used to explain and predict health behavior and provide recommendations for health behavioral interventions (Champion & Skinner, 2008). Several previous studies tested both theories simultaneously and compared them against one another and the TPB has been found to demonstrate a stronger fit to the data or account for more variance than the HBM (Gerend & Shepherd, 2012; McClenahan, Shevlin, Adamson, Bennett, & O’Neill, 2007; Montanaro & Bryan, 2014; Şimşekoğlu, & Lajunen, 2008; Thornton & Calam, 2010; Yang, 2015).

However, most of these studies tested both theories among student samples. As the previous literature addressed, the differences between student and nonstudent samples vary across different contexts (Hanel & Vione, 2016; Peterson & Merunka, 2014). For example, when Notani (1998) reviewed the TPB-based studies systematically and found that nonstudent samples should provide better predictions of behavior from perceived behavioral control compared to student samples, while the relationship between perceived behavioral control and intentions is significant only for the student samples. Therefore, it can be problematic to generalize findings from student to nonstudent samples. It is worthwhile to compare the TPB and HBM among a nonstudent sample to guide future interventions tailored for the target population. Furthermore, to my knowledge, both theories have not been tested simultaneously regarding ACP. My dissertation would address this research gap by comparing the utility of the two theories in predicting behavioral intentions critical to end-of-life care among Chinese American older adults:

H3a-b: The Theory of Planned Behavior has more predictive power for participants’ intentions toward (a) discussing end-of-life care plans with family members and (b) completing an advance directive than the Health Belief Model.

CHAPTER 3: METHODOLOGY

Overview

The purpose of this research was to understand the factors that influence Chinese American older adults' intentions to plan for end-of-life care through the Theory of Planned Behavior (TPB) and the Health Belief Model (HBM). Two recommended behaviors related to planning for end-of-life care were studied: discussing end-of-life care plans with family members and completing an advance directive (AD). The target population was Chinese Americans aged 55 and older living in the metropolitan Phoenix, Arizona. Participant recruitment occurred through Chinese senior community settings. Participants were randomly assigned to answer a set of questions deriving from the TPB and HBM regarding either one of the two recommended behaviors. Dependent variables were participants' intentions to discuss end-of-life care plans with family members and complete an AD respectively.

Research Design

Quantitative survey methodology building upon qualitative interviews as formative research was applied to examine the factors that influence Chinese American elders' intentions to plan for end-of-life care. Researchers frequently use qualitative interviews to "verify, validate, or comment on information obtained from other sources [and] achieve efficiency in data collection" (Lindlof & Taylor, 2011, p. 175). Therefore, interviews were conducted to inform the development of data collection instrument in the cross-sectional survey. The objectives of qualitative interviews were to: 1) explore the target population's basic understandings of the advantages and disadvantages of planning for end-of-life care, 2) understand participants' preference for the two recommended behaviors associated with planning for end-of-life care, and 3) identify when participants would like to plan for end-of-life care if they have not done yet. Participants’ responses were used to inform the design of the cross-sectional survey.

After formative research, quantitative survey methodology was used because it offers researchers a tool to provide statistical estimates of the characteristics of the targeted population and then generalize the findings to a larger population to help alleviate social problems (Andres, 2012; Fowler, 2014). More specifically, the better we understand the influence of predictors on Chinese American older adults’ intentions to plan for end-of-life care, the more likely it is that we will be able to provide recommendations to improve ACP awareness and engagement. The objectives of the cross-sectional survey were to: 1) compare two theories of health behavior, the TPB and HBM, in their prediction of Chinese American older adults’ intentions to discuss end-of-life care plans with family members and complete an AD respectively; 2) identify the roles of acculturation and family cohesion on the target population’s intentions to discuss end-of-life care plans with family members and complete an AD respectively.

Participants

To be considered eligible in this research, participants should be aged 55 and older, speak English or Chinese, have U.S. citizenship or permanent residency, and living in the metropolitan Phoenix areas. Although many developed countries accepted 65 years of age or older as the older population (World Health Organization, 2000), people whose age is 55 and older are included in this study to target a broader population.

Procedures

After approval from the university institutional review board, participants were recruited from a beginner-level English class in one Chinese American subsidized senior housing center in Phoenix. I volunteered to teach this eight-week, beginner-level English class. At the end of the last class, students were informed of the participation opportunity for this formative research. A consent letter was given to people who would like to participate in this study. Participants were asked to have a semi-structured interview. They can choose either English or Chinese speaking to respond to the interview questions. All the interviews were audio recorded and transcribed. In return for their participation, each participant was given a $10 gift card.

Participants' responses were coded and used to inform the development of quantitative questions regarding the TPB and HBM. Firstly, participants were given the TPB and HBM scales (translated from English to Chinese) to provide feedback whether they were able to understand each scale item to help make the cross-sectional survey understandable. Secondly, their responses guided the identification of the recommended behaviors to inform the survey. Some participants preferred to complete an AD over ACP discussions, because it is more reliable to document their medical preferences in a written legal document, while some others believed that they do not need an AD and having ACP discussions are appropriate enough. Because it was difficult to select which of the two recommended behaviors associated with planning for end-of-life care would be more helpful to promote ACP on end-of-life care among Chinese American older adults, this dissertation focused on these two recommended behaviors instead of one of them. Thirdly, many participants gave ambiguous answers (e.g., "when I am sick enough" and "when I need") regarding when they would like to plan for end-of-life care, while only one participant said he would like to discuss his end-of-life care plans within three years. Given that the target population may have low-level awareness of planning for future care plans, having the time at which a behavior is performed may not help explain behaviors, although Fishbein and Ajzen (2010) suggested that a specific behavior should include four elements, "the action performed, the target at which the action is directed, the context in which it is performed, and the time at which it is performed" (p. 29).

After formative research, a cross-sectional survey was conducted among the target population in community-based settings, including but not limited to senior centers, subsidized senior housing apartments, religious sites, senior social clubs, and community events. The recruitment strategies included delivering printed materials such as flyers and posters in Mandarin, Cantonese, and English in a wide variety of community settings, contacting potential participants face-to-face or on the telephone, providing referrals (e.g., from community leaders, health professionals, past participants, and friends), and developing partnerships with community organizations (e.g., offering members workshops and classes and volunteering in community events), and offering Chinese grocery market gift cards as research incentive. Developing partnerships with community organizations and providing referrals were found to be the most effective strategies for recruiting participants in this study.

Several of our participants' recruitment requests were declined when potential participants: 1) were emotionally resistant to questions related to death and dying process, 2) were still concerned that their private information would be disclosed to others after that knowing their responses would be anonymous and confidential, 3) believed that the survey was too long to complete, 4) were under medical treatments and did not feel comfortable to participate, 5) did not have time to participate due to busy schedules, or 6) had low literacy levels in Chinese or English.

A Chinese (either Mandarin or Cantonese) or English-written questionnaire packet was given to people who agreed to participate. Although the questionnaire was designed to be self-administered, three student workers were available to help potential respondents complete the questionnaire if needed. I provided approximately three-hour training to the student workers. This training included research ethics, study aims and contributions, questionnaire information, and possible challenges during data collection. Most questionnaires were self-administered. Student workers read survey questions to a few participants with vision problems.

This study focused on the two behaviors related to planning for end-of-life care, but participants were not asked to answer all the questions related to both behaviors. Due to participants' age, they might experience fatigue easily when they answered too many questions. Therefore, I asked each participant to answer questions regarding one of the two behaviors to avoid compromising reliability of instrumentation. Two versions of the survey questions related to the TPB and HBM were created. One version included a set of questions regarding participants' understandings of discussing end-of-life care plans with family members, while the other version included questions regarding completing an AD. The TPB and HBM measures are listed in Appendix II and III. Each participant was randomly given one of the two versions to complete the survey anonymously. The survey took them approximately 30 minutes to one hour. In return for their participation, each participant was given a $10 gift card.

To develop a Chinese-written questionnaire packet, all of the materials including survey questions, consent letter, and recruitment script were created in English, translated into Chinese, then back-translated into English by two Chinese scholars with doctoral degree who can speak both English and Chinese fluently and were not involved in this dissertation. Further, both Chinese and English-written surveys were pilot tested among 10 Chinese individuals who can speak English fluently to receive feedback about the survey questions and translations. The pilot study was used to modify the survey questions before it was administered on a larger scale and excluded for data analysis.

Instrumentation

The independent variables include attitude, subjective norms, perceived behavioral control, perceived susceptibility, perceived severity, perceived benefits, perceived barriers, and self-efficacy. Behavioral intentions toward the two behaviors were the dependent variables. Acculturation and family cohesion were measured to evaluate whether they would moderate the relationship between TPB and HBM measures and dependent variables.

Attitude

Attitude was measured through four 5-point Likert items (1=completely disagree, 2=mostly disagree, 3=neither agree nor disagree, 4=mostly agree, and 5=completely agree). These items were drawn from Fishbein and Ajzen’s (2010) attitude scale (i.e., bad-good, harmful-beneficial, useless-useful, worthless-valuable) and modified to fit the study context. Cronbach’s alpha for attitudes toward discussing end-of-life care plans with family members was .88. Cronbach’s alpha for attitudes toward completing an AD was .90. Attitude scores were calculated based on the mean across all the four items for both behaviors.

Subjective Norms

Subjective norm were measured through three 5-point Likert items (1=completely disagree, 5=completely agree). These items were drawn from Fishbein and Ajzen's (2010) subjective norm scale and modified to fit the study context. Sample items included: "Most people who are important to me think that I should discuss my end-of-life care plans with family members/Most people who are important to me think that I should complete an advance directive." Cronbach's alpha for subjective norms toward discussing end-of-life care plans with family members was .92. Cronbach's alpha for subjective norms toward completing an AD was .95. Subjective norm scores were calculated based on the mean across all the three items for both behaviors.

Self-Efficacy

Self-efficacy was measured through four 5-point Likert items (1=completely disagree, 5=completely agree). These items were drawn from Witte's (2000) self-efficacy scale and modified to fit the study context. Sample items included: "I am confident that I can discuss my end-of-life care plans with family members/I am confident that I can complete an advance directive." Cronbach's alpha for self-efficacy toward discussing end-of-life care plans with family members was .88. Cronbach's alpha for self-efficacy toward completing an AD was .87. Self-efficacy scores were calculated based on the mean across all the four items for both behaviors.

Behavioral Intention

Behavioral intention was measured through three 5-point Likert items (1=completely disagree, 5=completely agree). These items were drawn from Fishbein and Ajzen’s (2010) behavioral intention scale and modified to fit the study context. Sample items included: “I intend to discuss my end-of-life care plans with family members/I intend to complete an advance directive.” Cronbach’s alpha for behavioral intentions toward discussing end-of-life care plans with family members was .92. Cronbach’s alpha for behavioral intentions toward completing an AD was .94. Intention scores were calculated based on the mean across all the three items for both behaviors.

Perceived Susceptibility

Perceived susceptibility toward participants’ individual-level threat, receiving unwanted medical treatments, was measured through four 5-point Likert items (1=completely disagree, 5=completely agree). These items were drawn from Witte’s (2000) susceptibility scale and modified to fit the study context. Sample items included: “If I do not discuss my end-of-life care plans with family members I will be susceptible to unwanted medical treatments/If I do not complete an advance directive I will be susceptible to unwanted medical treatments.” Cronbach’s alpha for perceived susceptibility toward discussing end-of-life care plans with family members was .92. Cronbach’s alpha for perceived susceptibility toward completing an AD was .92. Perceived susceptibility scores were calculated based on the mean across all the four items for both behaviors.

Perceived Severity

Perceived severity toward participants' individual-level threat, receiving unwanted medical treatments, was measured through four 5-point Likert items (1=completely disagree, 5=completely agree). These items were drawn from Witte's (2000) severity scale and modified to fit the study context. Sample items included: "Receiving unwanted medical treatments would be harmful to me." Cronbach's alpha for perceived severity was .84 for those who answered questions regarding discussing end-of-life care plans with family members. Cronbach's alpha for perceived severity was .83 for those who answered questions regarding completing an AD. Perceived severity scores were calculated based on the mean across all the four items for both groups.

Perceived Benefits

Perceived benefits were measured through six 5-point Likert items (1=completely disagree, 5=completely agree). These items were adapted from VandeCreek and Frankowski's (1996) living will benefits scale and participants' responses in formative research. Sample items included: "Discussing end-of-life care plans with family members will help me get the wanted medical treatments in the future/Completing an advance directive will help me get the wanted medical treatments in the future." Cronbach's alpha for perceived benefits toward discussing end-of-life care plans with family members was .92. Cronbach's alpha for perceived benefits toward completing an AD was .91. Perceived benefits scores were calculated based on the mean across all the six items for both behaviors.

Perceived Barriers

Perceived barriers were measured through nine 5-point Likert items (1=completely disagree, 5=completely agree) were used to measure toward the two recommended behaviors. These items were adapted from VandeCreek and Frankowski's (1996) living will barrier scale and participants' responses in formative research. Sample items included: "Discussing end-of-life care plans with family members will cause my death anxiety/Completing an advance directive will cause my death anxiety." Cronbach's alpha for perceived barriers toward discussing end-of-life care plans with family members was .91. Cronbach's alpha for perceived barriers toward completing an AD was .91. Perceived barriers scores were calculated based on the mean across all the nine items for both behaviors.

Acculturation

Acculturation was measured with ten 5-point Likert items (1=completely disagree, 5=completely agree). These items were drawn from Gupta and Yick's (2001) acculturation scale validated with Chinese Americans. This acculturation scale was used, because it covered three different dimensions including language preference, social customs, and social networks. Sample items included: "I write in English more often than in Chinese." A higher score indicated a higher level of acculturation. Cronbach's alpha for acculturation was .85 among participants who answered questions regarding discussing end-of-life care plans with family members. Cronbach's alpha for acculturation was .87 among participants who answered questions regarding completing an AD. Acculturation level scores were calculated based on the mean across all the ten items for both groups.

Family Cohesion

Family cohesion was measured through five 4-point Likert items (1=strongly agree, 2=somewhat agree, 3=somewhat disagree, 4=strongly disagree). These items were drawn from the Alegria et al. (2004) family cohesion scale validated with ethnic minority groups. Same items included: “Family members respect one another.” All these items were reversely coded. A higher score indicated a higher level of family cohesion. Cronbach’s alpha for family cohesion was .88 for participants who answered questions regarding discussing end-of-life care plans with family members. Cronbach’s alpha for acculturation was .83 among participants who answered questions regarding completing an AD. Family cohesion scores were calculated based on the mean across all the five items for both groups.

Demographic Variables

Participants provided demographic information, including age, gender (0=male, 1=female), education level (1=6th grade or lower, 2=9th grade, 3=12th grade, 4=vocational or trade school, 5=college, 6=postgraduate or higher), religion (0=does not have a religious belief, 1= have a religious belief), residence length in the U.S. Given that the previous literature showed the positive influence of older adults’ prior experiences of ACP engagement on their future care plans (Fried et al., 2009), whether the participant had discussed end-of-life care plans with family members (0=I had not had discussed end-of-life care plans with family members, 1=had discussed end-of-life care plans with family members), and whether the participant had completed an AD (0=I had not had completed an AD, 1=I had completed an AD) were considered as control variables.

Data Analysis Plan

To examine whether there were significant differences between participants who answered questions regarding the two recommended behaviors, independent-sample *t*-tests and chi-square tests were conducted to compare demographic variables and the TPB/HBM measures through *SPSS 24*. Hierarchical regression analyses were performed to test whether the TPB and HBM can explain and predict participants' behavioral intentions. Before regression models were analyzed, all the continuous independent variables were mean-centered to avoid multicollinearity (Cohen, Cohen, West, & Aiken, 2003). Meanwhile, the associations between all the predictors and the dependent variables were examined closely with Pearson correlation. To explore the role of acculturation and family cohesion in explaining and predicting behavioral intentions, they were included as additional predictors beyond TPB/HBM measures in hierarchical regression analyses. Their interaction effects with TPB/HBM measures were tested in *SPSS 24* to examine whether acculturation and family cohesion moderated the relationships between TPB/HBM measures and behavioral intentions.

Given that completing an AD is considered as a one-time behavior by the target population, participants who reported the AD completion but still answered questions about their intentions to complete an AD were excluded from the main analysis, because they may not complete another AD unless an update is needed. In the main analysis, there were 12 subjects with missing data either on age or residence length in the U.S. For the variable of age, there was a case with missing value. For the variable of residence length in the U.S., there were 11 cases with missing values.

Pairwise deletion was used to handle missing data. Pairwise deletion occurs when subjects relating to each pair of variables with missing data involved in an analysis are deleted (Bryman, 2004). This approach does not include a case when it has a missing value on a particular variable, but this case is useable when researchers analyze its other variables with non-missing values. Pairwise deletion was used to handle missing data in this dissertation, because it helps mitigate the loss of data by discarding the data for a case with one or more missing values (Enders, 2010).

CHAPTER 4: RESULTS

Preliminary Statistics

Firstly, given the complexity of perceived benefits and barriers across health contexts, the measured items were adapted from VandeCreek and Frankowski’s (1996) living will benefit and barrier scale and participants’ responses in formative research. An exploratory factor analysis was conducted as a preliminary step to investigate the factor structures of perceived benefits and barriers for participants who completed this survey toward the two behaviors respectively.

The Kaiser’s rule of eigenvalues greater than one, the scree plot and parallel analysis were employed as criteria to determine the maximum number of factors to be retained (Pett, Lackey, & Sullivan, 2003). O’Connor’s (2000) SPSS program was used to conduct parallel analysis. Given that perceived benefits and barriers are related to each other, principal axis factoring with direct oblimin rotation was conducted to identify the underlying relationships between the items from the existing scale and emerging items from participants’ answers in the formative research through SPSS 24.

The scree plot and parallel analysis with 95th percentile criterion yielded a three-factor solution, perceived benefits, perceived barriers 1 (i.e., care planning concern) and perceived barriers 2 (i.e., future care unpreparedness). All items loaded strongly on one factor and at least three items loaded substantially on each factor. The factor loadings are presented in Table 1 and 2. For perceived benefits, all the six items loaded on the intended factor. For perceived barriers, Item 3, “It is difficult to discuss my end of life care plans because I do not know what my medical treatment preferences will be in the future,” Item 6, “I am not used to considering my end of life care plans in advance,” and

Item 7, “I am not sick enough to discuss end of life care plans with family members,” loaded on one factor focusing on participants’ future care unpreparedness, while other six items loaded on another factor highlighting participants’ concerns about the potential negative consequences of planning for end-of-life care in advance.

Table 1

Factor Loadings for Perceived Benefits and Barriers Toward Discussing End-of-Life Care Plans with Family Members

	Benefit	Barrier1	Barrier2
1. Discussing my end of life care plans with family members will help my family know about my medical treatment preferences in advance.	**.835**	-.177	.168
2. Discussing my end of life care plans with family members will help my doctor know about my medical treatment references in advance.	**.829**	-.151	.057
3. Discussing my end of life care plans with family members will help me get the wanted medical treatments in the future.	**.868**	-.149	.136
4. Discussing my end of life care plans with family members will help me relieve family burdens.	**.801**	.174	-.122
5. Discussing my end of life care plans with family members will help me reduce family conflicts.	**.743**	.217	-.311
6. Discussing my end of life care plans with family members will increase the quality of my life in my last days.	**.802**	.000	.004
1. It makes me sad to discuss my end of life care plans with family members.	.038	**.781**	.070
2. Discussing my end of life care plans with family members will increase my family conflicts.	-.096	**.745**	-.113
4. I feel uncomfortable to discuss my end of life care plans.	-.026	**.730**	.228
5. Discussing my end of life care plans with family members will cause my death anxiety.	.006	**.769**	.073
8. Discussing my end of life care plans with my family members is bad luck.	-.026	**.660**	.136
9. It will make my family members sad if I discuss my end of life care plans with them.	.025	**.715**	.072
3. It is difficult to discuss my end of life care plans because I do not know what my medical treatment preferences will be in the future.	-.037	.333	**.571**
6. I am not used to considering my end of life care plans in advance.	.035	.295	**.730**
7. I am not sick enough to discuss end of life care plans with family members.	-.027	.082	**.623**

Note. Extraction method = principal axis factoring; Rotation method = direct oblimin.

Table 2

Factor Loadings for Perceived Benefits and Barriers Toward Completing an Advance Directive

	Benefit	Barrier 1	Barrier 2
1. Completing an advance directive will help my family know about my medical treatment preferences in advance.	**.781**	-.281	-.301
2. Completing an advance directive will help my doctor know about my medical treatment references in advance.	**.774**	-.235	-.288
3. Completing an advance directive will help me get the wanted medical treatments in the future.	**.811**	-.171	-.126
4. Completing an advance directive will help me relieve family burdens.	**.886**	.102	.122
5. Completing an advance directive will help me reduce family conflicts.	**.766**	.122	.201
6. Completing an advance directive will increase the quality of my life in my last days.	**.730**	.109	.114
1. It makes me sad to complete an advance directive.	.005	**.768**	-.093
2. Completing an advance directive will increase my family conflicts.	-.146	**.578**	-.079
4. I feel uncomfortable to complete an advance directive.	.020	**.841**	-.100
5. Completing an advance directive will cause my death anxiety.	-.012	**.941**	.062
8. Completing an advance directive is bad luck.	-.083	**.723**	-.029
9. It will make my family members sad if I complete an advance directive.	.099	**.518**	-.049
3. It is difficult to complete an advance directive because I do not know what my medical treatment preferences will be in the future.	-.029	.207	**-.612**
6. I am not used to considering my end of life care plans in advance.	-.084	.467	**-.515**
7. I am not sick enough to complete an advance directive.	-.032	.214	**-.629**

Note. Extraction method = principal axis factoring; Rotation method = direct oblimin.

Demographic Characteristics

A total of 319 participants living in the metropolitan Phoenix area participated in this study. As described in the previous chapter, two versions of questionnaires were randomly delivered to participants. Based on the random assignment, 161 participants answered questions regarding discussing end-of-life care plans with family members, while 158 answered another set of questions regarding completing an advance directive (AD). Independent sample *t*-tests and chi-square tests were conducted to compare participants' age, residence length in the U.S., gender, religion, whether they had discussed end-of-life care plans with family members or not, and whether they had completed an AD. There were no significant differences between the groups except education. The effect of education was controlled for when multiple regression analyses were performed. All the participants' demographic information is presented in Table 3.

To examine intentions to plan for end-of-life care, participants who reported that they had already completed an AD before the survey and answered questions regarding completing an AD in the survey ($n = 21$) were excluded from the main analysis because they may not complete another AD after completing an AD unless an update is needed.

Table 3

Demographic Characteristics of Participants

	Group 1 (*N* = 161)	Group 2-In (*N* = 137)	Group 2-Out (*N* = 21)	Group 1 vs Group 2-In	Group 2-In vs Group 2-Out
	M(*SD*)/ *n*(%)	*M*(*SD*)/ *n*(%)	*M*(*SD*)/ *n*(%)	*t*-value(df)/ χ^2(df)	*t*-value(df)/ χ^2(df)
Age	73.04(9.16)	74.40(7.87)	76.62(9.80)	-1.36(294)	-1.16(156)
Residence in the U.S.	24.19(19.00)	20.10(18.62)	51.71(26.29)	1.86(292)	-.5.31(23)**
Gender				.85(1)	.003(1)
Male	54(33.5%)	53(38.7%)	8(38.1%)		
Female	107(66.5%)	84(61.3%)	13(61.9%)		
Religion				2.09(1)	.87(1)
Yes	102(64.2%)	76(55.9%)	14(66.7%)		
No	57(35.8%)	60(44.1%)	7(33.3%)		
Education				10.07(5)	5.11(5)
6th grade or lower	23(14.3%)	18(13.1%)	2(9.5%)		
9th grade	23(14.3%)	22(16.1%)	0(.0%)		
12th grade	23(14.3%)	25(18.2%)	5(23.8%)		
Vocational or trade school	35(21.7%)	22(16.1%)	3(14.3%)		
College	31(19.3%)	40(29.2%)	9(42.9%)		
Postgraduate or higher	26(16.1%)	10(7.3%)	2(9.5%)		
I had discussed end-of-life care with family members				7.16(1)*	44.19(1)**
Yes	54(33.5%)	27(19.7%)	19(90.5%)		
No	107(66.5%)	110(80.3%)	2(9.5%)		
I had completed an AD					
Yes	26(16.1%)	21(13.3%)	21(100.0%)		
No	135(83.9%)	137(85.3%)	0(.0%)		

Note. Group 1 = Participants who answered questions regarding discussing end-of-life care plans with family members. Group 2-In = Participants who did not complete an advance directive before the survey and answered questions regarding completing an advance directive. Group 2-Out = Participants who reported completing an advance directive before the survey and answered questions regarding completing an advance directive. ** = $p < .001$. * = $p < .05$.

The final sample (*N* = 298) included 107 males and 191 females. The age of participants ranged from 55 to 101 years (*M* = 73.67, *SD* = 8.60). There were 267 participants who completed the survey in Chinese (i.e., Mandarin or Cantonese), while 31 completed the survey in English. There were 178 participants who reported that they had a religious belief, while 117 reported that they did not have one and three did not report whether they had religious beliefs. In terms of participants' education levels, there were 41 participants with 6th grade or lower, 45 with 9th grade, 48 with 12th grade, 57 with vocational or trade school certificate, 71 with college degrees, and 36 with graduate degrees. Participants' residence length (i.e., how long they have lived in the U.S.) ranged from less than one year to 89 years (*M* = 22.30, *SD* = 18.90). Only 18 participants were U.S. born. Most of the participants were foreign-born in mainland China (*n* = 200), Taiwan (*n* = 48), Hong Kong (*n* = 11), and other areas outside the U.S. (*n* = 21).

Among the 298 participants, 161 participants answered questions regarding discussing end-of-life care plans with family members and 137 answered questions regarding completing an AD. Independent sample *t*-tests and chi-square tests were conducted to compare the two groups on demographic variables. The results are presented in Table 3. It is found that there were no significant differences in gender, age, religion, education levels, and residence in the U.S. between participants who completed the survey regarding discussing end-of-life care plans with family members and others who completed the survey regarding completing an AD. However, there were significant differences in terms of whether participants had discussed end-of-life care plans with family members or not, and whether participants had completed an AD. Their effects were controlled for when multiple regression analyses were performed.

Theory of Planned Behavior Results

RQ1a-b: Descriptive Statistics

RQ1a-b asked what participants' attitudes, subjective norms, self-efficacy, and behavioral intentions are. Table 4 shows means, standard deviations of TPB measures toward the two recommended behaviors and *t*-test results. Given that participants rated these measures near the middle of the five-point scales, they appeared to have neutral attitudes, subjective norms, self-efficacy, and intentions toward the two behaviors.

RQ2: Comparing Theory of Planned Behavior Measures

RQ2 asked whether there were group differences in participants' attitudes, subjective norms, self-efficacy, and behavioral intentions toward the two behaviors. The *t*-test results of comparing group differences are presented in Table 4. There were group differences in terms of subjective norms ($t(296) = 3.02$, $p < .05$), self-efficacy ($t(296) = 2.28$, $p < .05$), and behavioral intentions ($t(296) = 2.52$, $p < .001$). Participants scored significantly higher in subjective norms, self-efficacy, and behavioral intentions toward discussing end-of-life care plans with family members than completing an AD.

Table 4

t-test Results of TPB and HBM Measures Comparison

	Group 1 (*N* = 161)	Group 2 (*N* = 137)	*t*-test		
	M(*SD*)	*M*(*SD*)	*t*-value	df	*p*-value
1. Attitude	3.73(.69)	3.57(.75)	1.87	296	.06
2. Subjective norms	3.79(1.04)	3.42(1.08)	3.02	296	.003*
3. Self-efficacy	3.90(.95)	3.64(1.00)	2.28	296	.02*
4. Perceived susceptibility	3.23(1.18)	3.27(1.17)	-.29	296	.78
5. Perceived severity	3.48(1.08)	3.52(1.03)	-.30	296	.77
6. Perceived benefits	4.19 (.92)	4.06(.92)	1.20	296	.23
7. Perceived barriers	2.31(1.08)	2.49(1.07)	-1.43	296	.16
8. Intention	3.95(1.14)	3.60(1.25)	2.52	296	.01*
9. Acculturation	2.22(.79)	2.05(.81)	1.81	293	.07
10. Family cohesion	3.57(.46)	3.63(.44)	-1.18	296	.24

Note. Group 1=Participants who answered questions regarding discussing end-of-life care plans with family members. Group 2=Participants who answered questions regarding completing an advance directive. Variables 1–10 measured on a 5-point scale. Variable 11 measured on a 4-point scale. ** = $p < .001$, * = $p < .05$.

H1a: Discussing End-of-Life Care Plans with Family Members

H1a predicted that participants' attitudes, subjective norms, and self-efficacy would positively predict behavioral intentions toward discussing end-of-life care plans with family members positively. RQ3a and RQ4a asked whether acculturation and family cohesion would separately moderate the relationships between TPB measures and behavioral intentions toward discussing end-of-life care plans with family members. Table 5 shows means, standard deviations, and zero-order correlations among attitudes, subjective norms, self-efficacy, and intentions to discuss end-of-life care plans with family members.

Two hierarchical multiple regression analyses were performed with behavioral intentions toward discussing end-of-life care plans as the dependent variable, TPB measures as the independent variables, and acculturation or family cohesion as a moderator. Block 1 contained control variables, including age, residence length in the U.S., gender, religion, education levels, whether the participant had discussed end-of-life care plans with family members, and whether the participant had completed an AD. Block 2 included attitudes, subjective norms, and self-efficacy as the predictors. Block 3 added acculturation/family cohesion as an additional predictor. Block 4 added the interaction effects between acculturation/family cohesion and TPB measures. The results of these regression analyses are presented in Table 6 and 7.

Table 5

Descriptive Information and Zero-order Correlation Coefficients Toward Discussing End-of-Life Care Plans with Family Members (*N = 161*)

Variable	M (SD)	1	2	3	4	5	6	7	8	9
1. Attitude	3.73(.69)	–								
2. Subjective norms	3.79(1.04)	.59**	–							
3. Self-efficacy	3.90(.95)	.61**	.63**	–						
4. Perceived susceptibility	3.23(1.18)	.32**	.39**	.24*	–					
5. Perceived severity	3.48(1.08)	.22**	.27**	.15	.50**	–				
6. Perceived benefits	4.19 (.92)	.38**	.34**	.38**	.34**	.38**	–			
7. Perceived barriers	2.31(1.08)	-.40**	-.32**	-.41**	-.05	.10	-.20*	–		
8. Intention	3.95(1.14)	.64**	.65**	.66**	.31**	.26*	.52**	-.46**	–	
9. Acculturation	2.22(.79)	.12	.14	.17*	.04	-.04	.12	-.06	.20*	–
10. Family cohesion	3.57(.46)	.04	.03	-.02	-.03	.06	.09	-.17*	.03	-.06

Note. Variables 1–10 measured on a 5-point scale. Variable 11 measured on a 4-point scale. ** = $p < .001$. * = $p < .05$.

Table 6

Results of Regression Analysis for TPB Toward Discussing End-of-Life Care Plans (Acculturation as a Moderator)

Variables	Model 1			Model 2			Model 3			Model 4		
	B(SE)	β	*sr*^{2}	B(SE)	β	*sr*^{2}	B(SE)	β	*sr*^{2}	B(SE)	β	*sr*^{2}
Age	-.01(.01)	-.10	.01	-.002(.01)	-.01	.00	.00(.01)	-.004	.00	.00(.01)	-.002	.00
Residence length	-.001(.01)	-.02	.00	.001(.004)	.02	.00	-.001(.01)	-.01	.00	-.001(.01)	-.01	.00
Gender	-.32(.19)	-.13	.02	-.15(.13)	-.06	.003	-.17(.14)	-.07	.004	-.16 (.14)	-.07	.003
Religion	.53(.18)	.23*	.05	.28(.13)	.12*	.01	.29(.13)	.12*	.01	.28(.13)	.12*	.01
Education	.07(.06)	.11	.01	.04(.04)	.06	.003	.04(.04)	.05	.002	.04(.04)	.05	.002
Whether I had discussed end-of-life care with family members	.89(.20)	.37*	.10	.40(.15)	.17*	.02	.41(.15)	.17*	.02	.42(.15)	.18*	.02
Whether I had completed an AD	-.28(.28)	-.09	.01	-.36(.20)	-.12	.01	-.36(.20)	-.12	.01	-.33(.21)	-.11	.01
Attitude				.42(.11)	.26**	.04	.42(.11)	.26**	.04	.43(.12)	.26**	.04
Subjective norm (SBN)				.26(.08)	.24*	.03	.27(.08)	.24*	.03	.25(.08)	.23*	.02
Self-efficacy (SE)				.36(.09)	.30**	.04	.35(.09)	.29**	.04	.33(.09)	.28**	.03
Acculturation							.07(.11)	.05	.001	.07(.12)	.05	.001
Attitude*Acculturation										.08(.13)	.04	.001
SBN*Acculturation										-.06(.11)	-.04	.001
SE*Acculturation										-.04(.13)	-.02	.00
Δ*R*^{2}	.23			.39			.001			.002		
***R*^{2}(Adjusted *R*^{2})**	.23(.20)			.62(.59)			.62(.59)			.62(.59)		
***F*-change**	6.41**			49.34**			.35			.21		

Note. ** = $p < .001$. * = $p < .05$.

Table 7

Results of Regression Analysis for TPB Toward Discussing End-of-Life Care Plans (Family Cohesion as a Moderator)

Variables	Model 1			Model 2			Model 3			Model 4		
	B(SE)	β	*sr*^{2}	B(SE)	β	*sr*^{2}	B(SE)	β	*sr*^{2}	B(SE)	β	*sr*^{2}
Age	-.01(.01)	-.10	.01	-.002(.01)	-.01	.00	-.002(.01)	-.01	.00	-.003(.01)	-.03	.00
Residence length	-.001(.01)	-.02	.00	.001(.004)	.02	.00	.001(.004)	-.02	.00	.00(.004)	.00	.00
Gender	-.32(.19)	-.13	.02	-.15(.13)	-.06	.003	-.15(.13)	-.06	.003	-.15(.13)	-.06	.003
Religion	.53(.18)	.23*	.05	.28(.13)	.12*	.01	.28(.13)	.12*	.01	.29(.13)	.12*	.01
Education	.07(.06)	.11	.01	.04(.04)	.06	.003	.04(.04)	.06	.003	.04(.04)	.06	.003
Whether I had discussed end-of-life care with family members	.89(.20)	.37*	.10	.40(.15)	.17*	.02	.40(.15)	.17*	.02	.46(.15)	.19*	.02
Whether I had completed an AD	-.28(.28)	-.09	.01	-.36(.20)	-.12	.01	-.36(.20)	-.12	.01	-.36(.20)	-.12	.01
Attitude				.42(.11)	.26**	.04	.42(.11)	.26**	.04	.41(.12)	.25*	.03
Subjective norm (SBN)				.26(.08)	.24*	.03	.26(.08)	.24*	.03	.27(.08)	.24*	.03
Self-efficacy (SE)				.36(.09)	.30**	.04	.36(.09)	.30**	.04	.34(.09)	.28**	.04
Family cohesion (FC)							.00(.13)	.00	.00	-.03(.13)	-.01	.00
Attitude*FC										-.16(.26)	-.04	.001
SBN*FC										.35(.18)	.13	.01
SE*FC										-.23(.21)	-.08	.003
Δ*R*^{2}	.23			.39			.00			.01		
***R*^{2}(Adjusted *R*^{2})**	.23(.20)			.62(.59)			.62(.59)			.63(.60)		
***F*-change**	6.41**			49.34**			.00			1.55		

Note. ** = $p < .001$. * = $p < .05$.

At Block 1, the seven control variables explained a significant amount of variation, R^2-change = .23, F-change(7, 148) = 6.41, $p < .001$. Religion and whether the participant had discussed end-of-life care plans with family members were the significant positive predictors for behavioral intentions. That is, having a religious belief and having discussed end-of-life care plans with family members can help explain participants' intentions toward discussing end-life-life care plans with family members.

At Block 2, the inclusion of attitude, subjective norms, and self-efficacy accounted for a substantial amount of variation in intentions beyond control variables, R^2-change = .39, F-change(3,145) = 49.34, $p < .001$. The proportion of variation in behavioral intentions explained by the set of predictors was statistically significant, $R^2 = .62$, adjusted $R^2 = .59$, $F(10, 145) = 23.69$, $p < .001$. Attitudes ($\beta = .26$, $sr^2 = .04$, $p < .001$), subjective norms ($\beta = .24$, $sr^2 = .03$, $p < .05$), self-efficacy ($\beta = .30$, $sr^2 = .04$, $p < .001$), religion ($\beta = -.06$, $sr^2 = .01$, $p < .05$), and whether the participant had discussed end-of-life care plans with family members ($\beta = .17$, $sr^2 = .02$, $p < .05$) were significant predictors for behavioral intentions. H1a was supported.

RQ3a: Acculturation as a Moderator. At Block 3, acculturation was added as an additional predictor and did not increase a statistically proportion of variation in behavioral intentions. At Block 4, all the three interaction effects between TPB measures and acculturation were included as predictors together. They did not increase a statistically proportion of variation in behavioral intentions either. The results are presented in Table 6. Acculturation did not predict participants' intentions to discuss end-of-life care plans with family members after the inclusion of attitudes, subjective norms, and self-efficacy in the regression analysis. Acculturation did not moderate the relationships between TPB measures and behavioral intentions.

RQ4a: Family Cohesion as a Moderator. Another hierarchical regression was conducted with behavioral intentions toward discussing end-of-life care plans with family members as the dependent variable, TPB measures as the independent variables, and family cohesion as a moderator. The results are presented in Table 7. Family cohesion did not improve the prediction of behavioral intentions beyond TPB measures. The interaction effects between family cohesion and TPB measures did not increase a significant amount of variation in behavioral intentions. Family cohesion did not moderate the relationships between TPB measures and intentions to discuss end-of-life care plans with family members.

H1b: Completing an Advance Directive

H1b predicted that participants' attitudes, subjective norms, and self-efficacy would positively predict behavioral intentions toward completing an AD. RQ3b and RQ4b asked whether acculturation and family cohesion would separately moderate the relationships between TPB measures and behavioral intentions toward completing an AD. Table 8 shows means, standard deviations, and zero-order correlations among attitudes, subjective norms, self-efficacy, and intentions to complete an AD.

Table 8

Descriptive Information and Zero-order Correlation Coefficients Toward Completing an Advance Directive (N = 137)

Variable	M (SD)	1	2	3	4	5	6	7	8	9
1. Attitude	3.57(.75)	–								
2. Subjective norms	3.41(1.08)	.52**	–							
3. Self-efficacy	3.64(1.00)	.42**	.50**	–						
4. Perceived susceptibility	3.27(1.17)	.35**	.48**	.30**	–					
5. Perceived severity	3.52(1.03)	.19*	.40**	.40**	.51**	–				
6. Perceived benefits	4.06(.92)	.53**	.58**	.52**	.43**	.44**	–			
7. Perceived barriers	2.49(1.07)	-.37**	-.24*	-.22*	-.15	-.10	-.27*	–		
8. Intention	3.60(1.25)	.62**	.65**	.54**	.48**	.31**	.66**	-.37**	–	
9. Acculturation	2.05(.81)	.17	.02	.06	.04	-.09	-.01	-.13	.12	–
10. Family cohesion	3.63(.44)	.28*	.25*	.13	.13	.09	.24*	-.24*	.19*	-.13

Note: Variables 1–10 measured on a 5-point scale. Variable 11 measured on a 4-point scale. ** = $p < .001$. * = $p < .05$.

Two hierarchical multiple regression analyses were performed with behavioral intentions toward completing an AD as the dependent variable, TPB measures as the independent variables, and acculturation or family cohesion as a moderator. Block 1 contained control variables, including age, residence length in the U.S., gender, religion, education levels, and whether the participant had discussed end-of-life care plans with family members). Block 2 included attitudes, subjective norms, and self-efficacy as the predictors. Block 3 added acculturation/family cohesion as an additional predictor. Block 4 added the interaction effects between acculturation/family cohesion and TPB measures. The results of these regression analyses are presented in Table 9 and 10.

At Block 1, the six control variables explained a significant amount of variation, R^2-change = .19, F-change(6, 128) = 4.95, $p < .001$. Education levels and whether the participant had discussed end-of-life care plans with family members were the significant positive predictors for behavioral intentions, while age and residence length in the U.S. worked as significant negative predictors for behavioral intentions.

At Block 2, attitudes, subjective norms, and self-efficacy accounted for a substantial amount of variation in behavioral intentions beyond control variables, R^2-change = .42, F-change(3,125) = 45.3, $p < .001$. The proportion of variation in behavioral intentions explained by the set of predictors was statistically significant, $R^2 = .61$, adjusted $R^2 = .58$, $F(9, 125) = 21.82$, $p < .001$. Attitudes ($\beta = .31$, $sr^2 = .07$, $p < .001$), subjective norms ($\beta = .37$, $sr^2 = .08$, $p < .001$), self-efficacy ($\beta = .19$, $sr^2 = .02$, $p < .05$), and whether the participant had discussed end-of-life care plans with family members ($\beta = .15$, $sr^2 = .02$, $p < .05$) were significant predictors for behavioral intentions. H1b was supported.

Table 9

Results of Regression Analysis for TPB Toward Completing an Advance Directive (Acculturation as a Moderator)

Variables	Model 1			Model 2			Model 3			Model 4		
	B(SE)	β	*sr*^{2}	B(SE)	β	*sr*^{2}	B(SE)	β	*sr*^{2}	B(SE)	β	*sr*^{2}
Age	-.03(.01)	-.17*	.03	-.01(.01)	-.08	.01	-.01(.01)	-.08	.01	-.01(.01)	-.09	.01
Residence length	-.01(.01)	-.19*	.03	-.002(.004)	-.04	.001	-.003(.01)	-.05	.001	-.003(.01)	-.04	.001
Gender	-.17 (.22)	-.07	.004	.18(.16)	.07	.004	.18(.16)	.07	.004	.16(.16)	.06	.003
Religion	.38(.21)	.15	.02	.15(.15)	.06	.003	.15(.15)	.06	.003	.15(.15)	.06	.003
Education	.15(.07)	.19*	.03	.07(.05)	.08	.01	.06(.05)	.08	.004	.07(.05)	.08	.005
Whether I had discussed end-of-life care with family members	.89(.25)	.28*	.08	.48(.18)	.15*	.02	.48(.18)	.15*	.02	.49(.18)	.16*	.02
Attitude				.52(.11)	.31**	.07	.52(.12)	.31**	.06	.39(.12)	.24*	.03
Subjective norm (SBN)				.42(.08)	.37**	.08	.42(.08)	.37**	.08	.42(.08)	.37**	.08
Self-efficacy (SE)				.23(.09)	.19*	.02	.23(.09)	.19*	.02	.26(.09)	.21*	.02
Acculturation							.03(.15)	.02	.00	.05(.15)	.03	.00
Attitude*Acculturation										-.43(.15)	-.21*	.03
SBN*Acculturation										.03(.10)	.02	.00
SE*Acculturation										.04(.11)	.03	.00
Δ*R*^{2}	.19			.42			.00			.03		
***R*^{2}(Adjusted *R*^{2})**	.19(.15)			.61(.58)			.61(.58)			.64(.61)		
***F*-change**	4.95**			45.30**			.04			3.59*		

Note. ** = $p < .001$. * = $p < .05$.

Table 10

Results of Regression Analysis for TPB Toward Completing an Advance Directive (Family Cohesion as a Moderator)

Variables	Model 1			Model 2			Model 3			Model 4		
	B(SE)	β	sr^2	B(SE)	β	sr^2	B(SE)	β	sr^2	B(SE)	β	sr^2
Age	-.03(.01)	-.17*	.03	-.01(.01)	-.08	.01	-.01(.01)	-.08	.01	-.01(.01)	-.07	.01
Residence length	-.01(.01)	-.19*	.03	-.002(.004)	-.04	.001	-.003(.004)	-.04	.001	-.001(.004)	-.02	.00
Gender	-.17 (.22)	-.07	.004	.18(.16)	.07	.004	.19(.16)	.07	.004	.16(.16)	.06	.003
Religion	.38(.21)	.15	.02	.15(.15)	.06	.003	.14(.15)	.06	.003	.06(.15)	.03	.001
Education	.15(.07)	.19*	.03	.07(.05)	.08	.01	.07(.05)	.09	.01	.05(.05)	.06	.003
Whether I had discussed end-of-life care with family members	.89(.25)	.28*	.08	.48(.18)	.15*	.02	.49(.18)	.16*	.02	.47(.18)	.15*	.02
Attitude				.52(.11)	.31**	.07	.53(.12)	.32**	.07	.59(.12)	.35**	.08
Subjective norm (SBN)				.42(.08)	.37**	.08	.43(.08)	.37**	.08	.39(.08)	.34**	.07
Self-efficacy (SE)				.23(.09)	.19*	.02	.23(.09)	.18*	.02	.28(.09)	.22*	.03
Family cohesion (FC)							-.07(.18)	-.02	.001	-.04(.18)	-.02	.00
Attitude*FC										.34(.23)	.12	.01
SBN*FC										-.33(.19)	-.14	.01
SE*FC										.27(.21)	.10	.01
ΔR^2	.19			.42			.00			.02		
R^2(Adjusted R^2)	.19(.15)			.61(.58)			.61(.58)			.63(.59)		
***F*-change**	4.95**			45.30**			.15			2.16		

Note. ** = $p < .001$. * = $p < .05$.

RQ3b: Acculturation as a Moderator. At Block 3 acculturation was added as an additional predictor and did not increase a statistically proportion of variation in behavioral intentions. At Block 4 all the three interaction effects between TPB measures and acculturation were included as predictors together. They increased a statistically proportion of variation in behavioral intentions, R^2-change = .03, F-change(3, 121) = 3.59, $p < .05$. The interaction between attitudes and acculturation was a significant predictor for behavioral intentions, $\beta = -.21$, $sr^2 = .03$, $p < .05$. As acculturation increased, attitudes had a smaller influence on intentions to complete an AD. Furthermore, adding the interaction effect between attitudes and acculturation reduced the size of the significant effects of attitudes on intentions. The results are presented in Table 9.

The significant interaction effect was probed with simple slopes analysis. Results of the simple slopes analysis is presented in Figure 3. “High,” “moderate,” and “low” levels of responses to participants’ acculturation were created by computing one standard deviation above and one standard deviation below the mean. This analysis indicated that the relationship between attitudes and behavioral intentions was larger when participants were less acculturated.

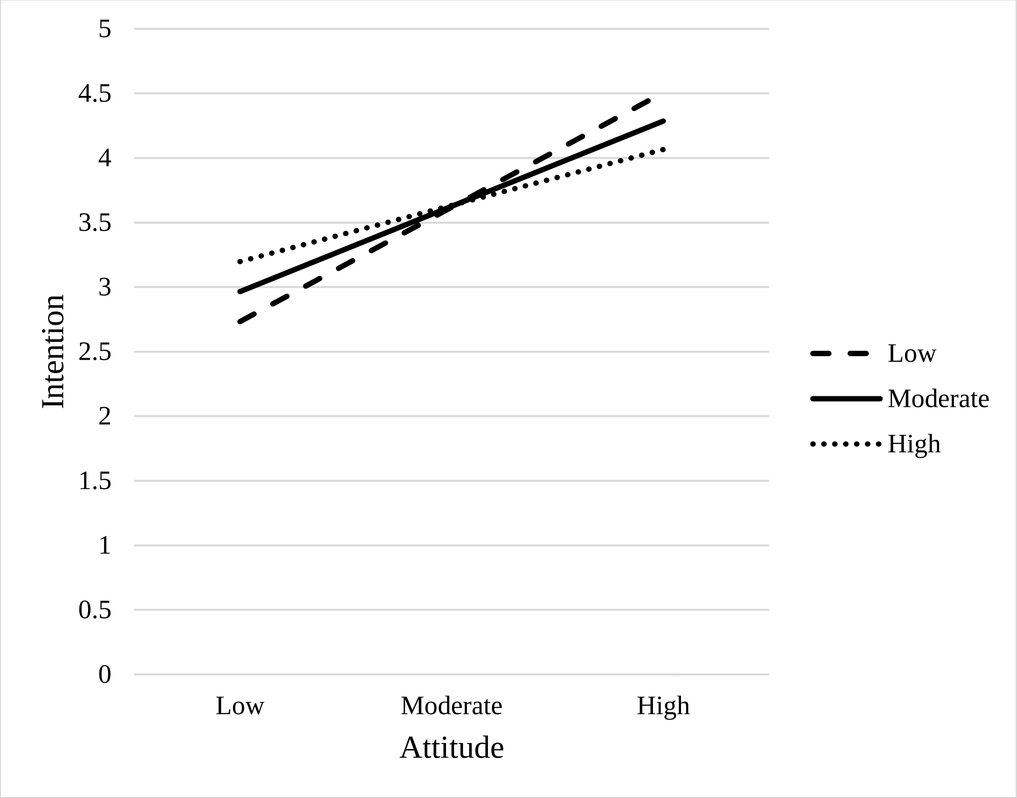

Figure 3. Acculturation as a Moderator between Attitude and Behavioral Intention toward Completing an Advance Directive.

RQ4b: Family Cohesion as a Moderator. Another hierarchical regression was conducted with behavioral intentions toward completing an AD as the dependent variable and TPB measures as the independent variables and family cohesion as a moderator. The results are presented in Table 10. Family cohesion did not improve the proportion of variation in behavioral intentions. The interaction effects between family cohesion and TPB measures did not increase a significant amount of variation in behavioral intentions. Family cohesion did not moderate the relationships between TPB measures and intentions to complete an AD.

Health Belief Model Results

RQ5a-b: Descriptive Statistics

RQ5a-b asked what participants' perceived susceptibility, perceived severity, perceived benefits, and perceived barriers are. Table 4 shows means, standard deviations of HBM measures toward the two recommended behaviors and *t*-test results. The results indicated that participants tended to score neutral in perceived susceptibility and severity and high in perceived benefits and low in perceived barriers.

RQ6: Comparing Health Belief Model Measures

RQ6 asked whether there were group differences in participants' perceived susceptibility, perceived severity, perceived benefits, and perceived barriers toward the two behaviors. The results are presented in Table 4. There were no significant group differences in terms of HBM measures.

H2a: Discussing End-of-Life Care Plans with Family Members

H2a predicted that participants' perceived susceptibility, perceived severity, perceived barriers, perceived benefits, and self-efficacy would predict behavioral intentions toward discussing end-of-life care plans with family members. RQ7a and RQ8a asked whether acculturation and family cohesion would separately moderate the relationships between HBM measures and behavioral intentions toward discussing end-of-life care plans with family members.

Two hierarchical multiple regression analyses were performed with behavioral intentions toward discussing end-of-life care plans as the dependent variable, HBM measures as the independent variables, and acculturation or family cohesion as a moderator. Block 1 contained control variables, including age, residence length in the

U.S., gender, religion, education levels, whether the participant had discussed my end-of-life care plans with family members, and whether the participant had completed an AD. Block 2 included perceived susceptibility, perceived severity, perceived benefits, perceived barriers, and self-efficacy. Block 3 added acculturation/family cohesion as an additional predictor. Block 4 added the interaction effects between acculturation/family cohesion and HBM measures. The results of these regression analyses are presented in Table 11 and 12. Table 5 shows means, standard deviations, and zero-order correlations among perceived susceptibility, perceived severity, perceived benefits, perceived barriers, self-efficacy, and intentions to discuss end-of-life care plans with family members.

Table 11

Results of Regression Analysis for HBM Toward Discussing End-of-Life Care Plans (Acculturation as a Moderator)

Variables	Model 1			Model 2			Model 3			Model 4		
	B(SE)	β	*sr*^{2}	B(SE)	β	*sr*^{2}	B(SE)	β	*sr*^{2}	B(SE)	β	*sr*^{2}
Age	-.01(.01)	-.10	.01	-.01(.01)	-.07	.004	-.01(.01)	-.05	.002	-.01(.01)	-.06	.003
Residence length	-.001(.01)	-.02	.00	.002(.004)	.03	.001	-.001(.01)	-.02	.00	.00(.01)	-.003	.00
Gender	-.32(.19)	-.13	.02	-.16(.14)	-.07	.004	-.19(.14)	-.08	.01	-.18(.15)	-.07	.004
Religion	.53(.18)	.23*	.05	.23(.13)	.10	.01	.24(.13)	.10	.01	.23(.14)	.10	.01
Education	.07(.06)	.11	.01	.03(.04)	.05	.002	.02(.04)	.02	.00	.03(.05)	.04	.001
Whether I had discussed end-of-life care with family members	.89(.20)	.37*	.10	.23(.17)	.10	.01	.22(.17)	.09	.01	.20(.17)	.08	.004
Whether I had completed an AD	-.28(.28)	-.09	.01	-.36(.20)	-.12	.01	-.36(.20)	-.12	.01	-.38(.21)	-.12	.01
Perceived susceptibility (SUS)				.06(.06)	.06	.002	.06(.06)	.07	.003	.06(.06)	.06	.003
Perceived severity (SEV)				.09(.07)	.08	.004	.09(.07)	.09	.01	.10(.07)	.09	.01
Perceived benefits (BEN)				.27(.08)	.22*	.03	.27(.08)	.22*	.03	.25(08)	.20*	.03
Perceived barriers (BAR)				-.21(.07)	-.20*	.02	-.22(.07)	-.21*	.03	-.25(.08)	-.23*	.03
Self-efficacy (SE)				.52(.08)	.44**	.13	.51(.08)	.43**	.13	.48(.08)	.40**	.10
Acculturation							.12(.12)	.08	.003	.12(.12)	.09	.003
SUS*Acculturation										-.04(.08)	-.03	.001
SEV*Acculturation										.10(.11)	.07	.003
BEN*Acculturation										-.09(.11)	-.06	.002
BAR*Acculturation										-.10(.11)	-.07	.003
SE*Acculturation										-.08(.13)	-.04	.001
Δ*R*^{2}	.23			.38			.003			.005		
***R*^{2}(Adjusted *R*^{2})**	.23(.20)			.61(.58)			.61(.58)			.62(.57)		
***F*-change**	6.41**			27.94**			.94			.37		

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

Table 12

Results of Regression Analysis for HBM Toward Discussing End-of-Life Care Plans (Family Cohesion as a Moderator)

Variables	Model 1			Model 2			Model 3			Model 4		
	B(SE)	β	sr^2	B(SE)	β	sr^2	B(SE)	β	sr^2	B(SE)	β	sr^2
Age	-.01(.01)	-.10	.01	-.01(.01)	-.07	.004	-.01(.01)	-.07	.004	-.01(.01)	-.08	.01
Residence length	-.001(.01)	-.02	.00	.002(.004)	.03	.001	-.002(.004)	-.03	.001	.00(.004)	.01	.00
Gender	-.32(.19)	-.13	.02	-.16(.14)	-.07	.004	-.16(.14)	-.07	.004	-.20(.14)	-.09	.01
Religion	.53(.18)	.23*	.05	.23(.13)	.10	.01	.23(.13)	.10	.01	.21(.13)	.09	.01
Education	.07(.06)	.11	.01	.03(.04)	.05	.002	.03(.04)	.05	.002	.03(.04)	.05	.002
Whether I had discussed end-of-life care with family members	.89(.20)	.37*	.10	.23(.17)	.10	.01	.23(.17)	.09	.01	.28(.16)	.12	.01
Whether I had completed an AD	-.28(.28)	-.09	.01	-.36(.20)	-.12	.01	-.37(.20)	-.12	.01	-.28(.20)	-.09	.01
Perceived susceptibility (SUS)				.06(.06)	.06	.002	.05(.06)	.06	.002	.06(.06)	.06	.003
Perceived severity (SEV)				.09(.07)	.08	.004	.09(.07)	.08	.01	.05(.07)	.04	.001
Perceived benefits (BEN)				.27(.08)	.22*	.03	.28(.08)	.22*	.03	.27(08)	.22*	.03
Perceived barriers (BAR)				-.21(.07)	-.20*	.02	-.22(.07)	-.20*	.03	-.19(.07)	-.18*	.02
Self-efficacy (SE)				.52(.08)	.44**	.13	.52(.08)	.43**	.13	.48(.08)	.40**	.10
Family cohesion (FC)							-.09(.14)	-.03	.001	-.05(.14)	-.02	.00
SUS*FC										.21(.14)	.10	.01
SEV*FC										-.20(.16)	-.08	.004
BEN*FC										-.44(.19)	-.17*	.01
BAR*FC										-.15(.13)	-.07	.004
SE*FC										.16(.19)	.06	.002
ΔR^2	.23			.38			.001			.03		
R^2(Adjusted R^2)	.23(.20)			.61(.58)			.61(.58)			.65(.60)		
***F*-change**	6.41**			27.94**			.40			2.60*		

Note. ** = $p < .001$. * = $p < .05$.

At Block 1, the seven control variables explained a significant amount of variation, R^2-change = .23, F-change(7, 148) = 6.41, $p < .001$. Religion and whether the participant had discussed end-of-life care plans with family members were the significant positive predictors for behavioral intentions.

At Block 2, perceived susceptibility, perceived severity, perceived benefits, perceived barriers, and self-efficacy accounted for a statistically significant amount of variance in behavioral intentions beyond control variables, R^2-change = .38, F-change(5,143) = 27.94, $p < .001$. The proportion of variation in behavioral intentions explained by the set of predictors was statistically significant, $R^2 = .61$, adjusted $R^2 = .58$, $F(12, 143) = 18.78$, $p < .001$. Perceived benefits ($\beta = .22$, $sr^2 = .03$, $p < .001$), perceived barriers, ($\beta = -.20$, $sr^2 = .02$, $p < .05$), and self-efficacy ($\beta = .44$, $sr^2 = .13$, $p < .001$) were significant predictors for behavioral intentions. H2a was supported.

RQ7a: Acculturation as a Moderator. At Block 3 acculturation was added as an additional predictor and did not increase a statistically proportion of variation in behavioral intentions. At Block 4 all the five interaction effects between HBM measures and acculturation were included as predictors together. They did not increase a statistically proportion of variation in behavioral intentions. The results are presented in Table 11. That is, acculturation did not predict participants' intentions to discuss end-of-life care plans with family members after the inclusion of perceived susceptibility, perceived severity, perceived benefits, perceived barriers, and self-efficacy. Acculturation did not moderate the relationships between HBM measures and behavioral intentions.

RQ8a: Family Cohesion as a Moderator. Another hierarchical regression was conducted with behavioral intentions toward discussing end-of-life care plans with family members as the dependent variable, HBM measures as the independent variables, and family cohesion as a moderator. The results are presented in Table 12. Family cohesion did not increase a statistically proportion of variation in behavioral intentions. However, adding the interaction effects between HBM measures and family cohesion increased a statistically proportion of variation in behavioral intentions, R^2-change = .03, F-change(5, 137) = 2.60, $p < .05$. Perceived benefits ($\beta = .22$, $sr^2 = .03$, $p < .05$), perceived barriers ($\beta = -.18$, $sr^2 = .02$, $p < .05$), and self-efficacy ($\beta = .40$, $sr^2 = .10$, $p < .001$) remained significant, but the sizes of the significant effects of perceived barriers and self-efficacy decreased. The interaction between family cohesion and perceived benefits worked as an additional significant predictor for behavioral intention, $\beta = -.17$, $sr^2 = .01$, $p < .05$. When family cohesion increased, perceived benefits had a smaller impact on intentions to discuss end-of-life care plans with family members.

The significant interaction effect was probed with simple slopes analysis. Results of the simple slopes analysis is presented in Figure 4. “High,” “moderate,” and “low” levels of responses to participants’ family cohesion were created by computing one standard deviation above and one standard deviation below the mean. This analysis indicated that the relationship between perceived benefits and behavioral intentions was larger when participants had lower-level family cohesion.

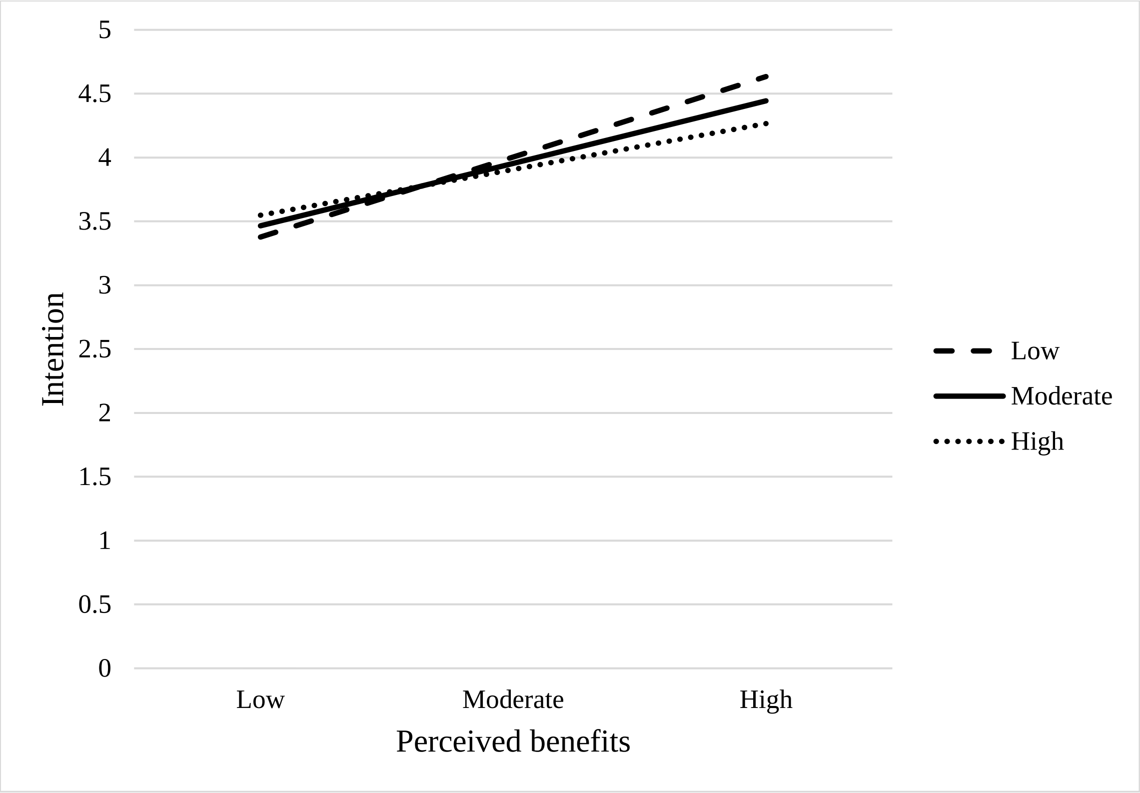

Figure 4. Family Cohesion as a Moderator between Perceived Benefits and Behavioral Intention toward Discussing End-of-Life Care Plans with Family Members.

H2b: Completing an Advance Directive

H2b predicted that participants' perceived susceptibility, perceived severity, perceived barriers, perceived benefits, and self-efficacy would predict behavioral intentions toward completing an AD. RQ7b and RQ8b asked whether acculturation and family cohesion would separately moderate the relationships between HBM measures and behavioral intentions toward completing an AD.

Two hierarchical multiple regression analyses were performed with behavioral intentions toward completing an AD as the dependent variable, HBM measures as the independent variables, and acculturation or family cohesion as a moderator. Block 1 contained control variables, including age, residence length in the U.S., gender, religion, education levels, and whether the participant had discussed end-of-life care plans with family members. Block 2 included perceived susceptibility, perceived severity, perceived benefits, perceived barriers, and self-efficacy. Block 3 added acculturation/family cohesion as an additional predictor. Block 4 added the interaction effects between acculturation/family cohesion and HBM measures. The results of these regression analyses are presented in Table 13 and 14. Table 8 shows means, standard deviations, and zero-order correlations among perceived susceptibility, perceived severity, perceived benefits, perceived barriers, self-efficacy, and intentions to complete an AD.

At Block 1, the six control variables explained a significant amount of variation, R^2-change = .19, F-change(6, 128) = 4.95, $p < .001$. Education levels and whether the participant had discussed end-of-life care plans with family members were the significant positive predictors for behavioral intentions, while age and residence length in the U.S. predicted intentions to complete an AD negatively.

At Block 2, perceived susceptibility, perceived severity, perceived benefits, perceived barriers, and self-efficacy accounted for a substantial amount of variation in intentions beyond control variables, R^2-change = .40, F-change(5,123) = 24.05, $p < .001$. The proportion of variation in intentions explained by the set of predictors was statistically significant, $R^2 = .59$, adjusted $R^2 = .55$, $F(11, 123) = 16.06$, $p < .001$. Perceived susceptibility ($\beta = .25$, $sr^2 = .04$, $p < .05$), perceived benefits ($\beta = .43$, $sr^2 = .10$, $p < .001$), perceived barriers ($\beta = -.16$, $sr^2 = .02$, $p < .05$), and self-efficacy ($\beta = .25$, $sr^2 = .04$, $p < .001$) were significant predictors for intentions. H2b was supported.

Table 13

Results of Regression Analysis for HBM Toward Completing an Advance Directive (Acculturation as a Moderator)

Variables	Model 1			Model 2			Model 3			Model 4		
	B(SE)	β	*sr*^{2}	B(SE)	β	*sr*^{2}	B(SE)	β	*sr*^{2}	B(SE)	β	*sr*^{2}
Age	-.03(.01)	-.17*	.03	-.01(.01)	-.07	.01	-.01(.01)	-.07	.003	-.01(.01)	-.07	.004
Residence length	-.01(.01)	-.19*	.03	.003(.004)	.04	.001	.001(.01)	.01	.00	.001(.01)	.01	.00
Gender	-.17 (.22)	-.07	.004	-.05(.16)	-.02	.00	-.04(.16)	-.02	.00	-.02(.17)	-.01	.00
Religion	.38(.21)	.15	.02	-.06(.16)	-.02	.00	-.06(.16)	-.03	.001	-.07(.17)	-.03	.001
Education	.15(.07)	.19*	.03	.01(.05)	.01	.00	-.002(.06)	-.003	.00	.001(.06)	.001	.00
Whether I had discussed end-of-life care with family members	.89(.25)	.28*	.08	.27(.20)	.09	.01	.27(.20)	.09	.01	.28(.21)	.09	.01
Perceived susceptibility (SUS)				.27(.08)	.25*	.04	.26(.08)	.25*	.04	.21(.10)	.20*	.02
Perceived severity (SEV)				-.15(.09)	-.13	.01	-.15(.09)	-.12	.01	-.09(.12)	-.07	.002
Perceived benefits (BEN)				.58(.11)	.43**	.10	.58(.11)	.43**	.10	.51(.13)	.37**	.05
Perceived barriers (BAR)				-.18(.08)	-.16*	.02	-.18(.08)	-.15*	.02	-.19(.09)	-.17*	.02
Self-efficacy (SE)				.31(.09)	.25*	.04	.31(.09)	.25*	.04	.32(.11)	.26*	.03
Acculturation							.07(.15)	.04	.001	.06(.16)	.04	.001
SUS*Acculturation										-.11(.12)	-.08	.003
SEV*Acculturation										.12(.16)	.08	.002
BEN*Acculturation										-.18(.18)	-.09	.003
BAR*Acculturation										-.05(.13)	-.03	.001
SE*Acculturation										-.01(.13)	-.01	.00
ΔR^2	.19			.40			.001			.01		
R^2(Adjusted R^2)	.19(.15)			.59(.55)			.59(.55)			.60(.54)		
***F*-change**	4.95**			24.05**			.19			.43		

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

Table 14

Results of Regression Analysis for HBM Toward Completing an Advance Directive (Family Cohesion as a Moderator)

Variables	Model 1			Model 2			Model 3			Model 4		
	B(SE)	β	*sr*^{2}	B(SE)	β	*sr*^{2}	B(SE)	β	*sr*^{2}	B(SE)	β	*sr*^{2}
Age	-.03(.01)	-.17*	.03	-.01(.01)	-.07	.01	-.01(.01)	-.07	.01	-.01(.01)	-.08	.01
Residence length	-.01(.01)	-.19*	.03	.003(.004)	.04	.001	.003(.004)	.04	.001	.002(.01)	.03	.001
Gender	-.17 (.22)	-.07	.004	-.05(.16)	-.02	.00	-.05(.16)	-.02	.00	-.03(.17)	-.01	.00
Religion	.38(.21)	.15	.02	-.06(.16)	-.02	.00	-.06(.16)	-.02	.00	-.07(.17)	-.03	.001
Education	.15(.07)	.19*	.03	.01(.05)	.01	.00	.01(.05)	.01	.00	-.001(.06)	-.001	.00
Whether I had discussed end-of-life care with family members	.89(.25)	.28*	.08	.27(.20)	.09	.01	.27(.20)	.09	.01	.23(.21)	.07	.004
Perceived susceptibility (SUS)				.27(.08)	.25*	.04	.27(.08)	.25*	.04	.24(.08)	.23*	.03
Perceived severity (SEV)				-.15(.09)	-.13	.01	-.15(.09)	-.13	.01	-.17(.10)	-.14	.01
Perceived benefits (BEN)				.58(.11)	.43**	.10	.58(.11)	.43**	.10	.62(.12)	.46**	.10
Perceived barriers (BAR)				-.18(.08)	-.16*	.02	-.18(.08)	-.16*	.02	-.22(.08)	-.19*	.03
Self-efficacy (SE)				.31(.09)	.25*	.04	.31(.09)	.25*	.04	.32(.09)	.26*	.04
Family cohesion (FC)							-.01(.18)	-.002	.00	-.07(.20)	-.02	.00
SUS*FC										-.13(.20)	-.05	.001
SEV*FC										.39(.25)	.13	.01
BEN*FC										-.12(.29)	-.04	.001
BAR*FC										-.07(.19)	-.03	.00
SE*FC										.07(.20)	.03	.00
ΔR^2	.19			.40			.00			.02		
R^2(Adjusted R^2)	.19(.15)			.59(.55)			.59(.55)			.60(.55)		
***F*-change**	4.95**			24.05**			.001			.88		

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

RQ7b: Acculturation as a Moderator. At Block 3, acculturation was added as an additional predictor and did not increase a statistically proportion of variation in behavioral intentions. At Block 4, all the five interaction effects between HBM measures and acculturation were included as predictors together. They did not increase a statistically proportion of variation in behavioral intentions. The results are presented in Table 13. Acculturation did not predict participants' intentions to complete an AD after the inclusion of HBM measures. Acculturation did not moderate the relationships between HBM measures and intentions to complete an AD.

RQ8b: Family Cohesion as a Moderator. Another hierarchical regression was conducted with behavioral intentions toward completing an AD as the dependent variable and HBM measures as the independent variables and family cohesion as a moderator. The results are presented in Table 14. Family cohesion did not improve the proportion of variation in behavioral intentions as an additional predictor. The interaction effects between family cohesion and TPB measures did not increase a significant amount of variation in participants' intentions to complete an AD. Family cohesion did not moderate the relationships between HBM measures and intentions to complete an AD.

Comparing Theory of Planned Behavior and Health Belief Model

H3a predicted that the TPB had more predictive power for participants' intentions to discuss end-of-life care plans with family members than the HBM. As addressed earlier, the inclusion of TPB measures accounted for a statistically significant amount of variation in intentions beyond control variables, R^2-change = .39, F-change(3,145) = 49.34, $p < .001$. In contrast, HBM measures accounted for a statistically significant amount of variation in intentions beyond control variables, R^2-change = .38,

F-change(5,143) = 27.94, $p < .001$. TPB measures accounted for 1% more variance in intentions than HBM measures. This finding suggested that the TPB had more predictive power for participants' intentions toward discussing end-of-life care plans with family members than the HBM. H3a was supported.

H3b predicted that the TPB had more predictive power for participants' intentions toward completing an AD than the HBM. TPB measures accounted for a substantial amount of variation in intentions beyond control variables, R^2-change = .42, F-change(3,125) = 45.3, $p < .001$. HBM measures accounted for a statistically significant amount of variation in intentions beyond control variables, R^2-change = .40, F-change(5,123) = 24.05, $p < .001$. TPB measures accounted for 2% more variance in intentions than HBM measures. This result implied that the TPB had more predictive power for participants' intentions toward completing an AD than the HBM. H3b was supported.

CHAPTER 5: DISCUSSION

Overview

This study examined the factors that can predict community-dwelling Chinese American older adults' intentions to plan for end-of-life care toward the two recommended behaviors in advance care planning (ACP), discussing end-of-life care plans with family members and completing an advance directive (AD). The results indicated that attitudes, subjective norms, and self-efficacy were significant predictors for behavioral intentions toward the two behaviors in this study. In terms of Health Belief Model (HBM), perceived benefits, perceived barriers, and self-efficacy were significant predictors for behavioral intentions toward the two behaviors. Perceived susceptibility only significantly increased variation in intentions to complete an AD. In addition, acculturation moderated the relationship between attitudes and intentions to complete an AD. Family cohesion moderate the relationship between perceived benefits and intentions to discuss end-of-life care plans with family members.

Theory of Planned Behavior and Health Belief Model

Theory of Planned Behavior

The results indicated that there were significant differences of subjective norms, self-efficacy, and behavioral intentions toward the two behaviors. That is, participants scored higher in subjective norms, self-efficacy, and behavioral intentions toward discussing end-of-life care plans with family members than completing an AD. This finding suggested that it is possible for participants to perceive more family support and capability for ACP conversations. They were more likely to discuss their end-of-life care plans with family members compared to the completion of an AD.

This study indicated that attitudes, subjective norms, and self-efficacy had important predictability for behavioral intentions toward the two behaviors but the predictability of these measures toward these two behaviors were different. According to the existing meta-analyses, attitude is the most important predictor (Albarracin et al., 2001; Downs & Hausenblas, 2005). This contradicted the current study showing that attitude did not work as the most influential determinant of behavioral intentions toward the two behaviors. Instead, the results illustrated that self-efficacy played the most significant role in predicting participants' intentions to discuss end-of-life care plans and subjective norms had the largest influence on intentions to complete an AD. Given the changing influence of these factors on different behavioral intentions, it is helpful for intervention designers to understand what factor is most likely to improve specific behavioral intentions for ACP promotion.

The previous meta-analyses suggested that subjective norms did not have the strongest relationship with intentions compared with attitudes (Cooke et al., 2014; McEachan et al., 2011). However, subjective norms had the strongest relationship with intentions to complete an AD. This finding showed that 8% variances in intentions toward the completion of an AD was explained by subjective norms, beyond that explained by the other predictors, while 3% variances in intentions to discuss end-of-life care plans with family members was explained by subjective norms, beyond that explained by the other predictors. In other words, participants' understandings of their significant others' reactions toward the completion of an AD had a stronger impact on their likelihood of behavioral performance than the other behavior. Both strong effects of subjective norms toward the two behaviors reflect that due to the potential influence of collectivism, having perceived social approval from the reference group is a critical determinant for engaging in a behavior and can be more salient than other predictors.

Self-efficacy was a strong predictor of behavioral intentions toward the two behaviors. Interestingly, 4% variances in intentions to discuss end-of-life care plans with family members was explained by self-efficacy, beyond that explained by the other predictors. However, 2% variances in intentions to complete an AD was explained self-efficacy, beyond that explained by the other predictors. That is, participants' self-efficacy toward discussing end-of-life care plans with family members had a stronger impact on their likelihood of behavioral performance compared with the other behavior. Because completing an AD requires sufficient English proficiency or others' assistance when a person does not speak English, participants may feel more challenging to take actions toward the completion of an AD. They were likely to perceive more abilities to have end-of-life care conversations with their family members.

Health Belief Model

In the HBM, perceived benefits, perceived barriers, and self-efficacy were significant predictors for participants' intentions toward the two behaviors. Regarding discussing end-of-life care plans with family members, self-efficacy was the strongest predictor for behavioral intentions, followed by perceived benefits, and perceived barriers. In terms of the completion of an AD, perceived benefits were the most important factor predicting behavioral intentions, followed by perceived susceptibility and self-efficacy, and perceived barriers. Self-efficacy explained more unique variation in intentions to discuss end-of-life care plan with family members than intentions to complete an AD. This finding was consistent with the TPB results of this study that self-efficacy explained more unique variance in behavioral intentions toward discussing end-of-life care plans with family members. This similarity provided strong evidence that participants felt less capable of the completion of an AD than the other behavior.

The positive effects of perceived benefits and negative effects of perceived barriers on behavioral outcomes were consistent with the previous literature (Carpenter, 2010; Harrison et al., 1992). However, the size of significant effects of perceived benefits was larger than that of perceived barriers toward the two behaviors. It is crucial for participants to perceive benefits of ACP to overcome relevant barriers. Although barriers (e.g., I am not sick enough to discuss end of life care plans with family members/I am not sick enough to complete an AD) inhibit the target population from ACP engagement, addressing the benefits of ACP would help reduce the negative influence of barriers.

Severity was a weak factor predicting participants' behavioral outcomes. This finding was consistent with the previous HBM meta-analysis (Harrison et al., 1992). However, a study of Korean American and Non-Hispanic White older adults found that the likelihood of end-of-life communication would increase as perceived severity increased. This inconsistency indicated that the influence of severity varied across different health contexts and populations. Participants in the current study had low ACP awareness. It is likely that many of them had not developed a solid understanding of the seriousness of having unwanted medical treatments. Therefore, perceived severity did not work as an important predictor in this study.

Comparing Theory of Planned Behavior and Health Belief Model

The inclusion of attitudes, subjective norms, self-efficacy significantly separately increased 39% and 42% variation in behavioral intentions toward discussing end-of-life care plans with family members and completing an AD. This finding was consistent with the previous TPB meta-analyses showing that TPB measures can explain approximately 40%–49% of variances in intentions (Armitage & Conner, 2001; McEachan et al., 2011). In contrast, adding perceived susceptibility, perceived severity, perceived benefits, perceived barriers, and self-efficacy significantly increased 38% and 40% variances in intentions toward discussing end-of-life care plans with family members and completing an AD respectively. These findings indicated that both the TPB and HBM had predictive power to explain participants' intentions to plan for end-of-life care, but TPB measures accounted for slightly more variation in intentions.

Acculturation and Family Cohesion of Chinese American Older Adults

In this study, participants had low acculturation levels but high family cohesion levels. This finding was consistent with the existing literature showing Chinese American elders had low-level acculturation and high-level family dependency (Dong, Bergren, & Chang, 2015; Hsiung & Ferrans, 2007). In a population study of Chinese older adults in Chicago, lower acculturation level was found to be associated with older age, more offspring, lower income, fewer years living in the U.S., lower overall health status, and lower quality of life among 3159 participants (Dong et al., 2015). Hsiung and Ferrans (2007) considered Chinese American older immigrants as the most traditional and least acculturated compared to other Chinese populations in the U.S. Most Chinese American older immigrants were foreign-born and arrived in the U.S. at advanced ages. They primarily came from mainland China, Hong Kong, Taiwan, Singapore, or some other areas to be with their children and help take care of their grandchildren. They usually speak Mandarin, Cantonese, or other Chinese dialects, know little or no English, socialize with other Chinese American older immigrants, maintain traditional Chinese beliefs, and favor family responsibility and support over individual independence. It is not surprising that participants were found to have low acculturation and high family cohesion levels.

Acculturation and family cohesion did not explain the TPB and HBM as additional predictors. Limited variations in these two variables may explain their nonsignificant effects on the TPB and HBM. Also, both TPB and HBM measures explained a substantial amount of variances in intentions. Therefore, the inclusion of acculturation and family cohesion did not increase variances in intentions. Furthermore, acculturation and family cohesion measurements used in this study did not capture specific beliefs related to ACP and may result in the nonsignificant effects of acculturation and family cohesions on intentions.

Interestingly, acculturation moderated the relationship between attitude and intention to complete an AD negatively. In other words, when participants were less acculturated, their attitudes had a larger impact on their intentions toward the completion of an AD. In contrast, for participants in a higher acculturated group, their attitudes had a smaller impact on their intentions toward the completion of an AD. It is likely that higher acculturation levels made participants become more aware of the complexity of ACP process. Having positive reactions toward the completion of an AD does not guarantee their successful engagement in the completion of an AD. Also, there was no significant relationship between acculturation and intentions to complete an AD, while acculturation was positively associated with intentions to discuss end-of-life care plans with family members. This implied that the role of acculturation can vary in different behaviors.

Additionally, family cohesion moderated the relationship between perceived benefits and intention to discuss end-of-life care plans with family members negatively. When participants had lower family cohesion levels, their perceived benefits had a larger impact on their intentions toward the discussion of end-of-life care plans with family members. When they had higher family cohesion levels, their perceived benefits had a smaller impact on their intentions. It is possible that when Chinese American older adults and their families are closely united and under the influence of filial piety, their children and grandchildren may provide them strong assistance for their daily life, diminishing their need to learn U.S. customs (Dong et al., 2015). Consequently, older adults with higher-level family cohesion may not perceive more benefits of end-of-life care discussions and wait for their highly acculturated family members for decision making.

Implications

Advance Care Planning Interventions

As behavior contributes to the cause of mortality and morbidity (Michie & Johnson, 2012; Parkin, Boyd, & Walker, 2011), interventions to change behavior-related components are essential. Social and behavioral science theories systematically explain why individuals behave the ways they do. Therefore, health promotion interventions that are based on social and behavioral science theories are more effective than those lacking a theoretical base (Glanz & Bishop, 2010; Green, 2000; Noar, Benac, & Harris, 2007; Sales, Smith, Curran, & Kochevar, 2006). It is important to apply theories to increase the effectiveness of intervention design, implementation, and evaluation.

This theory-based study would provide guidance to inform the future interventions for Chinese American older adults. To the best of my knowledge, only a few ACP interventions have been created for Chinese elders in Hong Kong, including Let Me Talk, Anticipatory Grief Therapy, and Dignity-Conserving End-of-Life Care Program (Chan & Pang, 2010; Cheng et al., 2010; Ho et al., 2016). There were many ACP interventions in the U.S., but none of them were particularly designed to improve Chinese American older adults' ACP awareness and engagement. Lee, Hinderer, and Friedmann (2015) designed a one-hour nurse-led culturally-sensitive seminar for Chinese American adults aged from 32 to 87 and offered a step-by-step guide of the AD completion process. Although this seminar introduced participants ACP components, researchers and intervention designers need to rely more on communication.

The current study finding suggested that participants reported higher intentions to discuss end-of-life care plans with family members, compared with intentions to complete an AD. It is likely that Chinese American older adults feel more comfortable to communicate with their family members rather than the completion of an AD. This implication is consistent with what the existing interventions suggested among Chinese older adults in Hong Kong (Chan & Pang, 2010; Cheng, Lo, Chan, & Woo, 2010; Ho et al., 2016). These interventions commonly valued the importance and complexity of communication on planning for end-of-life care and included multiple sessions to invite participants to share their memorable life stories and lessons, lessons they have learned about life and death, and then guided them to explore their understandings of life-sustaining treatments, their end-of-life care expectations, and their preferred health care decision maker. Planning for end-of-life care is not a one-time commitment for Chinese American older adults and their family members. Instead, it should be considered as an ongoing process involving communication that matches older adults' life values and medical preferences. When an ACP-related intervention is designed for the target population, it is helpful to consider changing people's intentions to discuss end-of-life care plans with family members first. Both TPB and HBM had strong predictive power for the target population's intentions to discuss end-of-life care plans with family members. However, the TPB accounted for slightly more variation in intentions and can be given a priority for the design of an intervention.

Given that self-efficacy is the strongest predictor for intentions to discuss end-of-life care plans in both TPB and HBM, it can be a good component to focus on in an ACP-related intervention. As Fishbein and Ajzen (2010) suggested, people's perceptions of their capabilities of performing a behavior are associated with their perceptions of having resources available to perform a behavior and the extents to which having resources available to perform a behavior is sufficient to overcome barriers to perform the behavior. It can be helpful for intervention designers to get inspiration from the HBM measures, perceived barriers and benefits. These measures can be included to educate the target population to develop self-efficacy to overcome the barriers to discuss end-of-life care plans with family members and maximize the values of perceived benefits.

Additionally, to design effective efficacy-related components for the intervention, it is necessary to further explore the reasons why people have difficulty in making their decisions whether they will discuss their end-of-life care plans with family members and validate the perceived barriers scale among Chinese American older adults. Based on the preliminary results, perceived barriers yielded a two-factor solution. One factor focused on participants' future care unpreparedness, while the other factor addressed participants' concerns about the potential negative consequences of planning for end-of-life care in advance. In the previous literature researchers commonly considered perceived barriers as a composite variable in ACP contexts and did not specify perceived barriers in the prediction of behavioral performance (Ko & Lee, 2009; Szalai, 2015). Without knowing about specific barriers for the target population, intervention designers may not be able to develop useful information to reach the goal of improving participants' ACP awareness and engagement. The multidimensional nature of perceived barriers should be examined more specifically for the effectiveness of targeting self-efficacy among Chinese American older adults.

Challenge of Using Timeline for the Recommended Behaviors

One challenge is that the two recommended behaviors identified in this dissertation did not include the time at which they are performed. To design theory-based studies to alleviate social problems, it is very important to firstly identify a recommended behavior that researchers want participants to reinforce or change (Fishbein & Ajzen, 1975; Downs & Hausenblas, 2005). For the identification of a specific behavior, Fishbein and Ajzen (2010) said that it is helpful to consider a behavior with four elements to maximize the behavioral prediction, "the action performed, the target at which the action is directed, the context in which it is performed, and the time at which it is performed" (p. 29). However, the recommended behaviors identified in this dissertation did not include the time at which they are performed, because the formative research and previous literature did not provide strong evidence to support the effectiveness of including time at which behaviors are performed. Hsiung (2015) found that the cutoff points of 30 days and six months that are frequently used in smoking cessation research may be arbitrary in behavior change related to ACP. Having ACP on end-of-life care with significant others were more complicated than a person’s decision to quit smoking. As this dissertation addressed earlier, most participants in formative research could not predict when they would engage in ACP processes. Participants had good intentions but might not be decisive about timing. In this regard, using a clear cutoff point (e.g., 30 days) is not an effective way to measure the target population’s behavioral components. More future studies are needed to further explore this challenge to increase the intervention effectiveness for the target population.

Strengths

One of the major strengths of the study was the sample. The target population was community-dwelling Chinese American adults aged 55 and older living in the Phoenix metropolitan areas. Considering the majority of ACP research focusing on non-Hispanic Whites and increasing need for community-based research, this study can help improve the sample diversity in terms of race, ethnicity and study location. Furthermore, given the challenges of promoting ACP in Chinese American senior communities, the participants of the study are an ideal choice for researchers and intervention designers to understand this population.

Another strength is that this study was theory-driven and applied the TPB and HBM to examine Chinese American older participants’ intentions to plan for their end-of-life care. This study provided strong empirical support for the TPB and HBM for an important topic in an ethnic minority population and had significant implications for developing effective theory-driven interventions to improve the target population’s ACP awareness and engagement.

Additionally, the measures for the TPB and HBM measures were guided by validated scales, previous literature, and formative research in this dissertation. A combination of qualitative and quantitative approaches were used to explore the complexity of the target population's understandings of ACP on end-of-life care and ensure the effectiveness of measures written in multiple languages.

Limitations

There are several limitations in this dissertation. Firstly, most participants were Chinese-speaking Chinese Americans and foreign-born immigrants. They were more likely to have lower acculturation levels and higher family cohesion levels than English-speaking and U.S. born Chinese Americans. In the future studies, researchers should consider recruiting more English-speaking Chinese American older adults to further explore the acculturation influence on ACP among Chinese American senior communities to increase sample diversity.

Secondly, data collection was performed in the Phoenix metropolitan areas. Although this study demonstrated ACP understandings of Chinese American older adults living in the Phoenix metropolitan areas, the findings may not be generalized to other Chinese aging populations in the U.S. Furthermore, participants from similar community settings were more likely to see the same health care providers and receive the same ACP-related information than samples drawn randomly from the nationwide population. This may limit the generalizability of this study. To understand Chinese American older adults' ACP processes, it is helpful to recruit participants from different regions.

Thirdly, this dissertation applied individual-level theoretical frameworks and did not primarily consider the determinants from other levels such as community-based influence. Given the multilevel impacts of health promotive behaviors, it would be worthwhile to consider the complex interaction between individual, relationship, community, and societal factors in the future studies related to ACP.

Conclusion

This study examined the factors predicting community-dwelling Chinese American older adults' intentions toward discussing end-of-life care plans with family members and completing an AD respectively. The results indicated that attitudes, subjective norms, and self-efficacy worked as a significant set of predictors for behavioral intentions toward the two behaviors in this study. In the HBM, perceived benefits, perceived barriers, and self-efficacy were significant predictors for behavioral intentions toward the two behaviors. Perceived susceptibility only significantly increased variation in intention to complete an AD. In addition, acculturation moderated the relationship between attitude an intention to complete an AD negatively. Family cohesion moderate the relationship between perceived benefits and intention to discuss end-of-life care plans with family members negatively. Overall, the TPB and HBM provided strong theoretical foundations for us to understanding Chinese American older adults' behaviors related to ACP. The study findings would inform the future interventions to improve Chinese American older adults' ACP awareness and engagement.

Endnote

[1] In addition to testing self-efficacy, perceived control was measured through three 5-point Likert items (1=completely disagree, 5=completely agree). These items were drawn from a Fishbein and Ajzen's (2010) control belief scale and modified to fit the study context. Sample items included: "Whether I discuss my end-of-life care plans with family members is under my personal control/Whether I complete an advance directive is under my personal control." Cronbach's alpha for perceived control toward discussing end-of-life care plans with family members was .82. Cronbach's alpha for perceived control toward completing an advance directive was .91. Perceived control scores were calculated based on the mean across the three items for both behaviors. Two hierarchical multiple regression analyses were performed with behavioral intentions toward the two behaviors, and attitudes, subjective norms, self-efficacy, and perceived control as independent variables. Control for the effects of demographic variables, attitudes, subjective norms, and self-efficacy were significant predictors except perceived control.

REFERENCES

Aging with Dignity. (2011). Five wishes. Retrieved from https://agingwithdignity.org/docs/default-source/default-document-library/product-samples/fwsample.pdf?sfvrsn=2

Ajzen, I. (1985). From intentions to action: A theory of planned behavior. In J. Kuhl & J. Beckman (Eds.), *Action control: From cognitions to behaviors* (pp. 11–39). New York: Springer.

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes, 50*, 179–211.

Ajzen, I. (2002). Perceived behavioral control, self-efficacy, locus of control, and the theory of planned behavior. *Journal of Applied Social Psychology, 32*, 665–683.

Albarracin, D., Johnson, B. T., Fishbein, M., & Muellerleile, P. A. (2001). Theories of reasoned action and planned behavior as models of condom use: A meta-analysis. *Psychological Bulletin, 127*, 142–161.

Alegria, M., Vila, D., Woo, M., Canino, G., Takeuchi, D., Vera, M.,…Shrout, P. (2004). Cultural relevance and equivalence in the NLAAS instrument: Integrating etic and emic in the development of cross-cultural measures for a psychiatric epidemiology and services study of Latinos. *International Journal of Methods in Psychiatric Research, 13*, 270–288.

Armitage, C. J., & Conner, M. (2001). Efficacy of the theory of planned behaviour: A meta-analytic review. *British Journal of Social Psychology, 40*, 471–499.

Andres, L. (2012). *Designing and doing survey research*. Thousand Oaks, CA: Sage Publications Inc.

Baer, J. C., & Schmitz, M. F. (2007). Ethnic differences in trajectories of family cohesion for Mexican American and Non-Hispanic White adolescents. *Journal of Youth and Adolescence, 36*, 583–592.

Bandura, A. (1991). Social cognitive theory of self-regulation. *Organizational Behavior and Human Decision Processes, 50*, 248–287.

Barber, B. K., & Buehler, C. (1996). Family cohesion and enmeshment: Different constructs, different effects. *Journal of Marriage and the Family, 58*, 433–441.

Bartholomew, L. K., Parcel, G., Kok, G., & Gottlieb, N. H. (2006). Behavior-oriented theories used in health promotion. In J. Allegrante & K. McLeroy (Eds.), *Planning health promotion programs* (pp. 81–135). San Francisco: Jossey-Bass.

Berry, J. W. (2005). Acculturation: Living successfully in two cultures. *International Journal of Intercultural Relations*, *29*, 697–712.

Bischoff, K. E., Sudore, R., Miao, Y., Boscardin, W. J., & Smith, A. K. (2013). Advance care planning and the quality of end-of-life care among older adults. *Journal of the American Geriatrics Society, 61*, 209–214. doi:10.1111/jgs.12105

Bito, S., Matsumura, S., Singer, M. K., Meredith, L. S., Fukuhara, S., & Wenger, N. S. (2007). Acculturation and end-of-life decision making: Comparison of Japanese and Japanese American focus groups. *Bioethics*, *21*, 251–262.

Blackford, J., & Street, A. F. (2016). Advance care planning. In E. Wittenberg, B. Ferrell, J. Goldsmith, T. Smith, M. Glajchen, G. Handzo, & S. L. Ragan (Eds.), *Textbook of palliative care communication* (pp. 285–293). New York, NY: Oxford University Press.

Boerner, K., Carr, D., & Moorman, S. (2013). Family relationships and advance care planning: Do supportive and critical relations encourage or hinder planning? *The Journals of Gerontology: Series B, 68*, 246–256. doi:10.1093/geronb/gbs161

Brinkman-Stoppelenburg, A., Rietjens, J. A., & van der Heide, A. (2014). The effects of advance care planning on end-of-life care: A systematic review. *Palliative Medicine, 28*, 1000–1025.

Brown, B. A. (2003). The history of advance directives a literature review. *Journal of Gerontological Nursing, 29*, 4–9. doi:10.3928/0098-9134-20030901-04

Bryman, A. (2004). Pairwise deletion. In M. S. Lewis-Beck, A. Bryman, & T. F. Liao (Eds.), *The SAGE encyclopedia of social science research methods* (pp. 782). Thousand Oaks, CA: SAGE Publications Inc. doi:10.4135/9781412950589.n682

Carpenter, C. J. (2010). A meta-analysis of the effectiveness of health belief model variables in predicting behavior. *Health Communication, 25*, 661–669.

Centers for Medicare & Medicaid Services. (2016). *Advance care planning.* Retrieved from https://www.cms.gov/Outreach-and-Education/Medicare-Learning-Network-MLN/MLNProducts/Downloads/AdvanceCarePlanning.pdf

Champion, V. L., & Skinner, C. S. (2008). The health belief model. K. Glanz, B. K. Rimer, & K. Viswanath (Eds.), *Health behavior and health education: Theory, research, and practice* (4th ed., pp. 45–65). San Francisco, CA: Jossey-Bass.

Chan, C. K. L., & Yau, M. K. (2009). Death preparation among the ethnic Chinese well-elderly in Singapore: An exploratory study. *Journal of Death and Dying, 60*, 225–239. doi:10.2190/OM.60.3.b

Chan, H. Y., & Pang, S. M. (2010). Let me talk – an advance care planning programme for frail nursing home residents. *Journal of Clinical Nursing, 19,* 3073–3084. doi: 10.1111/j.1365-2702.2010.03353.x

Cheng, J. O.-Y., Lo, R., Chan, F., & Woo, J. (2010). A pilot study on the effectiveness of anticipatory grief therapy for elderly facing the end of life. *Journal of Palliative Care, 26*, 261–269.

Chu, L., Luk, J. K., Hui, E., Chiu, P. K., Chan, C. S., Kwan, F.,…Woo, J. (2011). Advance directive and end-of-life care preferences among Chinese nursing home residents in Hong Kong. *Journal of the American Medical Directors Association, 12,* 143–152. doi:10.1016/j.jamda.2010.08.015

Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2003). *Applied multiple regression/correlation analysis for the behavioral sciences.* Mahwah, New Jersey: Lawrence Erlbaum Associates, Inc.

Colby, S. L., & Ortman, J. M. (2015). *Projections of the size and composition of the U.S. population: 2014 to 2060*. Retrieved from https://census.gov/content/dam/Census/library/publications/2015/demo/p25-1143.pdf

Cooke, R., Dahdah, M., Norman, P., & French, D. P. (2014). How well does the theory of planned behaviour predict alcohol consumption? A systematic review and meta-analysis. *Health Psychology Review, 10,* 148–167.

Cooke, R., & French, D. P. (2008). How well do the theory of reasoned action and theory of planned behaviour predict intentions and attendance at screening programmes? A meta-analysis. *Psychology and Health, 23*, 745–765.

De Bary, W. T. (1998). *Asian values and human rights: A Confucian communitarian perspective.* Cambridge, MA: Harvard University Press.

De Vleminck, A., Houttekier, D., Pardon, K., Deschepper, R., Van Audenhove, C., Vander Stichele, R., & Deliens, L. (2013). Barriers and facilitators for general practitioners to engage in advance care planning: A systematic review. *Scandinavian Journal of Primary Health Care, 31*, 215–226.

Detering, K. M., Hancock, A. D., Reade, M. C., & Silvester, W. (2010). The impact of advance care planning on end of life care in elderly patients: Randomised controlled trial. *BMJ, 340*. doi:10.1136/bmj.c1345

Dillon, F. R., De La Rosa, M., & Ibañez, G. E. (2013). Acculturative stress and diminishing family cohesion among recent Latino immigrants. *Journal of Immigrant and Minority Health, 15,* 484–491.

Dong, X., Bergren, S. M., & Chang, E. S. (2015). Levels of acculturation of Chinese older adults in the greater Chicago area—the population study of Chinese elderly in Chicago. *Journal of the American Geriatrics Society, 63*, 1931–1937. doi: 10.1111/jgs.13604

Downs, D. S., & Hausenblas, H. A. (2005). The theories of reasoned action and planned behavior applied to exercise: A meta-analytic update. *Journal of Physical Activity and Health, 2*, 76–97.

Durbin, C. R., Fish, A. F., Bachman, J. A., & Smith, K. V. (2010). Systematic review of educational interventions for improving advance directive completion. *Journal of Nursing Scholarship, 42*, 234–241. doi: 10.1111/j.1547-5069.2010.01357.x

Enders, C. K. (2010). *Applied missing data analysis*. New York, NY: Guilford Press.

Enguidanos, S., & Ailshire, J. (2017). Timing of advance directive completion and relationship to care preferences. *Journal of Pain and Symptom Management, 53,* 49–56. doi: 10.1016/j.jpainsymman.2016.08.008.

Enguidanos, S., Yonashiro-Cho, J., & Cote, S. (2013). Knowledge and perceptions of hospice care of Chinese older adults. *Journal of the American Geriatrics Society, 61*, 993–998.

Fishbein, M., & Ajzen, I. (1975). *Belief, attitude, intention and behavior: An introduction to theory and research.* Reading, MA: Addison-Wesley.

Fishbein, M., & Ajzen, I. (2010). *Predicting and changing behavior: The reasoned action approach*. New York, NY: Psychology Press.

Fowler, F. J. (2014). *Survey research methods* (5th ed.). Thousand Oaks, CA: Sage Publications Inc.

Fried, T. R., Bullock, K., Iannone, L., & O'Leary, J. R. (2009). Understanding advance care planning as a process of health behavior change. *Journal of the American Geriatrics Society, 57*, 1547–1555.

Gao, X., Sun, F., Ko, E., Kwak, J., & Shen, H. W. (2015). Knowledge of advance directive and perceptions of end-of-life care in Chinese-American elders: The role of acculturation. *Palliative and Supportive Care, 13*, 1677–1684.

Gerend, M. A., & Shepherd, J. E. (2012). Predicting human papillomavirus vaccine uptake in young adult women: Comparing the health belief model and theory of planned behavior. *Annals of Behavioral Medicine, 44*, 171–180.

Glanz, K., & Bishop, D. B. (2010). The role of behavioral science theory in development and implementation of public health interventions. *Annual Review of Public Health, 31*, 399–418. doi:10.1146/annurev.publhealth.012809.103604

Greco, P. J., Schulman, K. A., Lavizzo-Mourey, R., & Hansen-Flaschen, J. (1991). The Patient Self-Determination Act and the future of advance directives. *Annals of Internal Medicine*, *115*, 639–643.

Green, J. (2000). The role of theory in evidence-based health promotion practice. *Health Education Research, 15*, 125–129. doi:10.1093/her/15.2.125

Guo, M., Li, S., Liu, J., & Sun, F. (2015). Family relations, social connections, and mental health among Latino and Asian older adults. *Research on Aging, 37*, 123–147.

Gupta, R., & Yick, A.G. (2001). Preliminary validation of the acculturation scale on Chinese Americans. *Journal of Social Work Research and Evaluation, 2*, 43–56.

Hamel, C. F., Guse, L. W., Hawranik, P. G., & Bond, J. B., Jr. (2002). Advance directives and community-dwelling older adults. *Western Journal of Nursing Research*, *24*, 143–158.

Hanel, P. H. P., & Vione, K. C. (2016). Do student samples provide an accurate estimate of the general public? *PLOS ONE*, *11*, e0168354. doi:10.1371/journal.pone.0168354

Harrison, J. A., Mullen, P. D., & Green, L. W. (1992). A meta-analysis of studies of the health belief model with adults. *Health Education Research, 7*, 107–116.

Heyland, D. K., Barwich, D., Pichora, D., Dodek, P., Lamontagne, F., You, J. J.,…Simon, J. (2013). Failure to engage hospitalized elderly patients and their families in advance care planning. *JAMA Internal Medicine*, *173*, 778–787. doi:10.1001/jamainternmed.2013.180

Ho, A. H. Y., Dai, A. A. N., Shu-hang, L., Wong, S. W. R., Tsui, A. L. M., Tang, J. C. S., & Lou, V. W. Q. (2016). Development and pilot evaluation of a novel dignity-conserving End-of-Life (EoL) care model for nursing homes in Chinese societies. *Gerontologist*, *56*, 578–589. doi:10.1093/geront/gnv037

Hong, M., Casado, B. L., & Lee, S. E. (2018). The intention to discuss advance care planning in the context of Alzheimer's Disease among Korean Americans. *The Gerontologist*. Advance online publication. doi:10.1093/geront/gnx211

Houben, C. H., Spruit, M. A., Groenen, M. T., Wouters, E. F., & Janssen, D. J. (2014). Efficacy of advance care planning: A systematic review and meta-analysis. *Journal of the American Medical Directors Association, 15*, 477–489.

Hsiung, Y. (2015). Theoretical issues associated with cultural readiness for end-of-life care planning in Taiwan. *Social Behavior & Personality, 43*, 1385–1393. doi:10.2224/sbp.2015.43.8.1385

Hsiung, Y. F. (2011). *Chinese American's readiness for advance care planning*. (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. 3551255)

Hsiung, Y. Y., & Ferrans, C. E. (2007). Recognizing Chinese Americans' cultural needs in making end-of-life treatment decisions. *Journal of Hospice & Palliative Nursing, 9*, 132–140. doi:10.1097/01.NJH.0000269993.13625.49

Huang, I. A., Neuhaus, J. M., & Chiong, W. (2016). Racial and ethnic differences in advance directive possession: Role of demographic factors, religious affiliation, and personal health values in a national survey of older adults. *Journal of Palliative Medicine, 19*, 149–156. doi:10.1089/jpm.2015.0326

Janz, N. K., & Becker, M. H. (1984). The health belief model: A decade later. *Health Education Quarterly, 11*, 1–47.

Kang, S. C., Lin, M. H., Hwang, I. H., Lin, M. H., Chang, H. T., & Hwang, S. J. (2012). Impact of hospice care on end-of-life hospitalization of elderly patients with lung cancer in Taiwan. *Journal of the Chinese Medical Association, 75*, 221–226.

Kataoka-Yahiro, M. R., Yancura, L. A., Page, V., & Inouye, J. (2011). Advance care planning decision making among Asian Pacific Islander family caregivers of stage 4 to 5 chronic kidney disease patients on hemodialysis: A focus group study. *Journal of Hospice & Palliative Nursing, 13*, 426–435. doi:10.1097/NJH.0b013e31822da9c2

Kent, D. R. (1996). *Application of health behavior theory to increase use of advance directives among individuals with HIV disease*. (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. 9703840)

Ko, E. (2008). *Advance care planning with Korean American and non-Hispanic White older adults*. (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. 3297917)

Ko, E., & Lee, J. (2009). End-of-life communication: Ethnic differences between Korean American and non-Hispanic White older adults. *Journal of Aging and Health, 21*, 967–984. doi:10.1177/0898264309344179

Kononovas, K., & McGee, A. (2017). The benefits and barriers of ensuring patients have advance care planning. *Nursing Times, 113,* 41–44.

Kramer, B. J., Boelk, A. Z., & Auer, C. (2006). Family conflict at the end of life: Lessons learned in a model program for vulnerable older adults. *Journal of Palliative Medicine, 9,* 791–801.

Lee, H. T. S., Cheng, S. C., Dai, Y. T., Chang, M., & Hu, W. Y. (2016). Cultural perspectives of older nursing home residents regarding signing their own DNR directives in Eastern Taiwan: A qualitative pilot study. *BMC Palliative Care, 15,* 1–10. doi:10.1186/s12904-016-0117-4

Lee, M. C., Byon, H., Hinderer, K., & Alexander, C. (2017). Beliefs in advance care planning among Chinese Americans: Similarities and differences between the younger and older generations. *Asian/Pacific Island Nursing Journal, 2,* 83–90. doi:10.9741/23736658.1055

Lee, M. C., Hinderer, K. A., & Friedmann, E. (2015). Engaging Chinese American adults in advance care planning: A community-based, culturally sensitive seminar. *Journal of Gerontological Nursing, 41*, 17–21. doi:10.3928/00989134-20150406-01

Lee, M. C., Hinderer, K. A., & Kehl, K. A. (2014). A systematic review of advance directives and advance care planning in Chinese people from Eastern and Western cultures. *Journal of Hospice & Palliative Nursing*, *16*, 75–85.

Lindlof, T. R., & Taylor, B. C. (2011). *Qualitative communication research methods* (3rd ed.). Thousand Oaks, CA: SAGE Publications Inc.

Low, J. A., Ng, W. C., Yap, K. B., & Chan, K. M. (2000). End-of-life issues: Preferences and choices of a group of elderly Chinese subjects attending a day care center in Singapore. *Annals of the Academy of Medicine, Singapore, 29,* 50–56.

Matsumura, S., Bito, S., Liu, H., Kahn, K., Fukuhara, S., Kagawa-Singer, M., & Wenger, N. (2002). Acculturation of attitudes toward end-of-life care. *Journal of General Internal Medicine, 17,* 531–539. doi:10.1046/j.1525-1497.2002.10734.x

McClenahan, C., Shevlin, M., Adamson, G., Bennett, C., & O’Neill, B. (2007). Testicular self-examination: A test of the health belief model and the theory of planned behaviour. *Health Education Research, 22*, 272–284. doi:10.1093/her/cyl076

McEachan, R. R. C., Conner, M., Taylor, N. J., & Lawton, R. J. (2011). Prospective prediction of health-related behaviours with the theory of planned behaviour: A meta-analysis. *Health Psychology Review, 5*, 97–144.

Michie, S., & Johnston, M. (2012). Theories and techniques of behaviour change: Developing a cumulative science of behaviour change. *Health Psychology Review, 6*, 1–6. doi:10.1080/17437199.2012.654964

Miller, B. (2017). Nurses in the know: The history and future of advance directives. *The Online Journal of Issues in Nursing, 22*(3). doi:10.3912/OJIN.Vol22No03PPT57

Montanaro, E. A., & Bryan, A. D. (2014). Comparing theory-based condom interventions: Health belief model versus theory of planned behavior. *Health Psychology, 33*, 1251–1260. doi:10.1037/a0033969

Morrison, R. S., & Meier, D. E. (2004). High rates of advance care planning in New York City's elderly population. *Archives of Internal Medicine, 164,* 2421–2426. doi: 10.1001/archinte.164.22.2421

Nahapetyan, L., Orpinas, P., Glass, A., & Song, X. (2017). Planning ahead: Using the theory of planned behavior to predict older adults' intentions to use hospice if faced with terminal illness. *Journal of Applied Gerontology*. Advance online publication. doi:10.1177/0733464817690678

National Hospice and Palliative Care Organization. (2016). *Advance care planning*. Retrieved from http://www.nhpco.org/advance-care-planning

National Institute of Aging. (2016). *Advance care planning*. Retrieved from https://www.nia.nih.gov/health/publication/advance-care-planning

Ni, P., Zhou, J., Wang, Z. X., Nie, R., Phillips, J., & Mao, J. (2014). Advance directive and end-of-life care preferences among nursing home residents in Wuhan, China: A cross-sectional study. *Journal of the American Medical Directors Association, 15*, 751–756. doi:10.1016/j.jamda.2014.06.006

Noar, S. M., Benac, C. N., & Harris, M. S. (2007). Does tailoring matter? Meta-analytic review of tailored print health behavior change interventions. *Psychological Bulletin, 133*, 673–693. doi: 10.1037/0033-2909.133.4.673

Notani, A. S. (1998). Moderators of perceived behavioral control's predictiveness in the theory of planned behavior: A meta-analysis. *Journal of Consumer Psychology, 7*, 247–271.

Nussbaum, J. F., & Fisher, C. L. (2009). A communication model for the competent delivery of geriatric medicine. *Journal of Language and Social Psychology, 28,* 190–208.

O'Connor, B. P. (2000). SPSS and SAS programs for determining the number of components using parallel analysis and Velicer's MAP test. *Behavior Research Methods, Instrumentation, and Computers*, 32, 396–402.

Ortman, J. M., Velkoff, V. A., & Hogan, H. (2014). *An aging nation: The older populationin the United States*. Retrieved from https://www.census.gov/prod/2014pubs/p25-1140.pdf

Parkin, D.M., Boyd, L., & Walker, L.C. (2011). The fraction of cancer attributable to lifestyle and environmental factors in the UK in 2010. *British Journal of Cancer, 105*, S77–S81. doi:10.1038/bjc.2011.474

PerryUndem Research/Communication. (2016). *Physicians' views toward advance care planning and end-of-life care conversations.* Retrieved from https://www.johnahartford.org/images/uploads/resources/ConversationStopper_Poll_Memo.pdf

Peterson, R. A., & Merunka, D. R. (2014). Convenience samples of college students and research reproducibility. *Journal of Business Research, 67*, 1035–1041.

Pett, M. A., Lackey, N. R., & Sullivan, J. J. (2003). *Making sense of factor analysis.* Thousand Oaks, CA: Sage Publications Inc.

Pew Research Center. (2017). *Chinese in the U.S. Fact Sheet*. Retrieved from http://www.pewsocialtrends.org/fact-sheet/asian-americans-chinese-in-the-u-s/

Pope, T. M. (2013). Legal briefing: The new Patient Self-Determination Act. *Journal of Clinical Ethics, 24*, 156–167.

Rao, J. K., Anderson, L. A., Lin, F.-C., & Laux, J. P. (2014). Completion of advance directives among U.S. consumers. *American Journal of Preventive Medicine, 46*, 65–70.

Riebl, S. K., Estabrooks, P. A., Dunsmore, J. C., Savla, J., Frisard, M. I., Dietrich, A. M., …Davy, B. M. (2015). A systematic literature review and meta-analysis: The theory of planned behavior's application to understand and predict nutrition-related behaviors in youth. *Eating Behaviors*, *18*, 160–178.

Rivera, F. I., Guarnaccia, P. J., Mulvaney-Day, N., Lin, J. Y., Torres, M., & Alegria, M. (2008). Family cohesion and its relationship to psychological distress among Latino groups. *Hispanic Journal of Behavioral Sciences, 30*, 357–378. doi:10.1177/0739986308318713

Rosenstock, I. M. (1974). Historical origins of the health belief model. *Health Education Monographs, 2,* 328–335.

Rosenstock, I. M., Strecher, V. J., & Becker, M. H. (1988). Social learning theory and the health belief model. *Health Education & Behavior, 15,* 175–183.

Sabatino, C. P. (2010). The evolution of health care advance planning law and policy. *The Milbank Quarterly, 88,* 211–239. doi:10.1111/j.1468-0009.2010.00596.x

Sales, A., Smith, J., Curran, G., & Kochevar, L. (2006). Models, strategies, and tools: Theory in implementing evidence-based findings into health care practice. *Journal of General Internal Medicine, 21*(Suppl 2), S43–S49. doi:10.1111/j.1525-1497.2006.00362.x

Schwartz, S. J., Unger, J. B., Zamboanga, B. L., & Szapocznik, J. (2010). Rethinking the concept of acculturation: Implications for theory and research. *The American Psychologist, 65,* 237–251. doi:10.1037/a0019330

Sharp, T., Moran, E., Kuhn, I., & Barclay, S. (2013). Do the elderly have a voice? Advance care planning discussions with frail and older individuals: A systematic literature review and narrative synthesis. *British Journal of General Practice, 63,* e657–e668. doi:10.3399/bjgp13X673667

Shrestha, L. B., & Heisler, E. J. (2011). The changing demographic profile of the United States. Retrieved from https://www.fas.org/sgp/crs/misc/RL32701.pdf.

Şimşekoğlu, Ö., & Lajunen, T. (2008). Social psychology of seat belt use: A comparison of theory of planned behavior and health belief model. *Transportation Research Part F: Traffic Psychology and Behaviour, 11*, 181–191.

Stiff, J. B., & Mongeau, P. A. (2016). *Persuasive communication* (3rd ed.). New York, NY: Guilford Press.

Sudore, R. L., & Fried, T. R. (2010). Redefining the "planning" in advance care planning: Preparing for end-of-life decision making. *Annals of Internal Medicine, 153*, 256–261.

Sun, F., Gao, X., & Coon, D. W. (2015). Perceived threat of Alzheimer's Disease among Chinese American older adults: The role of Alzheimer's Disease literacy. *The Journals of Gerontology: Series B, 70*, 245–255. doi:10.1093/geronb/gbt095

Szalai, L. C. (2015). *Predicting young adults' engagement in advance care planning*. (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. 10024069)

Ta, V. M., Holck, P., & Gee, G. C. (2010). Generational status and family cohesion effects on the receipt of mental health services among Asian Americans: Findings from the national Latino and Asian American study. *American Journal of Public Health, 100*, 115–121. doi:10.2105/AJPH.2009.160762

Tang, C., Lam, L., & Chiu, H. (2007). Attitudes to end-of-life decisions: A survey of elderly Chinese with dementia and their carers. *Asian Journal of Gerontology & Geriatrics, 2*, 119–125.

Ting, F. H., & Mok, E. (2011). Advance directives and life-sustaining treatment: Attitudes of Hong Kong Chinese elders with chronic disease. *Hong Kong Medical Journal, 17*, 105–111.

Topa, G., & Moriano, J. A. (2010). Theory of planned behavior and smoking: Meta-analysis and SEM model. *Substance Abuse and Rehabilitation, 1,* 23–33.

Thornton, S., & Calam, R. (2011). Predicting intention to attend and actual attendance at a universal parent-training programme: A comparison of social cognition models. *Clinical Child Psychology and Psychiatry, 16*, 365–383. doi:10.1177/1359104510366278

U.S. Census Bureau. (2012, March 12). *2010 Census shows Asians are fastest-growing race group* [Press release]. Retrieved from https://www.census.gov/newsroom/releases/archives/2010_census/cb12-cn22.html

U.S. Census Bureau. (2016). *Asian alone or in any combination by selected groups*. Retrieved from https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=bkmk

U.S. Census Bureau. (2017a). *Asian-American and Pacific Islander Heritage Month: May 2017.* Retrieved from https://www.census.gov/content/dam/Census/newsroom/facts-for-features/2017/cb17-ff07.pdf

U.S. Census Bureau. (2017b). *Older Americans Month: May 2017.* Retrieved from https://www.census.gov/newsroom/facts-for-features/2017/cb17-ff08.html

U.S. Census Bureau. (2017c). *The nation's older population is still growing, Census Bureau reports* [Press release]. Retrieved from https://www.census.gov/newsroom/press-releases/2017/cb17-100.html

VandeCreek, L., & Frankowski, D. (1996). Barriers that predict resistance to completing a living will. *Death Studies, 20*, 73–82. doi:10.1080/07481189608253412

Volandes, A. E., & Volandes, A. (2015). The conversation: A revolutionary plan for end-of-life care. New York: Bloomsbury Publishing USA.

Wilkinson, A., Wenger, N., & Shugarman, L. R. (2007). *Literature review on advance directives*. United States: Department of Health and Human Services and RAND Corporation.

Witte, K. (2000). *EPPM: Examples of items*. Retrieved from http://www.msu.edu/~wittek/scale.htm

Wittenberg-Lyles, E., Villagran, M. M., & Hajek, C. (2008). The impact of communication, attitudes, and acculturation on advance directives decision-making. *Journal of Ethnic & Cultural Diversity in Social Work, 17*, 349–364. doi:10.1080/15313200802467874

World Health Organization. (2000*). Information needs for research, policy and action on ageing and older adults.* Retrieved from http://www.who.int/healthinfo/survey/ageing_mds_report_en_harare.pdf

Wright, A. A., Zhang, B., Ray, A., Mack, J. W., Trice, E., Balboni, T.,...& Prigerson, H. G. (2008). Associations between end-of-life discussions, patient mental health, medical care near death, and caregiver bereavement adjustment. *Jama, 300*, 1665–1673. doi:10.1001/jama.300.14.1665

Yang, Z. J. (2015). Predicting young adults' intentions to get the H1N1 vaccine: an integrated model. *Journal of Health Communication, 20*, 69–79. doi:10.1080/10810730.2014.904023

Yap, S. S., Chen, K., Detering, K. M., & Fraser, S. A. (2017). Exploring the knowledge, attitudes and needs of advance care planning in older Chinese-Australians. *Journal of Clinical Nursing.* Advance online publication. doi:10.1111/jocn.13886

Yzer, M. (2013). Reasoned action theory: Persuasion as belief-based behavior change. In J. P. Dillard, & L. J. Shen (Eds.), *The SAGE handbook of persuasion: Developments in theory and practice* (pp. 120-136). Thousand Oaks, CA: Sage Publications Inc.

Zhang, N., Ning, X. H., Zhu, M. L., Liu, X. H., Li, J. B., & Liu, Q. (2015). Attitudes towards advance care planning and healthcare autonomy among community-dwelling older adults in Beijing, China. *BioMed Research International, 2015,* 1-10. doi:10.1155/2015/453932

Zhang, B., Wright, A. A., Huskamp, H. A., Nilsson, M. E., Maciejewski, M. L., Earle, C. C.,…& Prigerson, H. G. (2009). Health care costs in the last week of life: associations with end-of-life conversations. *Archives of Internal Medicine*, *169*, 480-488. doi:10.1001/archinternmed.2008.587

Zimmerman, R. S., & Vernberg, D. (1994). Models of preventative health behavior: Comparison, critique, and meta-analysis. *Advances in Medical Sociology*, *4*, 45–67.

APPENDIX I

IRB APPROVAL

ASU Knowledge Enterprise Development

EXEMPTION GRANTED

Anthony Roberto
Human Communication, Hugh Downs School of
480/965-4111
Anthony.Roberto@asu.edu

Dear Anthony Roberto:

On 3/31/2017 the ASU IRB reviewed the following protocol:

Type of Review:	Initial Study
Title:	Understanding Chinese American Older Adults' Intention to Use Advance Care Planning
Investigator:	Anthony Roberto
IRB ID:	STUDY00006081
Funding:	None
Grant Title:	None
Grant ID:	None
Documents Reviewed:	• Survey Questions Chinese, Category: Translations; • Translation Certificate Form, Category: Translations; • PROTOCOL Social Behavioral 0329.docx, Category: IRB Protocol; • survey recruitment revised.pdf, Category: Recruitment Materials; • CONSENT SOCIAL BEHAVIORAL revised.pdf, Category: Consent Form; • Survey Questions English, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions);

The IRB determined that the protocol is considered exempt pursuant to Federal Regulations 45CFR46 (2) Tests, surveys, interviews, or observation on 3/31/2017.

In conducting this protocol you are required to follow the requirements listed in the INVESTIGATOR MANUAL (HRP-103).

Sincerely,

IRB Administrator

cc: Yanqin Liu

APPENDIX II

THEORY OF PLANNED BEHAVIOR & HEALTH BELIEF MODEL QUESTIONS

ENGLISH VERSION 1

Advance care planning helps us before we encounter a medical crisis and are not able to speak for ourselves. Advance care planning includes:

1. **Discussing** your end of life care preferences with family members, and
2. **Documenting** your end of life care preferences.

It is recommended that you do these two things while you are still physically and mentally able to do so.

This part of the survey focuses on **discussing your end of life care plans with family members**. Please think about just this part of advance care planning when answering the questions in this section.

Please circle the word that best describes your opinion. It is measured on a scale of 1-5.
Attitude
Discussing my end of life care plans with family members is:
1. Very bad-bad-neutral-good-very good
2. Very Harmful-harmful-neutral-beneficial-very beneficial
3. Very useless-useless-neutral-useful-very useful
4. Very worthless-worthless-neutral-valuable-very valuable

Please rate to what degree the following statements are true to you. 1=completely disagree, 2 =mostly disagree, 3=neither agree nor disagree, 4=mostly agree, 5=completely agree.
Subjective norm
1. Most people who are important to me think I should discuss my end of life care plans with family members.
2. Most people whose opinions I value would approve of my discussing end of life care plans with family members.
3. Most people I respect and admire will support my discussing end of life care plans with family members.

Self-efficacy
1. I am confident that I can discuss my end of life care plans with family members.
2. I have the ability to discuss my end of life care plans with family members.
3. It would be easy for me to discuss my end of life care plans with family members.
4. I have enough knowledge to be able to discuss my end of life care plans with family members.

Control belief
1. Whether I discuss my end of life care plans with family members is entirely up to me.
2. Whether I discuss my end of life care plans with family members is under my personal control.
3. I feel in complete control over whether I discuss my end of life care plans with family members.

Behavioral intention
1. I intend to discuss my end of life care plans with family members.
2. I am willing to discuss my end of life care plans with family members.
3. I will discuss my end of life care plans with family members.

Perceived susceptibility
1. If I do NOT discuss my end of life care plans with family members I will receive unwanted medical treatments.
2. If I do NOT discuss my end of life care plans with family members I will be at risk of receiving unwanted medical treatments.
3. If I do NOT discuss my end of life care plans with family members it is likely that I will receive unwanted medical treatments.
4. If do NOT discuss my end of life care plans with family members I will be susceptible to unwanted medical treatments.

Perceived severity
1. Receiving unwanted medical treatments would be harmful to me.
2. Receiving unwanted medical treatments is a big concern to me.
3. Receiving unwanted medical treatments is a serious problem to me.
4. Receiving unwanted medical treatments would have severe negative consequences.

Perceived benefit
1. Discussing my end of life care plan with family members will help my family know about my medical treatment preferences in advance.
2. Discussing my end of life care plan with family members will help my doctor know about my medical treatment references in advance.
3. Discussing my end of life care plan with family members will help me get the wanted medical treatments in the future.
4. Discussing my end of life care plan with family members will help me relieve family burdens.
5. Discussing my end of life care plan with family members will help me reduce family conflicts.
6. Discussing my end of life care plan with family members will increase the quality of my life in my last days.

Perceived barrier

1. It makes me sad to discuss my end of life care plans with family members.
2. Discussing my end of life care plans with family members will increase my family conflicts.
3. It is difficult to discuss my end of life care plans because I do not know what my medical treatment preferences will be in the future.
4. I feel uncomfortable to discuss my end of life care plans with family members.
5. Discussing my end of life care plans with family members will cause my death anxiety.
6. I am not used to considering my end of life care in advance.
7. I am not sick enough to discuss end of life care plans with family members.
8. Discussing my end of life care plans with my family members is bad luck.
9. It will make my family members sad if I discuss my end of life care plans with them.

APPENDIX II

THEORY OF PLANNED BEHAVIOR & HEALTH BELIEF MODEL QUESTIONS

MANDARIN VERSION 1

计划行为理论和健康信念模型问题版本一

基本提示：

在美国的医疗系统中，预定护理计划(Advance Care Planning)可以帮助我们**在身体健康、精神状态良好、意识清楚的时候**对未来的临终照料做出安排。这样做的目的是尽可能地保证自己的选择得到家人和医生的尊重，更好地处理医疗危机。这一类的计划主要包括：

1） 与家人讨论临终照料计划
2） 填写临终照料计划

这部分的问题关于<u>与家人讨论临终照料计划</u>的行为。<u>如果您已经有过讨论，请设想自己是否愿意继续和家人就这一问题进行讨论。因为我们的生活处于变化之中，对于临终照料的计划有可能需要调整。</u>

<u>在这一部分，您会发现很多问题看似重复。这是为了科学研究所做出的刻意安排，因为一个问题有时并不能全面地呈现出您的看法。请仔细阅读并根据您的真实想法思考每一个问题，在相应选项处划勾。调查对参与者信息严格保密，请放心回答。答案无对错之分。</u>

请根据真实想法回答，在相应选项处划勾。五个选项分别代表1-5。
态度
与家人讨论我的临终照料计划：
1）很不好 不好 中立 好 很好
2）很有害 有害的 中立 有利 很有利
3）很没有帮助 没有帮助 中立 有帮助 很有帮助
4）很没有价值 没有价值 中立 有价值 很有价值

请根据自己的真实想法选出对下列描述的同意程度。1=完全不同意，2=大部分不同意，3=一半一半，4=大部分同意，5=完全同意。
主观规范
1. 对我重要的大多数人认为我应该与家人讨论临终照料计划。
2. 我重视意见的大多数人会赞同我与家人讨论临终照料计划。
3. 我尊敬的大多数人会支持我与家人讨论临终照料计划。

自我效能
1. 我有信心和家人讨论我的临终照料计划。
2. 我有能力和家人讨论我的临终照料计划。
3. 对我来说，和家人讨论我的临终照料计划是容易的。

4. 我知道自己该怎样和家人讨论我的临终照料计划。

控制信念

1. 是否和家人讨论临终照料计划完全由我自己来决定。
2. 是否和家人讨论临终照料计划在我的控制范围之内。
3. 是否和家人讨论临终照料计划，我一个人说了算。

行为动机

1. 我计划和家人讨论我的临终照料事项。
2. 我愿意和家人讨论我的临终照料计划。
3. 我将来会和家人讨论我的临终照料计划。

风险程度

1. 如果不和家人讨论临终照料计划，我会得到不想要的医疗方案。
2. 如果不和家人讨论临终照料计划，我很有可能会得到不想要的医疗方案。
3. 如果不和家人讨论临终照料计划，我也许会得到不想要的医疗方案。
4. 如果不和家人讨论临终照料计划，不想要的医疗方案容易影响到我。

严重性

1. 得到不想要的医疗方案对我是有害的。
2. 我很担心自己会得到不想要的医疗方案。

3. 对我来说， 得到不想要的医疗方案是一个严重的问题。
4. 得到不想要的医疗方案会给我带来严重的后果。

好处

1. 与家人讨论临终照料计划可以帮助家人提前了解我的医疗意愿。
2. 与家人讨论临终照料计划可以帮助医生提前了解我的医疗意愿。
3. 与家人讨论临终照料计划可以帮助我将来得到我想要的医疗方案。
4. 与家人讨论临终照料计划可以帮助减轻家庭负担。
5. 与家人讨论临终照料计划可以帮助缓解家庭矛盾。
6. 与家人讨论临终照料计划可以提高我生命最后阶段的生活质量。

困难

1. 与家人讨论我的临终照料计划会让我感到悲伤。
2. 与家人讨论我的临终照料计划会增加家庭矛盾。
3. 与家人讨论我的临终照料计划比较困难，因为我还不知道自己未来的医疗意愿会是什么。
4. 与家人讨论我的临终照料计划会让我心里不舒服。
5. 与家人讨论我的临终照料计划会引起我对死亡的恐惧。
6. 我不习惯提前考虑和临终照料有关的话题。
7. 我还没有病重到需要与家人讨论临终照料计划的程度。
8. 和家人我的讨论临终照料计划不吉利。
9. 与家人讨论我的临终照料计划会让家人感到悲伤。

APPENDIX III

THEORY OF PLANNED BEHAVIOR AND HEALTH BELIEF MODEL QUESTIONS

ENGLISH VERSION 2

Advance care planning helps us before we encounter a medical crisis and are not able to speak for ourselves. Advance care planning includes:

1. **Discussing** your end of life care preferences with family members, and
2. **Documenting** your end of life care preferences.

It is recommended that you do these two things while you are still physically and mentally able to do so.

This part of the survey focuses on **documenting your end of life care plans.** Documenting your end of life care plan is done using a legal document called an advance directive (AD). When you encounter a medical crisis and are not able to speak for yourself, AD mainly provides guidance about the following things:

1. What life-supporting treatments (e.g., CPR and a breathing machine) you do not want.
2. Who is appointed to make medical decisions on your behalf.

Think about just this part of advanced care planning when answering the questions in this section. Please keep in mind that we may ask similar questions multiple times, since no one item will assess your understanding perfectly.

Please circle the word that best describes your opinion. It is measured on a scale of 1-5.
Attitude
For me, completing an advance directive is:
1. Very bad-bad-neutral-good-very good
2. Very Harmful-harmful-neutral-beneficial-very beneficial
3. Very useless-useless-neutral-useful-very useful
4. Very worthless-worthless-neutral-valuable-very valuable

Please rate to what degree the following statements are true to you. 1=completely disagree, 2=mostly disagree, 3=neither agree nor disagree, 4=mostly agree, 5=completely agree.
Subjective norm
1. Most people who are important to me think that I should complete an advance directive.
2. Most people whose opinions I value would approve of my completing an advance directive.
3. Most people I respect and admire will support my completing an advance directive.

Self-efficacy
1. I am confident that I can complete an advance directive.
2. I have the ability to complete an advance directive.
3. It would be easy for me to complete an advance directive.
4. I have enough knowledge to be able to complete an advance directive.

Control belief
1. Whether I complete an advance directive is entirely up to me.
2. Whether I complete an advance directive is under my personal control.
3. I feel in complete control over whether I complete an advance directive.

Behavioral intention
1. I intend to complete an advance directive.
2. I am willing to complete an advance directive.
3. I will complete an advance directive.

Perceived susceptibility
1. If I do NOT complete an advance directive I will receive unwanted medical treatments.
2. If I do NOT complete an advance directive I am at risk of receiving unwanted medical treatments.
3. If I do NOT complete an advance directive it is likely that I will receive unwanted medical treatments.
4. If do NOT complete an advance directive I will be susceptible to unwanted medical treatments.

Perceived benefit
1. Completing an advance directive will help my family know about my medical treatment preferences in advance.
2. Completing an advance directive will help my doctor know about my medical treatment references in advance.
3. Completing an advance directive will help me get the wanted medical treatments in the future.
4. Completing an advance directive will help me relieve family burdens.
5. Completing an advance directive will help me reduce family conflicts.
6. Completing an advance directive will increase the quality of my life in my last days.

Perceived barrier
1. It makes me sad to complete an advance directive.
2. Completing an advance directive will increase my family conflicts.
3. It is difficult to complete an advance directive because I do not know what my medical treatment preferences will be in the future.
4. I feel uncomfortable to complete an advance directive.
5. Completing an advance directive will cause my death anxiety.
6. I am not used to considering my end of life care in advance.
7. I am not sick enough to complete an advance directive.
8. Completing an advance directive is bad luck.
9. It will make my family members sad if I complete an advance directive.

APPENDIX III

THEORY OF PLANNED BEHAVIOR AND HEALTH BELIEF MODEL QUESTIONS

MANDARIN VERSION 2

计划行为理论和健康信念模型问题版本二

基本提示：

在美国的医疗系统中，预定护理计划(Advance Care Planning)可以帮助我们**在身体健康、精神状态良好、意识清楚的时候**对未来的临终照料做出安排。这样做的目的是尽可能地保证自己的选择得到家人和医生的尊重，更好地处理医疗危机。这一类的计划主要包括：

3） 与家人讨论临终照料计划
4） 填写临终照料计划

在美国的医疗系统中，书面填写临终照料计划是通过签署医疗照料委托书 (advance directive) 实现的。医疗照料委托书是一份具有法律效力的文件，帮助我们在遇到医疗危机、没有能力做决定时表达重要的医疗意愿。它主要包括：

1） 指示是否需要维持生命治疗手段（比如使用心肺复苏、呼吸机等治疗方式）。
2） 指定当我不能做决定时能够代替我做医疗决定的代理人。

虽然临终照料计划的文件主要包括两方面的内容。但是在这一部分的问卷调查中，**请您把“书面填写临终照料计划”作为一个整体来考虑**。

这部分的问题关于书面填写临终照料计划的行为。如果您已经填写，请设想自己是否愿意以后书面更新自己的临终照料事项。因为我们的生活处于变化之中，对于临终照料的计划有可能需要调整。

在这一部分，您会发现很多问题看似重复。这是为了科学研究所做出的刻意安排，因为一个问题有时并不能全面地呈现出您的看法。请仔细阅读并根据您的真实想法思考每一个问题，在相应选项处划勾。调查对参与者信息严格保密，请放心回答。答案无对错之分。

请根据真实想法回答，在相应选项处划勾。五个选项分别代表1-5。
态度
对我来说，填写临终照料计划
1. 很不好 不好 中立 好 很好
2. 很有害 有害的 中立 有利 很有利
3. 很没有帮助 没有帮助 中立 有帮助 很有帮助
4. 很没有价值 没有价值 中立 有价值 很有价值

请根据自己的真实想法选出对下列描述的同意程度。1=完全不同意，2=大部分不同意，3=一半一半，4=大部分同意，5=完全同意。

主观规范

1. 对我重要的大多数人认为我应该填写临终照料计划。
2. 我重视意见的大多数人会赞同我填写临终照料计划。
3. 我尊敬的大多数人会支持我填写临终照料计划。

自我效能

1. 我对填写自己的临终照料计划有信心。
2. 我有能力填写临终照料计划。
3. 对我来说，填写临终照料计划是容易的。
4. 我知道自己该怎样填写临终照料计划。

控制信念

1. 是否填写临终照料计划完全由我自己来决定。
2. 是否填写临终照料计划在我的控制范围之内。
3. 是否填写临终照料计划，我一个人说了算。

行为动机

1. 我计划填写自己的临终照料事项。
2. 我愿意填写临终照料计划。
3. 我将来会填写临终照料计划。

风险程度

1. 如果不填写临终照料计划，我会得到不想要的医疗方案。
2. 如果不填写临终照料计划，我很有可能会得到不想要的医疗方案。
3. 如果不填写临终照料计划，我也许会得到不想要的医疗方案。
4. 如果不填写临终照料计划，不想要的医疗方案容易影响到我。

严重性

1. 得到不想要的医疗方案对我是有害的。
2. 我很担心自己会得到不想要的医疗方案。
3. 对我来说， 得到不想要的医疗方案是一个严重的问题。
4. 得到不想要的医疗方案会给我带来严重的后果。

好处

1. 填写临终照料计划可以帮助家人提前了解我的医疗意愿。
2. 填写临终照料计划可以帮助医生提前了解我的医疗意愿。
3. 填写临终照料计划可以帮助我将来得到我想要的医疗方案。
4. 填写临终照料计划可以帮助减轻家庭负担。
5. 填写临终照料计划可以帮助缓解家庭矛盾。
6. 填写临终照料计划可以提高我生命最后阶段的生活质量。

困难

1. 填写临终照料计划会让我感到悲伤。
2. 填写临终照料计划会增加家庭矛盾。
3. 填写临终照料计划比较困难，因为我还不知道自己未来的医疗意愿会是什么。
4. 填写临终照料计划会让我心里不舒服。
5. 填写临终照料计划会引起我对死亡的恐惧。
6. 我不习惯提前考虑和临终照料有关的话题。
7. 我还没有病重到需要填写临终照料计划的程度。
8. 填写临终照料计划不吉利。
9. 填写临终照料计划会让家人感到悲伤。

APPENDIX IV

SURVEY QUESTIONS ABOUT DEMOGRAPHICS, ACCULTURATION, AND FAMILY COHESION

ENGLISH VERSION

Are you 1. Male 2. Female

What is your date of birth? __ __ (month) __ __ __ __ (year)

What is the highest grade or year of regular school that you have completed?

1 6th grade or lower
2 9th grade
3 12th grade
4 Vocational or trade school
5 College graduate – 4 yr.
6 Postgraduate or higher

In which territory were you born?

1 USA ***(If you have chosen this one, skip question 2, and go to question 3)***
2 Mainland China
3 Hong Kong
4 Taiwan
5 Someplace else (***Specify***: __________________)

(If you were born in the U.S., skip this question). In which year you came to the United States to stay for the long term? __ __ __ ___ Year

Do you have any religious beliefs?

☐Yes
☐No

If yes, please specify 1 Buddhism 2. Christianity 3 Others __________

Have you discussed your end of life care plan with family members?

☐Yes
☐No

Have you documented your end of life care plan through advance directive?

☐Yes
☐No

Please rate to what degree the following statements are true to you. 1=completely disagree, 2=mostly disagree, 3=neither agree nor disagree, 4=mostly agree, 5=completely agree.

Acculturation
1. I speak Chinese more often than English.
2. My English is much more fluent than Chinese.
3. I celebrate Chinese holidays (e.g., Chinese Spring Festival, Mid Autumn Day) more frequently than American holidays (e.g., Christmas, Thanksgiving).
4. I watch Chinese TV programs and movies more frequently than English ones.
5. I read Chinese books or newspapers than English ones.
6. I write in English more often than in Chinese.
7. What I eat daily is mostly Chinese food.
8. Most activities I attend are associated with Chinese communities.
9. I mainly go shopping at Asian markets or grocery stores.
10. I feel at home living in the U.S.

Please rate to what degree the following statements are true to you. 1=strongly agree, 2=somewhat agree, 3=somewhat disagree, 4=strongly disagree.

Family cohesion
1. Family members respect one another.
2. We share similar values and beliefs as a family.
3. Family members feel loyal to the family.
4. Family members share their feelings with each other.
5. Family members like to be together when then have free time.

APPENDIX IV

SURVEY QUESTIONS ABOUT DEMOGRAPHICS, ACCULTURATION, AND FAMILY COHESION

MANDARIN VERSION

关于研究对象背景、文化适应程度和家庭亲密度的问题

您的性别　　1 男　　　　2 女

您的出生年月：　______ 年_______ 月

您的教育程度? ___________________

1　小学或者以下
2　初中
3　高中
4　大专或者大学肄业
5　四年本科毕业
6　研究生及以上

您在哪里出生?

1　美国
2　中国大陆
3　香港
4　台湾
5　其他　(请注明: __________________)

(如果选择出生地在美国，请跳过这个问题) 请问您哪一年__________来美国定居（长期居住）。

请问您有宗教信仰吗？

□有
□没有

如果有，请问是　1 佛教　2 基督教　3 其它_______

您和家人讨论过您的临终照料计划吗？

□有
□没有

您填写过您的临终照料计划（医疗照料委托书）吗？

□有
□没有

请根据自己的真实想法选出对下列描述的同意程度。1=完全不同意，2=大部分不同意，3=一半一半，4=大部分同意，5=完全同意。

文化适应程度

1. 我说中文 (普通话、粤语、或其他方言) 的时间超过英文。
2. 我的英文水平比中文水平高。
3. 我庆祝华人的节日（春节，中秋节）的时候多过美国的节日（圣诞节，感恩节）。
4. 我看中文电视 (普通话、粤语、等其他方言) 和电影超过看英文的节目。
5. 我看中文书籍或报纸超过看英文的。
6. 我用英语写信/email 超过用中文写的。
7. 我大部分时间吃的都是中餐。
8. 我参加的活动大都是华人举办的。
9. 我主要去亚洲（或中国）超市买东西。
10. 我对美国的生活很有认同感。

请根据自己的真实想法选出对下列描述的同意程度。1=非常赞同，2=比较赞同，3=比较反对，4=非常反对。

家庭亲密度

1. 你的家庭成员互相尊重对方。
2. 你们有相似的价值观和信仰。
3. 你的家庭成员之间彼此忠诚。
4. 你们可以向彼此讲心事。
5. 你的家庭成员喜欢有空就聚在一起。