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Yao Fu (Cici) April 8, 2020

Religion and End-of-Life Treatment Preferences Among Mainland Chinese

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An abstract of
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Abstract

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Given the rapidly increasing demand and interest in end-of-life (EOL) care in mainland China, there is a need to understand people's EOL treatment preferences. Religion, as a means to help construct the meanings of life, death and dying, has rarely been studied in conjunction with EOL medical decisions in China. This study uses empirical data collected through online surveys (n = 1,085) to access the effects of religion on EOL treatment preferences in two hypothetical terminal illness scenarios: physical pain and severe cognitive impairment. In various measures of religion, only two measures, less practice of folk religions and an endorsement of Buddhist beliefs in reincarnation, the afterlife, and karma, are associated with a preference for a palliative approach of treatments. Self-reported religious affiliation and practices of institutional religions do not predict EOL treatment preferences. These results evidence the functional position of religion, but also a discordance between the existing ways of measuring religion and the actual theoretical understanding of religious construct by the Chinese people. Better ways to operationalize religion and more studies are needed to understand EOL treatment preferences among the people of mainland China.

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Table of Contents

List of Tables and Figures

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INTRODUCTION

With rapid population aging around the world, improvement in life expectancy, and the rising global burden of chronic non-communicable diseases (NCDs), people are living longer and becoming sicker, bringing increasing demand and attention to end-of-life (EOL) care (Cruz-Oliver 2017; World Health Organization 2019). At the same time, there is a growing interest in the spiritual and religious aspects of health care (Sinclair, Pereira, and Raffin 2006). Given the heightened interest in EOL care and spiritual aspects of health care, many studies have investigated the relationship between religion and EOL treatment preferences because most religions uphold religious teachings that help to interpret, understand and construct the meanings of life, death and dying (Sinclair et al. 2006).

China, as the most populous country with rapid aging, has a growing need for end-of-life care. However, the development of EOL care in mainland China is still in its infancy, and studies on EOL issues that are conducted among mainland Chinese are limited (The Economist 2015). Studies that specifically investigate EOL treatment and its relationship with religion are even more limited. To the author's best knowledge, there is only one study conducted in mainland China that studies EOL treatment preferences including religion, and in that study, religion is only included as a sociodemographic variable (Ni et al. 2014). The applicability of existing findings to Chinese society is restricted because the landscape of religion in China is drastically different from that of western societies, where most studies are based (Pew Research Center 2008). As Liu, Schieman, and Jang (2011) argue, "the Chinese religious systems differ from the dominant Western religions in content, purpose, means, and implications for individuals, and this may ultimately influence the utilization of religion and spirituality in clinical decision making"

(Liu et al. 2011). This underscores the value of conducting Western-based research on the relationship between religion and EOL treatment preferences in Eastern societies.

This study aims to examine the role religion plays in EOL decision-making, particularly EOL treatment preferences among mainland Chinese. I begin by examining the theoretical background that bridges religion with EOL care. Next, I provide a brief account of the history, current development and barriers of EOL care in mainland China. Then, I discuss how religion in Chinese society is different from that in the West and how to measure it. To assess the relationship between religion and EOL treatment preferences, I have developed an online survey targeting the general public in mainland China. After presenting the research methodology in detail, I present my findings and discuss their implications. Limitations and suggestions for future research are also discussed.

LITERATURE REVIEW

Palliative Care, End-of-life Care, and Religion

There is some ambiguity surrounding the use of the term "end-of-life care" and "palliative care," even in published literature (Hui et al. 2014). Unifying conceptualization is essential in effective communication; thus, I will define both terms. According to the World Health Organization (WHO), palliative care is "an approach that improves the quality of life of patients and their families facing the problem associated with life-threatening illnesses, through the prevention and relief of suffering by means of early identification and impeccable assessment and treatment of pain and other problems, physical, psychosocial and spiritual" (WHO 2019). Palliative care can be initiated at any time after a diagnosis of a life-threatening illness. End-of-life care, in contrast, is the utilization of palliative care for people in the final months of life

when their condition has deteriorated to an extent that active treatment cannot control the disease (Cruz-Oliver et al. 2017). Therefore, Therefore, end-of-life care is palliative care that is focused on the period immediately prior to death.

Spiritual, religious, and existential aspects remain fundamental to palliative care (Kelley and Morrison 2015). When approaching the end of life, people become increasingly aware of their mortality. Because most religions uphold religious teachings that help to interpret, understand and construct the meaning and purpose of life, death and dying, people draw on religion to make EOL clinical decisions (Laungani, Young, and Laungani 1997; Seale 1998). Many studies have shown religion is an important factor influencing clinical decision making, especially toward the end of life (Balboni et al. 2007; Ehman et al. 1999; Koenig 1998; MacLean et al. 2003; Sharp, Carr, and Macdonald 2012). Religion provides an ethical framework as well as coping mechanisms (DuBose 1999; Setta and Shemie 2015). Religion also has two functions in medical decision-making: it provides a set of core beliefs about life events, and establishes ethical foundation for decision-making (O'Connell 1995).

Palliative Care and End-of-Life Care in Mainland China

The Need and Growing Demand for Palliative Care in China. China, as the most populous country in the world, has a growing interest in end-of-life care. China is facing population aging just like other countries, but at a faster pace. According to the WHO China Country Assessment Report on Ageing and Health (2015), it will only take China 25 years to double the percentage of people aged 60 years or over, from 12.4% (168 million people) in 2010 to 28% (402 million) in 2040, while it took France 115 years, Sweden 85 years and the United States 69 years to double from 7% to 14%. The faster pace of population aging, coupled with its

huge base population, will make China to have the biggest sheer number of older people. China is also facing a shift to chronic non-communicable disease. According to results from Global Burden of Disease Study (2016), about 88.5% of all deaths in China were attributable to NCDs, and 94.0% of the elderly aged over 70 years died from NCDs. The growing numbers of older people and the increasing prevalence of chronic illness jointly increase the need for palliative care in China (Li, Davis, and Gamier 2011).

History and development for Palliative Care in China. Major events in the historical development of palliative care in China are presented in chronological order. The concept of palliative care was introduced in China in the 1980s. In 1986, the paper "The concept of end-of-life care" written by professor Ikemi Yujiro, founder of the Department of Psychosomatic Internal Medicine at Kyushu University in Japan, first introduced the concept of end-of-life care to China (Wu et al. 2016; Murakami and Nakai 2017). In 1988, the first research center for palliative care was established in Tianjin Medical University. Two years later, in 1990, ward services for palliative care were first provided in the affiliated hospital of Tianjin Medical University. The establishment of the Chinese Association for Hospice and Palliative Care in 1993 was a milestone in the development of palliative care in China. In 1994, the Committee of Rehabilitation and Palliative Care of China Anti-cancer Association (CRPC) was founded. The CRPC contributes to the development of palliative care in China by promoting education and training professionals, supporting research, and improving public awareness (Cheng 2010; Cruz-Oliver et al. 2017).

In 1996, the *Chinese Journal of Hospice Care and Palliative Care* was founded, which largely promoted the research and communication of this field. In 1998, the first Hospice Unit that provides free home-based holistic care for patients with terminal cancer was founded by Li

Ka Shing Foundation (LKSF), as part of the First Hospital Affiliated to Shantou University Medical College. As of 2019, LKSF funded and established 32 hospice units across China (Li Ka Shing Foundation n.d.). In 2004, the Chinese Ministry of Health "stipulated that the existence of hospice and palliative care be one of the accreditation standards for general hospitals" (Wu et al. 2016). The Ministry of Health, now the National Health Commission of the People's Republic of China (2019), officially endorsed the establishment of palliative care departments in hospitals in 2008. From 2010, morphine, a strong painkiller used in palliative care to control pain, was listed on China National Essential Medicine List (NEML). Only listed medicines can be stocked and used by primary health care institutions (Tian, Song, and Zhang 2012).

When palliative care was first introduced in the early 1980s, it was translated to *"Lin Zhong Guan Huai (临终关怀),"* which can be back-translated to "care at the end of life." In a cultural context where talking about death is a taboo, the negative association suggested by this translation impeded both referrals from medical professionals to patients and the acceptance of the general Chinese people (Dalal et al. 2011; Yin et al. 2017). In 1996, the name *"Gu Xi Zhi Liao (姑息关怀),"* was adapted by Dr. Jinxiang Li. Meaning "care to alleviate suffering," this term more accurately transcribes the essence of palliative care, given that it can be part of the treatment at any time during the course of a serious illness. Another term for palliative care, *"Huan He Yi Liao（缓和医疗),"* is used in China as well (Yin et al. 2017).

Underdeveloped palliative care in China and its barriers. Palliative care in China is still in its infancy. Not only is the availability extremely limited, the quality is poor. In 2016, only 0.7% (146/22,000) of hospitals offered palliative care (Yin et al. 2017). This partially explains why China ranked 71st out of 80 countries in the quality of death index in 2015 (The Economist

2015). This Index is composed of scores in 20 quantitative and qualitative indicators across five categories, including palliative and healthcare environment, human resources, affordability of care, quality of care, and community engagement.

The poor palliative and health care environment are reflected through several indicators. According to the 2015 Quality of Death Index by The Economist Intelligence Unit (2015), fewer than 1% of Chinese people have access to palliative care, and relevant facilities are concentrated in big cities, such as Beijing, Shanghai, and Chengdu; there is no national strategy nor any official guidelines; the use and availability of opioids are limited; effective communication between medical professionals and patients is lacking; curative treatments prevail in medicine (Zou et al. 2013).

The number and the training of palliative care practitioners is insufficient in China. The majority of medical schools in mainland China do not have a formal curriculum on palliative care. Among the respondent medical schools, Ye and his colleagues found that only eleven (9.2%) medical schools offer palliative care training (Ye et al. 2019). Many medical professionals have never been exposed to the concept or techniques, according to Ning Xiaohong, an oncologist at Peking Union Medical College Hospital (The Economist 2015).

Chinese culture impedes the promotion of public awareness. Public awareness of palliative care is low. 95.3% of the residents in thirty-one nursing homes in Wuhan, China, have never heard of advance directives, an important topic in palliative care (Ni et al. 2014; Pérez, Macchi, and Agranatti 2013). In Chinese culture, death is a taboo and people avoid talking about it because of its association with bad luck (Hsu, O'Connor, and Lee 2009). There is also a misunderstanding of palliative care. Many Chinese people believe that being referred to

palliative care means that the medical professionals are giving up on the patients and that patients are just waiting for death. Filial piety, a Confucian teaching embedded in Chinese society, encourages family members to seek life-sustaining, aggressive treatment even if it considered medically futile. This is because the misconception of palliative care will make others condemn the family members as unfilial (Xie 2017). Last but not least, Chinese people bear the financial burden just like many other countries. Public subsidies and insurance do not fully cover the cost of palliative care.

In summary, the rapidly aging population and the shifted burden to non-communicable diseases increase the demand for end-of-life care and palliative care in China. Despite the progress made since palliative care was only recently introduced in the 1980s, it is still underdeveloped, reflected in its limited availability, poor quality, and the lack of official guidelines. Some barriers that impede its development include the insufficient training of palliative care practitioners, low public awareness, traditional Chinese culture, and financial burden.

Religion in Mainland China

Quantitative studies consistently suggest that China is the least religious country in the world. According to the 2007 Spiritual Life Study of Chinese Residents (SLSC), a nationally representative survey, only 14% of mainland Chinese people are religiously affiliated (Pew Research Center 2008). According to the data in 2010 of the Chinese General Social Survey, a national representative longitudinal survey, only 12.9% identified to be affiliated to a religion (Dou 2012). Despite these quantitative data, ethnographic and qualitative data suggest that China

is “a religious state” and “a continent of spirits” (Lagerwey 2010). These paradoxical findings hint at differences between religion in China and in the West.

Religion in China is profoundly different from that in western societies, not only in the very low percentage of religious-affiliated individuals, but also in the nature of religion itself. The China Family Panel Studies (CFPS, *Zhongguo Jiating Zhuizong Diaocha 中国家庭追踪调查*) is a nationally representative, annual longitudinal survey that focuses on the “economic and non-economic wellbeing of the population” (China Family Panel Studies 2019). In 2012, people were asked “What is your religion?” and possible answers were: 1. Buddhism; 2. Daoism; 3. Islam; 4. Protestantism; 5. Catholicism; 6. No religion; 7. Other (please specify). 89.6% said they had no religious affiliation, and around 10% identified with the five major institutional religions in China, including Buddhism, Taoism, Protestanism, Catholicism, and Islam (Lu 2014). This denomination-based question for measuring religion is valid in Western societies but the generalizability of this way of measuring religion in Chinese society remains a question. Zhang and Lu (2018) argued that identification with institutional religion is not very pronounced among the Chinese, but the deities of religion are. Therefore, the 2014 CFPS rephrase the question and asked: “[in] what do you believe?” Answers provided changed to the deities, and possible answers were: 1. Buddha, Bodhisattva[s]; 2. Daoist Gods and Immortals; 3. Allah; 4. The God of the Catholics; 5. The God of the Protestants; 6. Ancestors; 7. None of the above-named. This time, 74% said they were not religiously affiliated, and there was a 15% change compared to the results in 2012. The percentage of individuals affiliated with Buddhism increased from 6.5% in 2012 to 15.87% in 2014, and those who chose “other” increased from 0.15% to 5.94% (Wenzel-Teuber 2017).

Is this change due to the phrasing of the question or the actual change in the religion of Chinese people? To find out, the 2016 CFPS returned to the 2012 denomination-based question. The fact that the percentage of people who are not religiously affiliated drop to 86.1% in 2016, which is close to that in 2012, suggests that such significant change in data is a result of a rather simple change in the formulation of questions from denomination-based to deity-based. This not only demonstrates that the western way of measuring religion is not applicable in the Chinese context, it reflects the fundamental difference in China's religious landscape.

This rather dramatic change in data in a two-year period reflects three unique aspects of religion in China. First, Chinese people understand the term "religion" differently. There is no corresponding indigenous Chinese term for "religion," which now translated as *zongjiao* (*宗教*) in Chinese. Therefore, the concept of "religion" is imported from the west. According to Clart (2014), Chinese people understand religion in a stricter sense. Both Chinese scholars and the general public think religion "implies a socio-cultural structure with a high degree of institutional differentiation, clearly stated beliefs, a clergy, and sacred texts," while western scholars employ a minimalist definition: "an institution consisting of culturally patterned interaction with culturally postulated superhuman beings," said Melford Spiro (Smith 1998:281).

Second, it reflects the general social context of mainland China. The ruling Chinese Communist Party (CCP) officially adopted state atheism (Dillon 2001). As all Communist countries, regardless whether past or present, the CCP heavily regulates religion (Yang 2006). The restrictive regulations on the freedom of religion and religious intolerance are intertwined with Chinese history. Although the People's Republic of China Constitution guarantees citizens "freedom of religious belief," it has an important caveat that the freedom is

limited in "normal religious activities" (China: Religion and Chinese Law 2018). What is considered "normal" is not clearly defined. However, the Central government regulations implemented on February 1st, 2018, stipulate religious activity "must not harm national security" (International Religious Freedom Report 2018). The social context of religious intolerance contributes to the fact that many Chinese people are unwilling to disclose their religious affiliation or their membership in religious organizations (Zhang and Lu 2018).

Third, and most importantly, the paradigm of religion is fundamentally different in China. In order to better understand and study religion in Chinese society, scholars have tried to come up with theoretical paradigms to frame the different and diverse religious landscape in China.

Models used to explain religion in China. Scholars over the years have recognized that Chinese religion is fundamentally different from Western religion. Two paradigms were developed to offer theoretical frameworks to direct research. The first paradigm is derived from C. K. Yang's *Religion in Chinese Society* written in 1961 (C. Yang 1961). More recently, Fenggang Yang (2006) offers a new paradigm from a political economy approach that takes the state-society relationship into account.

To discover the social functions of religion in Chinese society, the sociologist C. K. Yang (1961) proposed a distinction between "institutional religion" and "diffused religion." Institutional religion is a separate social institution that exists independently from secular society. It is readily observable. Institutional religion in the theistic sense offers an independent cosmic account for the universe and human life; it has an independent form of worship

consisting of symbols and rituals; it has an independent organization to assist the interpretation of theological views as well as to facilitate worship (C. Yang 1961).

In contrast, diffused religion embedded within secular social institutions becomes "a part of the concept, rituals, and structure" of the latter (C. Yang 1961:294-5). Yang illustrated the social functions of diffused religion in family, and in various social and economic groups. Because diffused religion is so intimately diffused into the secular society, and does not exist independently, it is not readily observed. The fact that Chinese society is mainly permeated by diffused religion instead of institutional religion contributes to the misconception, reflected in quantitative data and upheld even by Chinese scholars, that China lacks religion.

Despite the success of Yang's classical paradigm at the time, Richard Madsen points out that scholars have abandoned this outdated paradigm as religion in China has dynamically evolved in correspondence to the drastic change in state's regulation of religion since the 1960s (Madsen 2011). Rather than searching for the function of religion in Chinese society vis-à-vis Yang's classical paradigm, more recent approaches have focused on the social context in which religion develops. Fenggang Yang (2006) offers a paradigm that accounts for the state-society relationship and mainly focuses on the expression of religiosity.

Fenggang Yang (2006) proposes a triple-market model from a political economy approach that takes the state's restrictive regulation into account. Religion has essential elements of an economy: a market with religious organizations as suppliers and religious adherents as consumers. A religious market has religious organizations that seek to attract and maintain adherents by offering religious commodities, while religious adherents consume religious commodities (Iannaccone 1995). In *The Red, Black, and Gray Markets of Religion in China* (F.

Yang 2006), Yang extends the religious market model beyond the Americas and Europe, as well as Christianity, to capture the religious landscape in mainland China.

The triple-market model consists of red, black, and gray markets of religion that account for the widespread non-institutional religion and restrictive state regulation *against* religion. A red market, or the open market, is consisted of officially permitted religious organizations, believers, and religious activities (F. Yang 2006). "Open" is relative, and there are still suppressions and restrictive regulations. Ever since 1949, except for the Cultural Revolution period from 1966 to 1979, five religions have been officially recognized and granted legal status by the Chinese government. The five institutionalized religions are Buddhism, Taoism, Protestantism, Catholicism, and Islam. Yang argues that not all adherents of these five legally permitted religions are in the red market because of state suppression. Instead, some religious adherents practice legally permitted religion in the black or gray market. Only "normal" religious activities that do not harm the national security are permitted; however, implementation is at the discretion of the Chinese government authorities.

A black market consists of religious organizations, believers and activities that are officially banned by the state (F. Yang 2006). Religious organizations that are banned include sectarian or cultic groups that are considered "heretic" and organizations that do not abide by the state religious policy. Examples of heretic cults or sects include Falun Gong, The Shouters, and All Scope Church (F. Yang 2018).

Religious policy in China aims to cut religious ties with foreign origins, break the denominational and sectarian system, and exert the state's control (Mandryk 2010:164). This tightening in religious regulation started from Christianity in the 1950s. In 1954, the China

Protestant Three-Self Patriotic Movement Committee (TSPM) was established (Leung 2004:90). Three-selfs refers to three principles: self-governance: free from the intervention of foreign religious organizations; self-support: financially independent from foreign organizations; and self-propagation: propagate by Chinese preachers (Venn 1971). Implied in the TSPM is obedience to the Chinese Communist Party. Soon a similar approach was applied to all five state-permitted religions. Therefore, resistant religious organizations that did not adopt the TSPM, adherents, and their religious activities went underground from the red market to the black market.

The third but the biggest and most complex religious market is a gray market. Its boundary with the red and black markets is "vague, elastic, and constantly shifting" (F. Yang 2006). A gray market consists of "all religious and spiritual organizations, practices, and activities with ambiguous legal status" (F. Yang 2006). Yang categorized a gray market into explicitly and implicitly religious phenomena. Explicitly religious phenomena include illegal religious activities conducted by legal religious suppliers and consumers that violate the state religious restrictions. An example is preaching at unapproved gathering points because proselytizing is outlawed when targeting people outside of the religious groups. State-sponsored, legal, religious groups involving in illegal activities are also regarded as explicitly religious phenomena in the gray market. On the other hand, implicitly religious phenomena, close to diffused religion in the first model (C. Yang 1961), include religions in the name of culture and health science. This category of the gray market has been studied as folk religion, popular religion, quasi-religion, magic, superstition, supernatural beings and forces, yoga, qigong, or spiritualities (Stark and Bainbridge 1985; Greil and Robbins 1994; Roof 1999; Heelas and Woodhead 2005).

Measuring Religion in Mainland China

In light of the very different religious landscape in China, the western way of measuring religion is not applicable to mainland China. As the CFPS data shows, the denomination-based question, "What is your religion?," will not accurately measure religion in China. In fact, it only captures those who have an explicit, public style of religious practice and those who identify with institutionalized religions, such as professional clergy or ecclesiastics; however, adherents of diffused religions are overlooked (Thoraval 1996; Zhang and Lu 2018; Madsen 2011). Zhang and Lu (2018) proposed measuring religion in China in three dimensions: self-identified religious affiliation, membership of religious organizations, and practice of religion (see fig. 1). It should be acknowledged that, despite advancement in measuring technique, a survey is only able to capture religious adherents in the red and gray markets. Those in the black market will not reveal their status under the restrictive political regulation.

[Figure 1]

The first dimension, self-identification of religious affiliation, is likely to capture people in the red market that are affiliated with any of the five institutionalized religions. They proposed to phrase the question to be deity-based and allowing people to choose more than one answer. Their proposed question is "[In] what do you believe?" Answers include various deities, none of the above, and others that asked people to specify. The deities include the ones in the five big institutionalized religions identified in national surveys (Buddhism, Taoism, Islam, Protestantism, and Catholicism). "Ancestors" is also included.

There are several benefits of phrasing the question this way. First, Chinese people's perception of religion is deity-based, not denomination-based. Second, Chinese people have a

narrow understanding of the term "religion," which contributes to the fact that they do not necessarily associate religious affiliation with their actual religious practices. By framing questions with a focus on "doing" religion, more religious practitioners will be captured. Third, by avoiding the sensitive term "religion" in the question, Chinese people's unwillingness of disclosing religious affiliation in the restrictive social context is mediated.

The second dimension is membership in a religious organization or group. A member will likely self-identify as being religiously-affiliated, while those who identify as religiously affiliated are not necessarily committed as members of institutionalized religion. Because of this, this dimension of membership is, in fact, a sub-dimension of the first; namely, self-identification with a religious affiliation. In Figure 1, the second dimension is entirely contained in dimension one. In addition, the number of people who claim to be religiously affiliated is greater than that of who is actually a member of religious organizations. For example, in the 2007 Spiritual Life Study of Chinese Residents, about 18% respondents identify as Buddhists, while only 9% said they had officially converted (F. Yang 2018; F. Yang 2010). Therefore, it is reasonable to include the second dimension inside the first, and it is expected that the number of religious members is less than the number of religiously affiliated. My survey includes a question adapted from the 2016 CFPS survey; it asks whether the respondent is a member of any religious/spiritual groups marked by initiation ceremonies, such as baptism in Christianity or taking refuge in the Three Jewels which signifies a person's conversion to Buddhism.

The third dimension is the practice of religion. This dimension is particularly important for identifying adherents of diffused religions. Many Chinese people practice religion without identifying as being religiously affiliated due to the restrictive social context. Zhang and Lu

(2018) proposed asking those who identify as being not religiously-affiliated about their practices. In their analysis of the longitudinal CFPS data, they found that asking those identified as non-religiously-affiliated will "capture" a considerable number of hidden, non-institutionalized religion adherents.

A series of questions are used in the survey to assess people's practice of religion. This set of questions is intended to capture religious adherents in the gray market. Questions are adapted from the 2007 Spiritual Life Study of Chinese Residents (SLSC). Conducted by Horizonkey Information and Consulting Co., Ltd, the SLSC aims to assess Chinese residents' religious life and spiritual pursuit (F. Yang et al. 2007). A multi-stage probability sampling was used, and 7,021 respondents were randomly selected from 56 locales throughout mainland China, including three municipal cities, and six provincial capital cities. In addition, 11 regional level cities, 16 small towns, and 20 administrative villages were sampled (F. Yang et al. 2007).

Adapted questions ask respondents whether they participated in various thematic religious practices at both individual and communal levels. The communal level's themes include local deity worship and ancestor worship. The individual level's themes include *Fengshui,* the God of wealth, fortune-telling, and amuletic practices (F. Yang and Hu 2012).

Because there are religious and deity-based beliefs and teachings about death and dying that intimately permeate Chinese society, it is important to measure how the Chinese understand those beliefs to be relevant in their lives. Because these beliefs are detached from their religious origin, people who have no religious affiliation also internalize these as they are socialized into Chinese society. Therefore, all participants are also asked about their endorsement of selected traditional Chinese beliefs toward life, death, and dying.

METHODS

Study Design and Participants

With approval from the institutional review board (IRB), an anonymous, voluntary, cross-sectional online survey were distributed to mainland Chinese people who are over 18 years old. Due to practical limitations, this study adopts a convenience sampling method as well as snowball sampling. Respondents were encouraged to share the survey within their social circles. The online survey was posted on WeChat, a mainland Chinese social media platform, with advertising words, but no financial incentives. Data were collected over a one-month period, from December 15th, 2019, to January 14th, 2020.

Measures

All variables and their relationships are presented in figure 2, and figure 3 shows how some variables are recoded.

[Figure 2 and Figure 3]

Independent variable one: Religion. As discussed previously, religion is measured by a series of questions in three dimensions: self-identified religious affiliation and frequencies of corresponding religious practices, denominational religious group membership, and practice of folk religion.

Independent variable two: Traditional Chinese beliefs of death and dying. Respondents were asked to rate their level of agreement on eight Chinese traditional beliefs related to death and dying. Respondents were provided with a four-point Likert scale from 1) strongly disagree, 2) disagree, 3) agree, 4) strongly agree, with an additional option of "I don't know / I am not

sure." The belief statements are adapted from a study of death and dying in Hong Kong (Mjelde-Mossey and Chan 2007). Because Hong Kong and mainland China share similar cultural origins, beliefs on death and dying used on Hong Kong residents should generally be applicable to mainland Chinese people. The eight statements are as follows. Thinking or talking about death can bring bad luck. A painful or early death is a result of past misdeeds. Black hair should not precede white hair. Dying without a son is "face losing." Death is part of the cycle of life. I live on through descendants. Belief in reincarnation/afterlife/karma. Death is our fate. These statements are later recoded into one multi-item scale named traditional Chinese beliefs of death and dying. The first regression analysis uses the multi-item scale, and the second regression analysis uses them separately.

Dependent variable: End-of-life treatment preferences. Previous studies measure EOL preferences by asking abstract questions. "Suppose you had a serious illness today with very low chances of survival. If you were mentally intact, but in severe and constant physical pain, would you want to continue all medical treatments or stop all life-prolonging treatments?" and "If you had no physical pain, but were not able to speak, walk, or recognize others, and had very low chances of survival, would you want to continue all medical treatments or stop all life-prolonging treatments?" (Sharp et al. 2012). "If you were severely ill or even in a life-threatening condition in which life-sustaining treatment could only help you to sustain your life but could not recover your health, would you accept it?" (Ni et al. 2014).

Unlike previous studies asking abstract questions to capture EOL treatment preferences, my online survey uses vignettes to explore people's EOL treatment preferences. Vignettes are effective when studying beliefs, values, and norms because they specify the features of the

context; they also help evaluate complex and sensitive topics among Chinese people with conservative attitudes (Finch 1987; Kandemir and Budd 2018).

Two vignettes of hypothetical scenarios of cancer (lung cancer) and the other non-cancer terminal condition (Alzheimer's disease) were adapted from a study exploring expectations of end-of-life care among white and Chinese older people in the UK (Seymour et al. 2007). The vignettes describe the nature of the disease and associated functional and cognitive disabilities. Two treatment approaches—an aggressive, curative approach and a palliative approach, sample treatments, accompanying pain and comfort, and objectives were also explained. The text carefully avoided words such as "palliative" and "end-of-life" for fear of negative connotations that might have unintentionally biased the responses. Participants were asked to put themselves in the character's shoes and choose the treatment approach they preferred. See appendix A for more details.

Control variables. I control for sociodemographic characteristics and physical health status that may confound the association between religion, religious beliefs, and EOL treatment preferences. Participants were asked to provide their age, gender, personal annual income, employment status, marriage status, and highest educational attainment. Physical health status is assessed by two factors, self-rated health, and recent hospitalization. Participants are asked: "In general, how would you rate your health now?" with response options of excellent, very good, good, fair, or poor. Recent hospitalization is a dichotomous variable indicating whether or not the participant has spent at least one night in the hospital due to their own health issues in the past 12 months.

Mediating variables. Experience living with older people and experience of visiting, taking care or knowing someone at the end of their lives may help explain the association between religion and EOL treatment preferences. Whether the respondent is living with elderly (> 65-year-olds) is measured. Past experience of visiting, taking care, or knowing someone at the end of their lives is a dichotomous variable. Health insurance status, frequency of religious practices, and the salience of religion in major life decisions and major medical decisions are also measured.

Data Cleaning and Analysis

While 1,215 responses were collected, the analytical dataset is 1,085 after 130 responses were cleaned. These responses were excluded for two reasons, either submitted in less than 2 minutes or having the same response to all eight attitude questions, some of which are reverse-worded.

The variable of "whether you are a member of any religious groups" was omitted from the final analysis. My data showed that there is high multicollinearity between membership in religious groups and self-reported religious affiliation. This shows that my data aligns with the logic model shown in figure 1; people who are a member of any religious group virtually all identified as religiously affiliated.

The Statistical Package for Social Sciences (SPSS) version 26.0 was used for the quantitative data analyses. First, the participants' characteristics and their responses to each of the questions were analyzed by descriptive statistics. Bivariate analysis was conducted between independent variables and five selected control variables, including age, gender, marital status,

education, and low income. Lastly, I ran binary logistic regression models to evaluate EOL treatment preferences between religions, net of all control and mediating variables.

RESULTS

Univariate Analysis

Population Demographics. The demographic characteristics of 1,085 respondents are presented in Table 1. Over half of the (55.0%) respondents are aged between 25 and 34 years old. There are more male (60.2%) than female respondents (39.8%). Single, divorced or widowed respondents (48.2%) are approximately the same compared to married or cohabitated respondents (51.8%). Most respondents are highly educated, with 43.1% having a 2-year associate degree, 43.2% having a bachelor's degree and 7.1% having a master's or doctoral degree. Most (88.8%) are employed. Half of the respondents rate their health as "very good" (29.9%) or "excellent" (19.6%). The percentage of people rating their health as "good," "fair" and "poor" are 19.6%, 27.6%, and 3.2% respectively. Close to one quarter (24.1%) report living with an elderly person. 11.1% said they were hospitalized for at least one night within the past 12 months. Most people (89.8%) have medical insurance. Half (51.6%) have the experience of knowing, visiting or taking care of someone at the end of their lives. One-third (30.4%) have heard of palliative care before, which is speculated to be above the average because this population is highly educated, younger and has a better socioeconomic status than the general Chinese public.

[Table 1]

Traditional Chinese beliefs of death and dying. Mean scores and standard deviations are presented in Table 2. Ratings of the level of agreement range from 0 to 4, where 0 represents "I

do not know, or I am not sure" and a higher score represents a higher agreement. 1 represents strongly disagree; 2 represents disagree; 3 represents agree; and 4 represents strongly agree. Among all eight statements of traditional Chinese beliefs of death and dying, the statement "Death is part of the cycle of life" has the highest agreement, with a mean score of 3.05 (SD = 0.92). This is the only item that receives a score above 3. "Thinking or talking about death can bring bad luck" has the lowest agreement, with a mean score of 1.48 (SD = 0.86). This indicates that, nowadays, Chinese people are less likely to adhere to this traditional folk belief, which plays an important role in impeding raising the public awareness of palliative care. Only two other statements received mean scores over two, representing an inclination towards agreement. These are "I live on through descendants" with a mean score of 2.45 (SD = 1.14), and "Death is our fate" with a mean score of 2.72 (SD = 1.15). These results generally align with the finding in the Hong Kong society (Mjelde-Mossey and Chan 2007).

As a two-sample t-test reveals, only two statements showed a statistically significant difference by gender. For the statement "Dying without a son is 'face losing'" ($t = -6.36$, $p < .05$), females (mean = 1.51) are more likely to disagree than males (mean = 1.83). Compared to males (mean = 2.98), females (mean = 3.16) have higher agreement with the statement of "Death is part of the cycle of life" ($t = 3.16$, $p < .05$).

[Table 2]

Bivariate Analysis

Table 3 shows the means of independent variables by several selected control variables, including age, gender, marital status, education, and annual income. The table also shows the range for each independent variable. Before diving into the mean scores by groups, it is worth

noting that neither frequencies of religious practices exceed 1, representing rare practices. Additionally, the frequency of attending religious services (mean = 0.21) is much lower than that of burning incense (mean = 0.58).

Table 3a shows means scores by age groups. I used a one-way ANOVA to test the difference between mean scores. The p-values are for F tests. There are statistically significant differences between age groups for the variables of "religious affiliation," "frequency of burning incense," and "practice of fold religion." There is a linear trend up to 64 years old showing that older people tend to have higher mean scores for all items. The lower scores for those 65 and older is likely due to the fact that there are only seven people age 65 and above. This oldest group is likely not representative, given their unusual use of the internet and social media. The 18-24 age group has the lowest mean score for variables of "religious affiliation" and "frequency of burning incense." In contrast, the 55-64 age group has the highest mean scores for all variables.

Table 3b shows mean scores by gender. Compared to males (mean = 2.76), females have a higher mean score (mean = 3.18) for "practices of folk religion" ($p < 0.01$). There are less significant gender differences for "religious affiliation" and "frequency of burning incense" ($p < 0.10$). Compared to single, divorced or widowed respondents, married or cohabiting respondents have higher mean scores for all independent variables. For example, married and cohabiting respondents' mean score for "religious affiliation" is 0.43, compared to 0.33 of that of singles. The mean score for "practices of folk religion" for the married or cohabiting group is 3.18 compared to that of the other group of 2.76. See more details in table 3c.

Mean scores also varied by education (table 3d). Responses to variable "frequency of burning incense" varies by education ($p < 0.10$). People with a bachelor's degree, but not those with a master's or doctoral degree, have the lowest mean score for "frequency of burning incense." People with the least education have the lowest score for "frequency of religious services" (mean = 0.15), while people with the highest education have the highest score (mean = 0.27). This may be due to the fact that attending religious services is generally associated with religions introduced from the western culture, and thus are more accessible for people who are better educated. However, this trend is reversed for "practices of folk religion," where higher education is associated with lower scores. People with a master's or doctoral degree also have the highest score for "traditional Chinese beliefs" (mean = 17.82). Means scores do not significantly vary by annual income.

[Table 3]

Multivariate Analysis

Binary logistic regression was used to investigate the association of independent variables of religion on end-of-life treatment preferences after taking account of potential covariates. Two sets, four multivariate regression analyses were conducted. The first analysis uses the combined multi-item scale for people's attitudes toward eight traditional Chinese beliefs of death and dying. The second analysis treats eight beliefs separately in the regression model.

Table 4a and Table 4b present the first analysis using the combined scale of religious beliefs, showing the results for the scenarios of lung cancer and end-stage Alzheimer's disease (AD), respectively. Table 5a and Table 5b present the results for the disaggregated analysis. Model 1 shows only the effects of multiple independent variables of religion on EOL treatment

preferences. Model 2 shows the effects of religion net of sociodemographic characteristics. Model 3 adjusts for health characteristics and Model 4 further adjusts for other mediators, including living with elderly, having medical insurance, knew or visited people at the end of their lives, heard of palliative care, saying religion is (somewhat) important in life, and saying religion is (somewhat) important in medical decision-making.

End-of-life treatment preferences in lung cancer scenario. The lung cancer scenario implies severe physical pain, though it is not spelled out directly to avoid a biased response. No statistically significant association was found for any of the variables of religion in the lung cancer scenario, even after adjusting for all other variables. However, some other variables showed statistically significant association with EOL treatment preferences. Older people are less likely to choose life-extending, aggressive treatments (OR = 0.61, $p < 0.001$). This highly statistically significant effect persists and remains stable after adjusting for all other variables. Males are 1.76 times more likely to desire aggressive treatment compared with females, and this effect persists even after adjusting for health characteristics and mediating factors (OR = 1.76 in Model 3, OR = 1.74 in Model 4, $p < 0.001$). Employed people are 2.29 times more likely to choose aggressive treatment compare to unemployed, retired people or students ($p < 0.05$), and this effect persists when adjusting for health and other mediators (OR = 2.26 in Model 3, OR = 2.31 in Model 4, $p < 0.01$). Compared to people who have a relatively higher annual income, those who make less than 2,900 USD show a higher endorsement of aggressive treatment (OR = 1.33 in Model 2, $p < 0.05$). When further adjusted for other variables, this effect attenuates slightly and becomes less statistically significant (OR = 1.31 in Model 4, $p < 0.10$). In addition, people who have heard of palliative care before are less likely to choose aggressive care, with an

odds ratio of 0.68 ($p < 0.05$). Neither of the health characteristics affect people's preference for EOL treatments.

[Table 4a]

End-of-life treatment preferences in Alzheimer's disease scenario. Alzheimer's disease scenario suggests severe cognitive impairment. Additionally, it was made clear that there is neither a cure or a way to stop or slow the progression. Among the five variables of religion, one shows a weak but significant effect on EOL treatment preferences. People who practice more folk religion are 1.06 times more likely to desire the use of a gastric feeding tube ($p < 0.10$). The magnitude increases slightly, and the significance level increased to $p < 0.05$ after adjusting for more variables. The highest odds ratio is 1.08 in Model 4; thus, the impact of practice folk religion on EOL treatment preference is very limited, but is still 8% higher for those who practice folk religion. Similar associations for age and gender are found in this scenario. Older people are less likely to choose using the gastric feeding tube than younger people (OR = 0.79 in Model 2, $p < 0.01$), and this effect remains stable after controlling for other variables. Males are 1.65 times more likely to desire the feeding tube than females ($p < 0.001$). This effect attenuates as more variables are adjusted. The odds ratio decreases to 1.57 and 1.58 in Model 3 and Model 4, but the significance level remains high at $p < 0.001$. People who make less annual income are 1.52 times more likely to choose the feeding tube, and this effect attenuates but remains statistically significant as more variables are adjusted (OR = 1.46 in Model 3, OR = 1.45 in Model 4, $p < 0.01$). In contrast to the lung cancer scenario, people who rate their health better show higher endorsement of using the feeding tube (OR = 1.24, $p < 0.001$). However, having heard of palliative care does not affect people's choice of using the feeding tube.

[Table 4b]

Results from analyzing eight attitudes questions separately. Noticed that in Table 5a and Table 5b, an endorsement of the seventh belief ("I believe in reincarnation/afterlife/karma") shows a highly significant association with the preference for palliative treatment across both scenarios. In the lung cancer scenario, people who endorse the belief of reincarnation, the afterlife, and karma are 19% less likely than their counterparts the choose aggressive treatments (OR = 0.81 in Model 4, $p < 0.01$). A similar pattern is found in the AD scenario (OR = 0.86, $p < 0.05$). Other than the practice of folk religion, all variables that present significant associations as in the first set of analyses still show similar associations. In the previous regression analysis of AD scenario, a higher score of practicing folk religion is associated with preferring aggressive EOL treatments, while this association was not found when the eight attitude questions on death and dying beliefs are analyzed separately.

[Table 5a, Table 5b]

DISCUSSION

This study is the first of its kind to investigate the role religion plays in end-of-life treatment preferences among mainland Chinese. Through convenience and snowball sampling methods, 1,085 responses were collected through an online survey distributed on Chinese social media platforms. Religion was measured by a series of questions in multiple dimensions, and EOL treatment preferences were assessed through two terminally ill vignettes. When analyzing people's endorsement of eight traditional Chinese beliefs about death and dying as one multi-item scale, I do not find a statistically significant association of religion with lung cancer EOL treatment preferences; however, for the AD scenario about the use of gastric feeding tube, the

practice of folk religion shows a statistically significant association, though small in magnitude. When analyzing people's attitudes on eight death-related beliefs separately, higher endorsement with the belief of reincarnation, the afterlife, and karma is associated with less desire for aggressive EOL treatments. This effect was prominent in both vignettes. In addition, I find that some other variables have strong and significant association with EOL treatment preferences, including age, gender, employment status, annual income, self-rated health, and whether or not they heard of palliative care before. Variables of age, gender, and annual income have similar direction and magnitude of association, while the rest are specific to the scenario.

Religion and End-of-Life Treatment Preferences

The lack of an association between EOL medical decisions and religion, regardless of the method of measurement, should not be taken as the lack of functional position of religion in Chinese society. In fact, I observed a statistically significant association between the preference for palliative care and the endorsement of a Buddhist belief in reincarnation, the afterlife, and karma. These interesting findings suggest a discordance between the existing ways of measuring religion and the actual theoretical understanding of religious constructs by the Chinese people.

The distinct religious landscape in China may help explain this discordance. First, the highly syncretic context of religion makes it harder for ordinary Chinese people to discern different religions, thus preventing further theoretical understanding of religious constructs. Compared with the Christian world, religions in Chinese society are less exclusive, more syncretic and interrelated (Thoraval 1996; Zhang and Lu 2018). According to C. K. Yang (1961), it is not uncommon to have a temple with deities from Buddhism, Taoism, and folk religions, and sometimes even priests or site caretakers may be unable to recognize the exact affiliation.

Religious teachings are also blended together. Putting aside the dispute about whether Confucianism is a religion or not, there are traces of Buddhism and Taoism in Confucianism. For example, people can find the Buddhist teaching of "mind and nature," the Taoist theology of Yin-yang, and the Five Elements (metal, wood, water, fire, and earth) in Confucianism (C. Yang 1961:17).

This high level of syncretism is not limited to religions that had been well assimilated in China; it extends to religions that have not attained a similar degree of acculturation. For example, when missionaries brought Christianity to China in the 16th century, they effectively promoted Christianity through localization, drawing connections with local religions. In particular, missionaries simplified doctrines to make them fit with corresponding Chinese religious teachings. Rong and Jun (2016) provide an example where missionaries connected the idea of "universal love" in Christianity with "benevolence" in Buddhism. Additionally, Christianity in China has become increasingly inclusive and it is "no longer monotheism" (Rong and Jun 2016). Therefore, the characteristics of high syncretism and the low exclusivity of Chinese religion collectively hinder Chinese people's ability to fathom and further comprehend distinct religious doctrines and teachings.

Second, because some religious practices are so intimately merged with the secular world and have become an integral part of the organized social institutions, practicing them may not represent any religious affiliation or acceptance of specific doctrines (Cohen 1992). Many comments from the online survey share a similar "tourism" theme of burning incense and praying in temples. These temples are usually built in mountains, and the religious practice of burning incense is shared by Buddhism, Taoism, and some folk religions. Some respondents indicated that they never would not make a regular point of burning incense or praying in

temples, but if they happened to pass by a temple on a tour or a hike, they would do these things. A few responses also commented on the psychology of conformity regarding burning incense at a public space; for example: "When I am at the temple, I just follow the crowd and burn incense." "Sweeping the tombs of the deceased" is another example of a practice which has stripped away much of the religious connotation and reduced a former "religious" practice to an established custom. The aspect of ancestor worship has been replaced by filial piety, usually emphasized in the social institution of the family (Cohen 1992). Sometimes, the detachment of religious beliefs from religious rites is done on purpose. C. K. Yang (1961:51) points out that the political driver for transforming the cult of ancestor worship to a non-theistic ritual has been to strengthen family ties and stabilize the kinship system, which serves as the basic unit of social organization.

Third, Chinese people's utilitarian view of religion may also explain the discordance between religious identification and the understanding of religion. It is not uncommon, especially in rural areas of China, for individuals to convert to a religion in order to cure an illness (Zheng, Wang and Wang 2014; Zhou and Sun 2019). According to the *Blue Book of Religions: Annual Report on China's Religions* in 2010, more than two-thirds of the newly converted Christians reported the reason is that "they or their relatives fell ill" (Jin and Qiu, 2010:192). One comment I received for the frequency of burning incense in a temple wrote, "I almost never go to a temple to burn incense, but I will do it if I recently experience bad luck." The pervasive "purity of faith, the quest for the authenticity of belief, and exclusive commitment to one God" in monotheistic religions are not prominent in China (Tu 2011:75). In fact, the eclecticism of Chinese religious practice facilitates the polytheistic tradition. Chinese people pray to different gods for different purposes, such as fertility, marriage, justice and good agricultural yield (C. Yang 1961:8).

Many unique characteristics of religion in China can help explain the hardship in measuring religious identification and the gap it has with actual theological understanding. However, we need not be trapped by one approach, in one corner of the labyrinth of religion. Rather, we should question if the conventional way to study religion in China as an independent, functional social institution is appropriate. The fact that various ways of identifying people's religious affiliation yields fruitless findings in my study suggests impropriety to do so. Future avenues of research focusing on the general Chinese population should shift the concern from religious identification to its functional significance. For example, the questions can directly ask respondents' opinions on specific religious beliefs rather than probing religious affiliations per se. Qualitative methods are also helpful in providing insights into the values and beliefs which frame major life decisions.

The conventional approach of studying religion can still be applied in Chinese society within a limited population. In future studies investigating the influence of religion on major life decisions, researchers should target active members of institutionalized regions who both claim to be religiously affiliated and who perform corresponding religious practices regularly. This population, compared to the general public, will be better informed about the boundaries between religions and have a solid understanding of their faiths.

Other Variables and End-of-Life Treatment Preferences

In addition to religious beliefs, there were other variables influencing EOL treatment preferences. Consistent with previous research (Miesfeldt et al. 2012; Tang et al. 2012), I found older individuals were associated with a decreased endorsement of aggressive EOL treatment in both scenarios. This may due to the greater acceptance of illness and impending mortality

associated with older age (Yun and Lachman 2006; Surbone et al. 2007), or a better understanding of the impaired conditions of living that followed different approaches of EOL treatments from their more enriched life experiences.

My results also indicate a significant difference between males and females in their overall preference for life-sustaining aggressive treatments. Consistent with previous studies (Bookwala et al. 2001; Earle et al. 2004; Sharma et al. 2015), I found that men express a stronger desire for more aggressive EOL treatments than women. This gender difference can possibly be explained by reasons including females' diminished desire to live in an impaired condition (Bookwala et al. 2001), gender-specific social norms on the appropriate behaviors in "fighting the war with cancer" (Saeed et al. 2018), and an easier understanding and acceptance of incurable disease by females (Fletcher et al. 2013). It may be possible that females know about their general longer life expectancy than their male partners, and they would be along at the end of their lives; therefore, females choose treatments that do not aim to prolong life.

People who make less annual income also indicate an endorsement of aggressive treatments. This is consistent with a previous study comparing the incurred EOL cancer treatment costs between aggressive and palliative approaches of care. Cheung and his colleagues (2015) found that people in the lowest income quintile are more likely to have high EOL treatment expenditures. Because aggressive treatments usually cost more than palliative treatments, it is likely that people who make less income both prefer and actually choose more aggressive EOL treatments.

Results also show that people who have heard of palliative care have a stronger preference for it compared to their counterparts, although this was only seen in the lung cancer

scenario. This preference is consistent with that seen in previous studies. A study conducted among nursing home residents in Wuhan, China, found that having previously heard of palliative care is a strong predictor for making an advanced directive, an important legal document for EOL care (Ni et al. 2014). I speculate that people who are aware of the concept of palliative care differ from their counterparts in systematic ways that provide them with more information and a better understanding of the differences between these two approaches of treatments. In the context of China, where concepts of palliative care and EOL care have only recently been introduced, individuals who have heard of palliative care are likely to have distinct characteristics, such as a social surrounding with a lot of health-related information, a keener personal interest in health, or possibly higher health literacy. Having more information and the ability to interpret the information at hand lead to a preference for palliative care (Sharma et al. 2015; Volandes et al. 2008).

Self-rated health was also found to have a significant association with aggressive treatments, but only in the scenario of Alzheimer's disease. People who rate themselves healthier indicate a stronger preference for using a gastric feeding tube. Although a younger age is associated with better self-rated health, age does not explain people's preference, given that we have controlled for age in the regression model. In fact, people who feel healthier at any age would prefer using the feeding tube.

The association we observed can possibly be explained by the confidence people have in their health and ability to recover from more aggressive treatments. Hypothetically, we would expect the association to be found only in the scenario of lung cancer, which has effective treatments, but not in the irrecoverable Alzheimer's disease scenario. However, the general public may not know or understand that AD has no cure even if this information was provided in

the vignettes. In addition, the perceived less harm and greater necessity of the feeding tube compared to examples of aggressive treatment—chest drainage tube, cardiopulmonary resuscitation (CPR), and especially, chemotherapy—may be another possible reason that healthier people prefer only the feeding tube. Self-rated health is the only measure of health in the study, and healthier people are more in favor of at least one type of aggressive treatment. Objective measures of health may be included in future research.

Limitations and Directions for Future Research

This study has several strengths, as well as several important limitations. In the context of China, both religion and end-of-life issues are fairly new concepts and have been rarely studied. This study is the first of its kind to investigate the role religion plays in Chinese people's end-of-life decision-making. The design takes into consideration the vast difference between religion in Chinese societies and western societies; therefore, religion is measured based on a new model proposed in 2018, in more than one dimension. This study also stands out in its collection of empirical data and a relatively large sample size of 1,085 survey responses. This study successfully reached out to respondents across mainland China. Based on the reported locations where respondents have lived the longest time in the past five years, I have respondents from almost all regions of mainland China, including 23 provinces, four municipalities, and four out of five autonomous regions (except Ningxia autonomous region). Yet despite the size and diversity, the sample is not based on probability, thus the result is not generalizable to any larger population of Chinese persons. The method of convenience sampling and snowball sampling, conducting online and advertising on social media all lead to an overrepresented population of younger individuals, clustered at the upper part of the socioeconomic hierarchy, in bigger cities.

There may be information bias. The question of annual income might be misinterpreted because the provided annual income ranges, adopted from the population average, might be too low for my selective sample (Liu 2018). If respondents' ran out of patience toward the later part of this survey, where the sociodemographic information was asked, they may have tended to jump to the options and not read the prompt carefully. Some people who have at least a four-year bachelor's degree, are employed, and are at their working age (from 25 to 65 years old), chose an annual income lower than 2,900 USD. This unusual profile is not rare in my sample. In fact, this accounts for 176 out of 483 (36.4%) lower-annual-income respondents. Therefore, I suspect the validity of this data. However, even if the question may have been misinterpreted, picking the lowest-income category may still hold some validity if the annual income is thought of as an ordinal measure, and the respondents were selecting what was the lowest category on the list.

The other source of information bias, as alluded to previously, comes from the length of the survey and the lack of incentive. Because this online survey provides no incentive and contains many questions, especially two long vignettes that require more time, participants may rush to the end without carefully reading and digesting the questions. I overcame information bias coming from this source by filtering out responses that took unreasonably short durations of time to complete.

Despite that the vignette method has advantages over abstract conceptual questions for determining individuals' end-of-life treatment preferences, the use of it in this study has limitations. First, only two distinctive treatment options are provided as options. Without more knowledge or information of end-of-life care, respondents may misinterpret that aggressive and palliative treatments are mutually exclusive. However, this is simply not true in real life. Palliative care is seen as an integral part of terminal illness care (WHO 1990). Patients with

terminal illness are generally regarded in a continuum transitioning from traditional, curative, and more aggressive treatments that aim to prolong life to palliative care that maximizes comfort, dignity, and quality of life. Second, to avoid inducing biased results, I purposefully phrased the vignettes in a way that does not imply any pain or discomfort. Based on the comments, I noticed that some people were unaware of the physical pain and discomfort that often accompanies aggressive treatments. The responses of individuals who lack insight into medical care might change if they were better informed. In real life, patients and their families typically receive tremendous guidance and assistance from health professionals on issues such as deciding the appropriate time to reorient goals of care and fully transit to palliative care (Maida et al. 2010).

Another limitation is that the opinion of young people on end-of-life issues is subject to change as they age. Moreover, individuals' stated EOL treatment preferences might not reflect the actual medical decisions they would make in real life. In terms of major medical decisions, collectivist Asian societies value patient autonomy less and favor paternalism more. In China, oftentimes decisions are made by family members, and there are discrepancies between patients and their families. For example, in the responses I collected, people who chose palliative treatment for themselves wrote, "I will choose a natural death without any hesitation, but I want to prolong the life of my family member as much as possible," and "I choose palliative care for myself. If I were to make the choice for my loved ones, I wish to accompany them even for one more second," and "For myself, the reason of choosing not to use a feeding tube to prolong life is that I do not want to be a burden to my family, and being cognitively impaired is not worth living. However, if it is my family member, I will still choose to use the feeding tube." This discrepancy can be explained by filial piety that is prevalent in many Asian societies. As shown

in Zheng and his colleagues' study (2010), the deeply rooted Confucian teaching of filial piety and the pressure of social (dis)approval drive family members to exhaust all means to preserve and prolong life. In a time of rapid social and cultural change in Chinese society, it is interesting to study the discrepancies between an individual's EOL treatment preferences toward him or herself and that toward their family members and to do intergenerational comparisons. Future research can investigate how such attitudinal discrepancies are related to the actual treatment received at the end of life.

CONCLUSIONS

As the most populous country undergoes rapid demographic shift, China faces the unprecedented challenge of aging population. End of life care of older Chinese people will be an issue of great national importance in the near future. This study is the first of its kind to explore the relationship between religion and end-of-life treatment preferences among the general public in mainland China. Among multiple variables that measure religion, adjusted according to the vastly different religious landscape in mainland Chinese society, only the practice of folk religion has a weak association in one of the two end-of-life treatment preference scenarios. In addition, the endorsement of the Buddhist teachings—reincarnation, the afterlife, and karma—is associated with the preference for palliative treatment, instead of for more aggressive treatments. This study undercuts the misconception that religion lacks a functional position in Chinese society. This study also provides the valuable insights in how religious teachings help construct meanings of life, death and dying and provide an ethical foundation for making major clinical decisions.

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TABLES AND FIGURES

Figure 1. Logical Relationship of Three Dimensions of Measuring Religion in China

Figure 2. Flow Charts of All Variables

Figure 2a. Flow Chart of Independent Variables

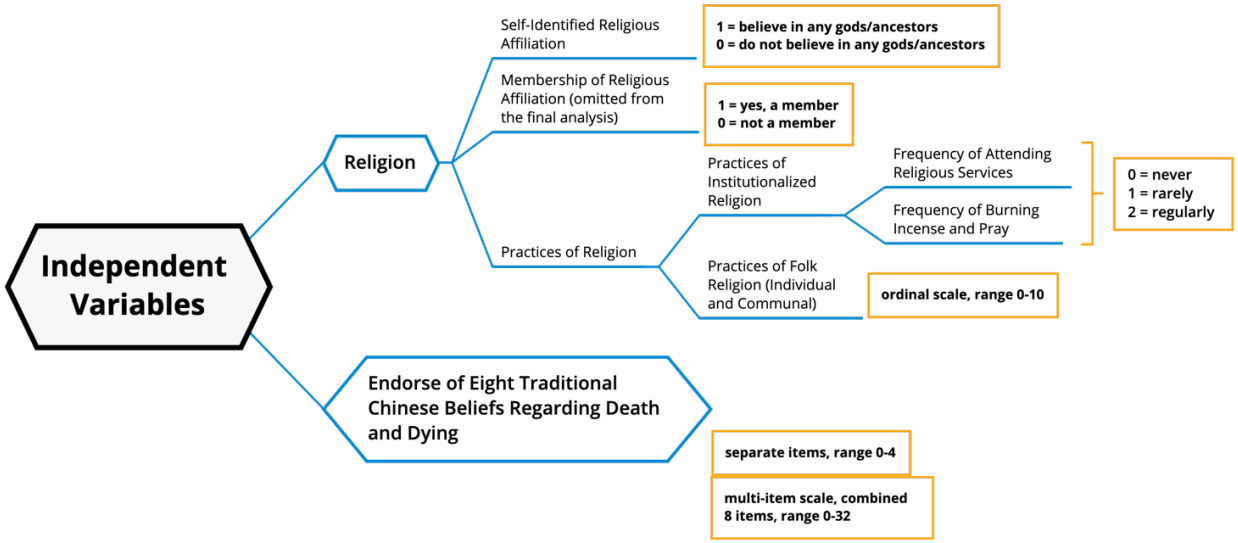


Figure 2b. Flow Chart of Dependent Variables

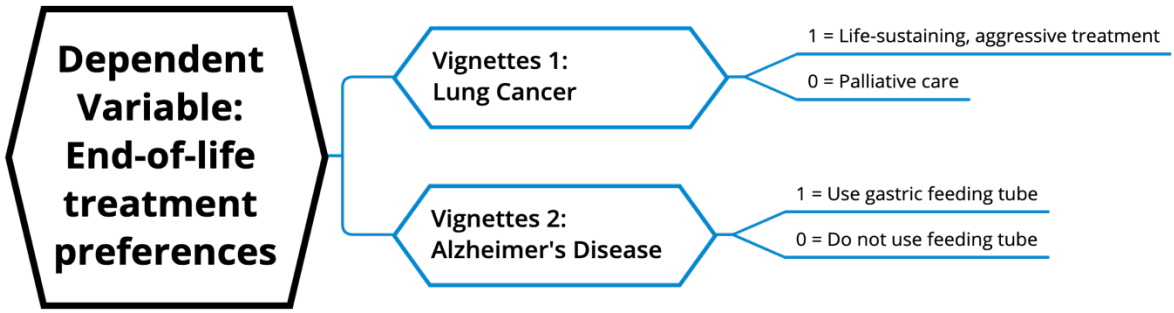


Figure 2c. Flow Chart of Other Variables

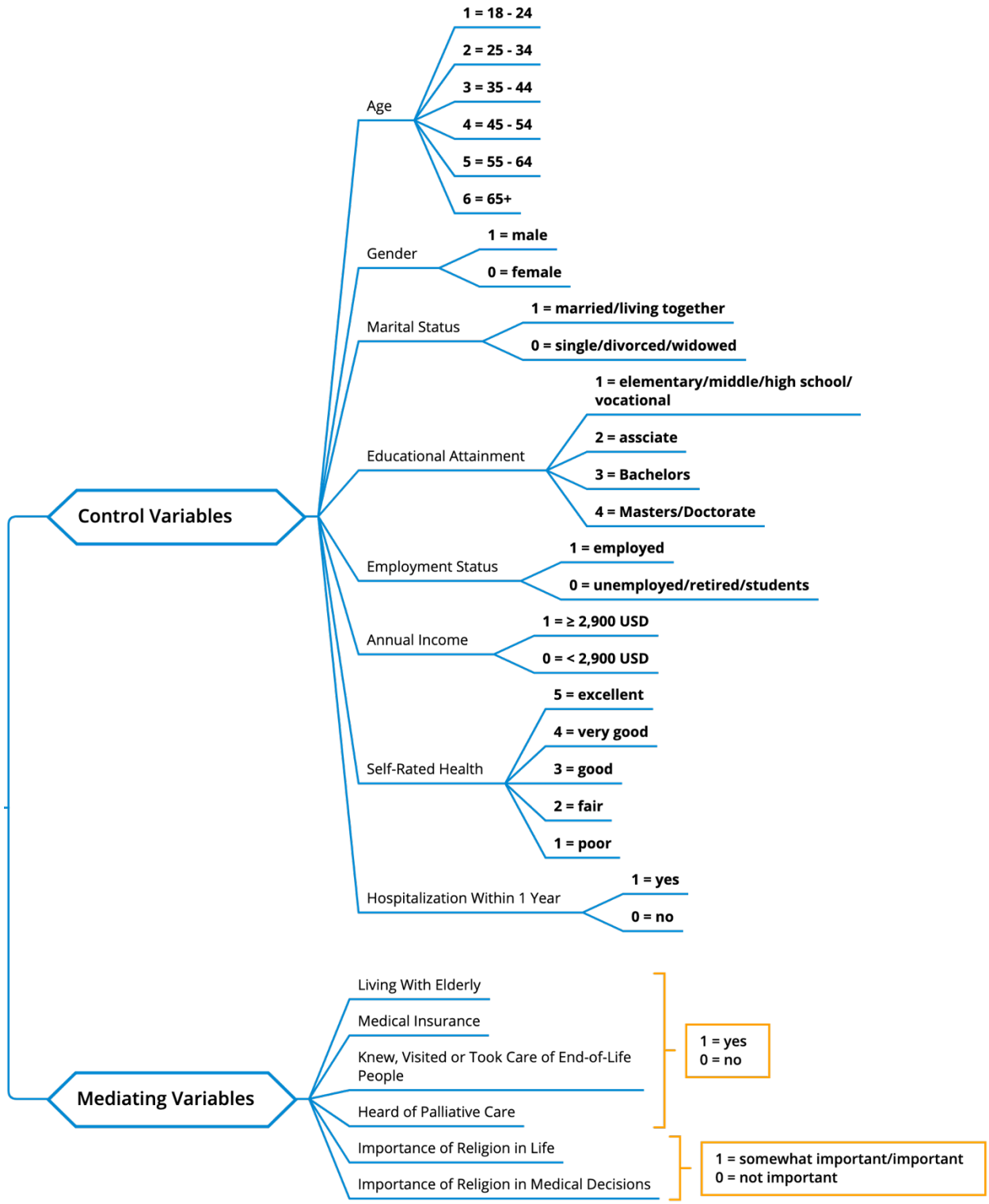
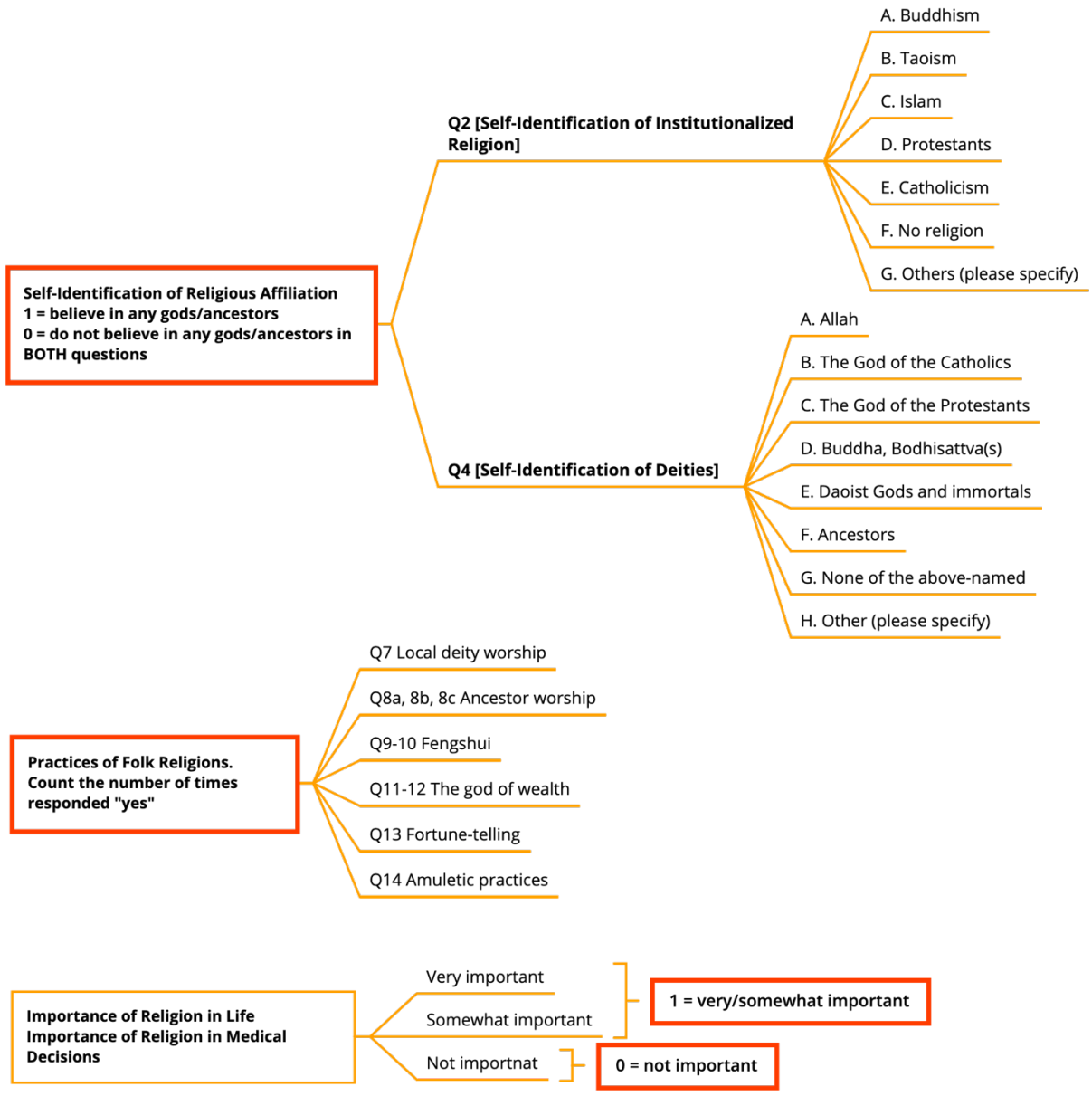
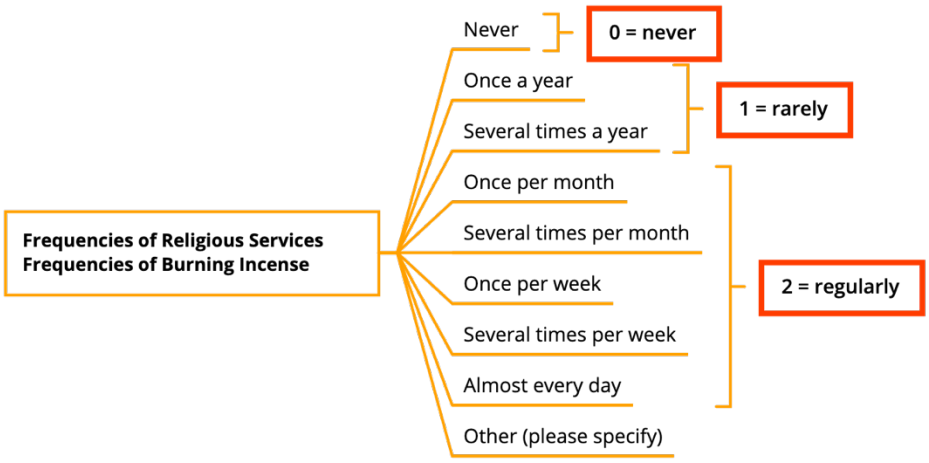
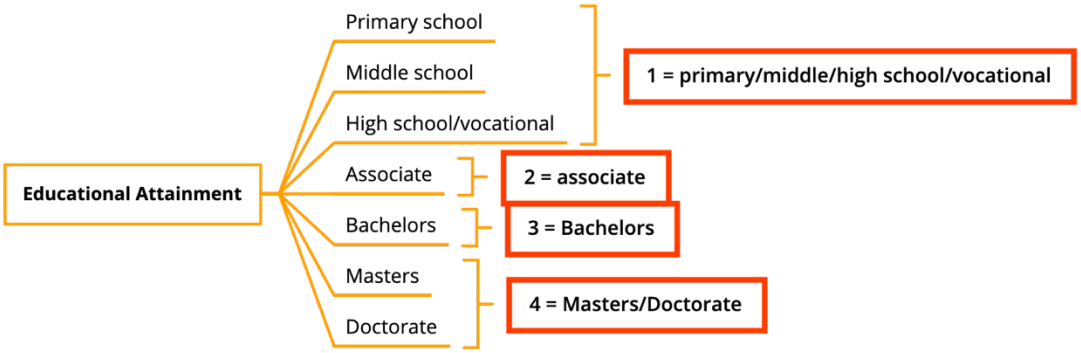
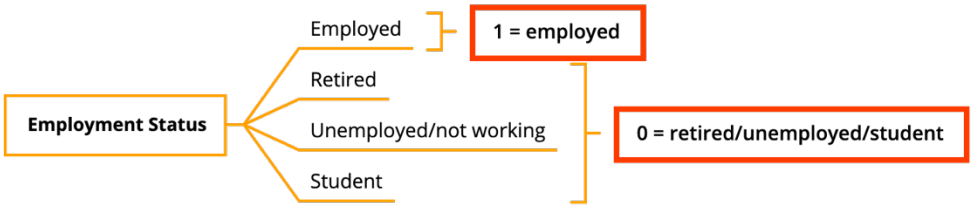


Figure 3. A Flow Chart of Recoded Variables and Their Attributes Included in the Final Analysis (Red).




Frequencies of Religious Services
Frequencies of Burning Incense
Never
Once a year
Several times a year
Once per month
Several times per month
Once per week
Several times per week
Almost every day
Other (please specify)
0 = never
1 = rarely
2 = regularly


Educational Attainment
Primary school
Middle school
High school/vocational
Associate
Bachelors
Masters
Doctorate
1 = primary/middle/high school/vocational
2 = associate
3 = Bachelors
4 = Masters/Doctorate


Employment Status
Employed
Retired
Unemployed/not working
Student
1 = employed
0 = retired/unemployed/student


Annual Income
Below 5,000 Chinese Yuan
5,000 – 9,999 Chinese Yuan
10,000 – 19,999 Chinese Yuan
20,000 – 29,999 Chinese Yuan
30,000 – 49,999 Chinese Yuan
50,000 – 99,999 Chinese Yuan
100,000+ Chinese Yuan
1 = <2,900 USD
0 = ≥2,900 USD

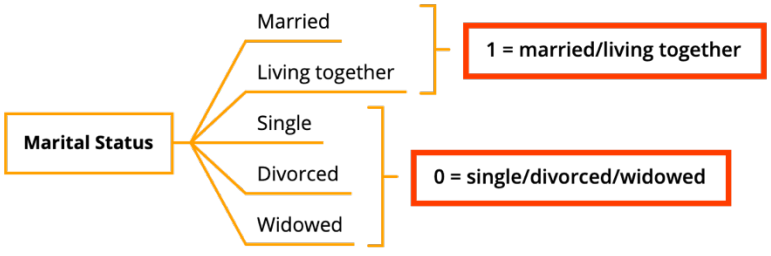

Marital Status
Married
Living together
Single
Divorced
Widowed
1 = married/living together
0 = single/divorced/widowed

Table 1. Characteristics of Survey Respondents (n = 1,085)

Demographic Characteristics		Frequency (percentage)	
Age	18 - 24	192	(17.7)
	25 - 34	597	(55.0)
	35 - 44	175	(16.1)
	45 - 54	102	(9.4)
	55 - 64	12	(1.1)
	65+	7	(0.6)
Gender	Male	653	(60.2)
	Female	432	(39.8)
Marital Status	Single/divorced/ widowed	523	(48.2)
	Married/living together	562	(51.8)
Educational Attainment	Elementary/middle school/high school/vocational	71	(6.5)
	Associate	468	(43.1)
	Bachelors	469	(43.2)
	Masters/Doctorate	77	(7.1)
Employment Status	Employed	963	(88.8)
	Unemployed/retired/ student	122	(11.2)
Annual Income	< 2900 USD	483	(44.5)
	≥ 2900 USD	602	(55.5)
Self-Rated Health	Excellent	213	(19.6)
	Very good	324	(29.9)
	Good	213	(19.6)
	Fair	300	(27.6)
	Poor	35	(3.20)
Hospitalization Within 1 Year	Yes	120	(11.1)
	No	965	(88.9)
Living With Elderly	Yes	262	(24.1)
	No	823	(75.9)
Medical Insurance	Yes	974	(89.8)
	No	111	(10.2)
Knew or Visited End-of-Life People	Yes	560	(51.6)
	No	525	(48.4)
Heard of Palliative Care	Yes	330	(30.4)
	No	755	(69.6)
Importance of Religion in Life	Somewhat important/important	484	(44.6)
	Not important	601	(55.4)

Importance of Religion in Medical Decision	Somewhat important/important	279	(25.7)
	Not important	806	(74.3)

Table 2. Endorsement of Eight Traditional Chinese Beliefs Regarding Death and Dying by Gender (n = 1,085)

	Mean (SD)			t
		Male n = 653	Female n = 432	
1. Thinking or talking about death can bring bad luck.	1.48 (0.86)	1.46 (0.89)	1.50 (0.81)	0.92
2. A painful or early death is a result of past misdeeds.	1.76 (1.11)	1.77 (1.11)	1.74 (1.11)	- 0.40
3. Black hair should not precede white hair.	1.93 (1.09)	1.98 (1.10)	1.86 (1.08)	- 1.74
4. Dying without a son is "face losing."	1.70 (0.90)	1.83 (0.99)	1.51 (0.69)	- 6.36*
5. Death is part of the cycle of life.	3.05 (0.92)	2.98 (0.96)	3.16 (0.85)	3.16*
6. I live on through descendants.	2.45 (1.14)	2.46 (1.14)	2.44 (1.13)	- 0.41
7. I believe in reincarnation/afterlife/karma.	2.72 (1.15)	2.69 (1.14)	2.78 (1.16)	1.29
8. Death is our fate.	1.67 (1.30)	1.63 (1.22)	1.73 (1.41)	1.17

Note: Scores range from 0 to 4. 0 = I do not know, or I am not sure; 1 = strongly disagree; 2 = disagree; 3 = agree; 4 = strongly agree. *$p < 0.05$

Table 3. Means of Independent Variables (n = 1,085)

	Range	Total
Religious Affiliation	0 - 1	0.38
Frequency of Burning Incense	0 - 2	0.58
Frequency of Religious Services	0 - 2	0.21
Practices of Folk Religion (individual and communal)	0 - 10	2.93
Traditional Chinese Beliefs	0 - 32	16.77

Table 3a. Means of Independent Variables by Age Groups (n = 1,085)

	Range	Age						
		18-24	25-34	35-44	45-54	55-64	65+	Total
Religious Affiliation**	0 - 1	0.29	0.37	0.46	0.49	0.58	0.43	0.38
Frequency of Burning Incense*	0 - 2	0.52	0.56	0.65	0.68	0.92	0.71	0.58
Frequency of Religious Services	0 - 2	0.20	0.20	0.23	0.20	0.25	0.14	0.21
Practices of Folk Religion (individual and communal) †	0 - 10	2.95	2.75	3.34	3.21	3.50	2.86	2.93
Traditional Chinese Beliefs	0 - 32	16.71	16.62	16.86	17.54	17.75	15.29	16.77

Note: † $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 3b. Means of Independent Variables by Gender (n = 1,085)

	Range	Gender		Total
		Male	Female	
Religious Affiliation†	0 - 1	0.36	0.41	0.38
Frequency of Burning Incense†	0 - 2	0.56	0.62	0.58
Frequency of Religious Services	0 - 2	0.22	0.19	0.21
Practices of Folk Religion (individual and communal)**	0 - 10	2.76	3.18	2.93
Traditional Chinese Beliefs	0 - 32	16.80	16.71	16.77

Note: † $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 3c. Means of Independent Variables by Marital Status (n = 1,085)

	Range	Marital Status		
		Single/ divorced/ widowed	Married/ living together	Total
Religious Affiliation***	0 - 1	0.33	0.43	0.38
Frequency of Burning Incense	0 - 2	0.55	0.61	0.58
Frequency of Religious Services	0 - 2	0.20	0.21	0.21
Practices of Folk Religion (individual and communal)	0 - 10	2.84	3.02	2.93
Traditional Chinese Beliefs*	0 - 32	16.44	17.07	16.77

Note: † p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001

Table 3d. Means of Independent Variables by Education (n = 1,085)

	Range	Education				
		Elementary/ Middle/High School/ Vocational	Associate	Bache-lors	Masters / Doctor-ate	Total
Religious Affiliation	0 - 1	0.41	0.39	0.36	0.40	0.38
Frequency of Burning Incense†	0 - 2	0.65	0.61	0.53	0.66	0.58
Frequency of Religious Services	0 - 2	0.15	0.21	0.20	0.27	0.21
Practices of Folk Religion (individual and communal)	0 - 10	3.11	2.93	2.91	2.92	2.93
Traditional Chinese Beliefs	0 - 32	16.73	16.61	16.75	17.82	16.77

Note: † p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001

Table 3e. Means of Independent Variables by Annual Income (n = 1,085)

	Range	Annual Income		
		<2900	≥2900	Total
Religious Affiliation	0 - 1	0.38	0.39	0.38
Frequency of Burning Incense	0 - 2	0.55	0.60	0.58
Frequency of Religious Services	0 - 2	0.22	0.19	0.21
Practices of Folk Religion (individual and communal)	0 - 10	2.96	2.91	2.93
Traditional Chinese Beliefs	0 - 32	16.86	16.69	16.77

Note: † p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001

Table 4a. Binary Logistic Regression Predicting Preference for Aggressive Treatment, Compared to Palliative Treatment in a Hypothetical Scenario of Lung Cancer, Using a Multi-Item Scale (n = 1, 085)

	Model 1	Model 2	Model 3	Model 4
Variables				
Religion				
Religiously affiliated	0.96	1.07	1.08	1.03
Frequency of burning incense	0.87	0.92	0.93	0.93
Frequency of religious services	1.13	1.07	1.05	1.03
Practices of folk religion (individual and communal)	1.01	1.01	1.01	1.03
Traditional Chinese beliefs about death and dying	1.00	1.00	1.00	1.00
Sociodemographic characteristics				
Age	-	**0.61*** **	**0.61*** **	**0.62*** **
Gender (1 = male)	-	**1.76*** **	**1.73*** **	**1.74*** **
Married/living together	-	1.00	1.00	1.04
Education	-	0.99	0.99	1.02
Employed	-	**2.29** **	**2.26** **	**2.31** **
Low annual income (<2900 USD)	-	**1.33***	**1.31†**	**1.31†**
Health characteristics				
Self-rated health	-	-	1.09	1.08
Hospitalization, past year (1 = yes)	-	-	1.12	1.16
Mediators				
Living with elderly (1 = yes)	-	-	-	0.93
Have medical insurance (1 = yes)	-	-	-	0.73
Knew or visited EOL people (1 = yes)	-	-	-	0.80
Heard of palliative care (1 = yes)	-	-	-	**0.68***
Religion is (somewhat) important in life	-	-	-	1.03
Religion is (somewhat) important in medical decisions	-	-	-	1.18
x^2; degree of freedom	1.70; 5	74.28; 11	76.25; 13	88.88; 19

Note: Odds ratios (OR) are displayed. Significant values are bolded at different levels: † p < .10, * p < .05, ** p < .01, *** p < .001.

Table 4b. Binary Logistic Regression Predicting Preference for Using A Gastric Feeding Tube in a Hypothetical Scenario of Alzheimer's Disease, Using a Multi-Item Scale (n = 1,085)

	Model 1	Model 2	Model 3	Model 4
Variables				
Religion				
Religiously affiliated	0.94	1.00	1.03	1.05
Frequency of burning incense	1.00	1.05	1.09	1.09
Frequency of religious services	1.14	1.08	1.05	1.04
Practices of folk religion (individual and communal)	**1.06†**	**1.07***	**1.07***	**1.08***
Traditional Chinese beliefs about death and dying	0.99	0.99	0.99	0.99
Sociodemographic characteristics				
Age	-	**0.79****	**0.79****	**0.80****
Gender (1 = male)	-	**1.65*****	**1.57*****	**1.58*****
Married/living together	-	1.12	1.11	1.09
Education	-	0.95	0.93	0.95
Employed	-	1.16	1.13	1.17
Low annual income (<2900 USD)	-	**1.52****	**1.46****	**1.45****
Health characteristics				
Self-rated health	-	-	**1.24*****	**1.24*****
Hospitalization, past year (1 = yes)	-	-	1.00	1.03
Mediators				
Living with elderly (1 = yes)	-	-	-	1.08
Have medical insurance (1 = yes)	-	-	-	0.82
Knew or visited EOL people (1 = yes)	-	-	-	0.88
Heard of palliative care (1 = yes)	-	-	-	0.97
Religion is (somewhat) important in life	-	-	-	0.84
Religion is (somewhat) important in medical decisions	-	-	-	1.17
χ^2; degree of freedom	5.66; 5	50.22; 11	76.25; 13	68.31; 19

Note: Odds ratios (OR) are displayed. Significant values are bolded at different levels: † $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$. Preference of using gastric feeding tube is denoted as 1.

Table 5a. Binary Logistic Regression Predicting Preference for Aggressive Treatment, Compared to Palliative Treatment in a Hypothetical Scenario of Lung Cancer (n = 1,085)

	Model 1	Model 2	Model 3	Model 4
Variables				
Religion				
Religiously affiliated	0.93	1.04	1.05	1.01
Frequency of burning incense	0.84	0.90	0.91	0.91
Frequency of religious services	1.10	1.03	1.01	1.00
Practices of folk religion (individual and communal)	1.01	1.01	1.01	1.03
Belief_1: thinking about death bring bad luck	1.00	1.00	1.00	0.99
Belief_2: painful deaths due to misdeeds	1.00	1.03	1.02	1.03
Belief_3: black hair shouldn't precede white hair	1.04	1.05	1.05	1.04
Belief_4: dying without a son is "face losing"	1.04	0.91	0.91	0.91
Belief_5: death is part of the cycle of life	0.97	1.03	1.04	1.06
Belief_6: I live on through descendants	1.07	1.08	1.07	1.06
Belief_7: believe in reincarnation, afterlife, and karma	**0.82****	**0.80*****	**0.80*****	**0.81****
Belief_8: death is our fate	1.07	1.10	1.10	1.09
Sociodemographic characteristics				
Age	-	**0.60*****	**0.60*****	**0.61*****
Gender (1 = male)	-	**1.79*****	**1.76*****	**1.77*****
Married/living together	-	1.01	1.00	1.06
Education	-	0.97	0.96	1.00
Employed	-	**2.17****	**2.14****	**2.22****
Low annual income (<2900 USD)	-	1.33	1.31	**1.32†**
Health characteristics				
Self-rated health	-	-	1.09	1.09
Hospitalization, past year (1 = yes)	-	-	1.12	1.16
Mediators				
Living with elderly (1 = yes)	-	-	-	0.90
Have medical insurance (1 = yes)	-	-	-	0.74
Knew or visited EOL people (1 = yes)	-	-	-	0.82
Heard of palliative care (1 = yes)	-	-	-	**0.69****
Religion is (somewhat) important in life	-	-	-	1.01
Religion is (somewhat) important in medical decisions	-	-	-	1.15
x^2; degree of freedom	15.33; 12	88.44; 18	90.47; 20	100.67; 26

Note: Odds ratios (OR) are displayed. Significant values are bolded at different levels: † p < .10, * p < .05, ** p < .01, *** p < .001.

Table 5b. Binary Logistic Regression Predicting Preference for Using A Gastric Feeding Tube in a Hypothetical Scenario of Alzheimer's Disease (n = 1, 085)

	Model 1	Model 2	Model 3	Model 4
Variables				
Religion				
Religiously affiliated	0.92	0.98	1.08	1.03
Frequency of burning incense	0.99	1.04	1.08	1.08
Frequency of religious services	1.14	1.07	1.04	1.03
Practices of folk religion (individual and communal)	1.06	1.07	1.07	1.08
Belief_1: thinking about death bring bad luck	1.08	1.10	1.10	1.10
Belief_2: painful deaths due to misdeeds	1.01	1.03	1.02	1.01
Belief_3: black hair shouldn't precede white hair	0.99	0.98	1.00	1.00
Belief_4: dying without a son is "face losing"	0.97	0.87	0.87	0.87
Belief_5: death is part of the cycle of life	0.89	0.94	0.95	0.95
Belief_6: I live on through descendants	1.11	1.11	1.11	1.11
Belief_7: believe in reincarnation, afterlife, and karma	**0.88****	**0.86****	**0.86***	**0.86***
Belief_8: death is our fate	1.01	1.03	1.02	1.02
Sociodemographic characteristics				
Age	-	**0.77****	**0.77****	**0.79****
Gender (1 = male)	-	**1.71*****	**1.62*****	**1.63*****
Married/living together	-	1.13	1.11	1.10
Education	-	0.93	0.91	0.93
Employed	-	1.07	1.04	1.08
Low annual income (<2900 USD)	-	**1.51****	**1.46****	**1.45****
Health characteristics				
Self-rated health	-	-	**1.24*****	**1.24*****
Hospitalization, past year (1 = yes)	-	-	1.01	1.03
Mediators				
Living with elderly (1 = yes)	-	-	-	1.05
Have medical insurance (1 = yes)	-	-	-	0.85
Knew or visited EOL people (1 = yes)	-	-	-	0.91
Heard of palliative care (1 = yes)	-	-	-	1.01
Religion is (somewhat) important in life	-	-	-	0.83
Religion is (somewhat) important in medical decisions	-	-	-	1.14
x^2; degree of freedom	16.80; 12	62.95; 18	77.17; 20	79.86; 26

Note: Odds ratios (OR) are displayed. Significant values are bolded at different levels: † $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$. Preference of using gastric feeding tube is denoted as 1.

APPENDIX A: Online Survey (English)

【Page 1】

[Self-Rated Health]

Question 1: In general, how would you rate your health?

1. Excellent
2. Very good
3. Good
4. Fair
5. Poor

【Page 2】

[Self-Identification of Institutionalized Religion]

Question 2: What is your religion (if any)?

A. Buddhism
B. Taoism
C. Islam
D. Protestants
E. Catholics
F. No religion
G. Other (please specify)

[Membership of Religious Organizations]

Question 3: Are you an official member of any religious groups (e.g. convert to Buddhism by taking refuge or baptism in Christianity)?

A. Yes
B. No

[Self-Identification, Deities]

Question 4: In what deities you believe? (select all that apply)

A. Allah
B. The God of the Catholics
C. The God of the Protestants
D. Buddha, Bodhisattva(s)
E. Daoist Gods and Immortals
F. Ancestors
G. None of the above-named
H. Other (please specify)

(Logic Jump Instructions: if choose A/B/C/G/H, answer question 5 and question 6. If choose D/E/F, skip question 5, answer question 6)

[Frequency of Religious Services]

Question 5: How often do you go to religious service?

1. Never
2. Once a year
3. Several times a year
4. Once per month
5. Several times per month
6. Once per week
7. Several times per week
8. Almost every day
9. Other (please specify)

[Frequency of Burning Incense]

Question 6: How often you burn incense and pray?

1. Never
2. Once a year
3. Several times a year
4. Once per month
5. Several times per month
6. Once per week
7. Several times per week
8. Almost every day
9. Other (please specify)

[Identify Folk Religion Believers]

[Local Deity Worship]

Question 7: In the past 12 months, did you pray and burn incense at other temples including Master Yu temple, earth god temple, etc?

1. Yes
2. No

[Ancestor Worship]

Question 8a: In the past one year, did you visit an ancestor's grave?

1. Yes
2. No

Question 8b: Do you have an ancestor tablet at home?

1. Yes
2. No

Question 8c: Do you think ancestral spirits exist?

3. Yes
4. No

[Fengshui]

Question 9: In the past 12 months, did you observe fengshui?

1. Yes
2. No

Question 10: Did you invite a geomancer (fengshui master) in the following situations: wedding, opening new business, sudden ill, purchasing a new house or apartment, remodeling the house, relocating, or funeral?

1. Yes
2. No

[The God of Wealth]

Question 11: Do you have the statue or portrait of the god of wealth at home or at your workplace?

1. Yes
2. No

Question 12: Do you think the god of wealth exists?

1. Yes
2. No

[Fortune-telling]

Question 13: In the past 12 months, did you have your fortune told by palm-reading, facing-reading, lot-drawing, Chinese characters interpretation, dream interpretation, or astrology?

1. Yes
2. No

[Amuletic Practices]

Question 14: In the past 12 months, did you participate in any one of these activities: wearing a red belt in the zodiac year of birth; wearing red clothes to ward off evil spirits; hanging a mirror on doors or windows to ward off evil spirits; finding an auspicious date to give birth or hold wedding; pasting talisman, hanging wormwood, door deities or eight diagrams on house doors; putting auspicious articles such as swords, golden toads, or branches of the peach tree in the house; setting off firecrackers to ward off evil spirits; wearing talisman to ward off evil spirits; hanging the figurines of gods to ward off evil spirits.

1. Yes
2. No

[Importance of Religion]

Question 15: Regardless of your actual participation in religious activities, is religion important to you?

1. Very important
2. Somewhat important
3. Not important

Question 16: Regardless of your actual participation in religious activities, is religion important in making medical decisions?

1. Very important
2. Somewhat important
3. Not important

【Page 3】

[Endorsement of Eight Traditional Chinese Beliefs of Death and Dying]

Question 17: Please rate your level of agreement to the following statements: (4 = strongly agree, 3 = agree, 2 = disagree, 1 = strongly disagree, 0 = I don't know, I'm not sure)

- Thinking or talking about death can bring bad luck.
- A painful or early death is a result of past misdeeds.
- Black hair should not precede white hair.
- Dying without a son is "face losing".
- Death is part of the cycle of life.
- I live on through descendants.
- Belief in reincarnation/afterlife/karma.
- Death is our fate.

【Page 4】

[End-of-Life Treatment Preferences Vignettes A: Lung Cancer]

Question 18: Frank is 75 years old and has lung cancer. He knows that he has not got long to live, but his doctor says it is impossible to say how long. One morning, Frank suddenly becomes very breathless. His wife Susan calls for an ambulance and he is admitted to hospital, where he is given oxygen and some fluid is drained from his lung. This makes him feel more comfortable. After a few days, Frank starts to feel a bit better, but he is weak, and he is getting a troublesome pain from the cancer in his lung quite often now.

Frank's doctor offers two treatment options.

Option 1: Using life-sustaining treatments to prolong life. For example, if breath stops, perform resuscitation. If heart stops, perform CPR. If there are fluids in the lung, use the chest tube to drain the fluid out. Decision of doing chemotherapy may be involved.

Option 2: Relieve the symptoms, control pain and make you feel more comfortable. The aim is to improve quality of life, and it intends neither to hasten or postpone death. Treatments include but are not limited to the use of painkillers like morphine.

If you are Frank, which treatment will you choose? (Note that, in real life, patients may undergo both types of treatments. Due to the limitation of hypothetical scenarios, please choose the one that you prefer.)

1. Option one, aggressive treatment
2. Option two, palliative treatment

[Open-Ended Question]

Question 19: Why you made the choice above? Do you have any concerns in particular? If you are not satisfied with two options provided, please explain.

【Page 5】

[End-of-Life Treatment Preferences Vignettes B: Alzheimer's Disease]

Question 20: Mary is 75 years old. She has had Alzheimer's disease (dementia) for five years. While there is no cure or a way to stop or slow its progression, there are ways that may help treat symptoms. Mary cannot communicate very well and often gets confused. After a stroke, Mary's condition further deteriorates and cannot eat or drink without choking. In this kind of situation, using the gastric feeding tube is a way to prevent choking.

The use of a gastric tube requires a surgery to inset the tube into the stomach, and then feed water and all or most of the food to the patient multiple times a day. Whether the feeding tube can really prolong the life of the patient remains questionable.

At the terminal stage of the disease, when the patient and family have decided not to insert the feeding tube, it means that they are willing to accept a natural death. This decision does not mean "to starve the patient". The doctor will do something to make the patient feel comfortable, and many patients can still receive food during this period.

If Mary knew about this dilemma when she was still able to communicate clearly at the early stage of dementia, and imagine if you are Mary, would you choose to use a gastric feeding tube in this situation?

1. Yes, perform surgery to inset and use the feeding tube.
2. No, do not use the feeding tube.

[Open-Ended Question]

Question 21: Why you have made the above choice? Is it different from the last vignette? If so why?

【Page 6】

[Sociodemographic and Other Information]

Question 22: What is your age?

1. 18 – 24 years old

2. 25 – 34 years old
3. 35 – 44 years old
4. 45 – 54 years old
5. 55 – 64 years old
6. 65+ years old

Question 23: What is your gender?

1. Male
2. Female

Question 24: What is your highest educational attainment?

1. Primary school
2. Middle school
3. High school/Vocational
4. Associate
5. Bachelor
6. Master
7. Doctor

Question 25: Please choose your employment status.

1. Employed
2. Retired
3. Unemployed/Not working
4. Student

Question 26: What is your personal annual income, all sources of income included?

1. Below 5,000 Chinese Yuan
2. 5,000 – 9,999 Chinese Yuan
3. 10,000 – 19,999 Chinese Yuan
4. 20,000 – 29,999 Chinese Yuan
5. 30,000 – 49,999 Chinese Yuan
6. 50,000 – 99,999 Chinese Yuan
7. 100,000+ Chinese Yuan

Question 27: What is your marital status?

1. Single
2. Married
3. Living together
4. Divorced
5. Widowed

Question 28: Do you live with someone who is 65 years old and above?

1. Yes
2. No

Question 29: In the last 12 months, were you hospitalized due to your own health problems for at least one night?

1. Yes
2. No

Question 30: Do you have medical insurance, either from social security program or commercial medical insurance?

1. Yes
2. No

Question 31: Did you know, visit, or take care of someone at the end of their lives?

1. Yes
2. No

Question 32: Have you heard of palliative care before?

1. Yes
2. No

APPENDIX B: Two Vignettes (Chinese)

[Vignettes A]

李明今年75岁，患有肺癌。 医生告诉他还有大概3到6个月的生命，他自己也知道命不久矣，但是医生也说不好还剩下多少时日。一天早晨，李明突然觉得呼吸非常困难， 他的妻子第一时间叫了救护车把他送进医院。医生给他吸了氧且排除肺部多余液体， 这使他感到舒服了许多。几天后，李明的情况开始好转，但他依然很虚弱。相比发作之前，李明更常被肺癌引起的痛苦烦扰。

医生提供了两种治疗方案。

方案一：采用一些生命支持的治疗方法，尽可能延长生命。例如，当呼吸停止时，使用呼吸机；当心脏停跳时，采用心肺复苏(CPR)；在胸部连接一根软管，用于排除肺部积液等。根据患者情况，这种疗法可能会涉及到是要不要做化疗的决定。

方案二：缓解症状、减轻痛苦，使病人感到更舒适，进而达到情况允许下的最佳生存质量，既不打算加速也不推迟死亡的到来。常见治疗手段有使用止痛药（如吗啡）。

如果你是李明，你会选择哪种治疗方案？（现实生活中，很多病人会结合两种治疗方案。由于虚拟情景的限制，请选一个你更倾向的治疗方案）

1. 方案一。

2. 方案二。

[Vignettes B]

张丽今年 75 岁，她患有阿尔茨海默病（老年痴呆症）已有五年了。并没有可以阻止或逆转这种病的治疗，只有少数方法可以暂时缓解或改善症状。张丽的症状已经发展到了无法正常与别人沟通交流的状态，她经常感到迷惑且善忘。在一次突发的中风后，张丽的状态继续恶化，变得无法自主进食。每次喝水或吞咽时都会呛到。

在这种情况下，维持患者生命的一种方式是使用喂食管（如胃管）提供生命所需的能量。使用胃管需要通过手术将管子经腹部直接接入胃内，水和食物会每日多次通过胃管“喂”给病人。对于老年痴呆症晚期的患者，使用喂食管是否真的能够延长患者生命，目前仍然存在一些争论。

当病情发展到了晚期，如果决定不使用喂食管，代表患者和家属已经作出了接受死亡自然来临的决定。这并不意味着要“把患者饿死”。医生会采取一些措施使患者感到舒适，许多患者仍然可以在最后这段时间吃一些饭。

假设张丽在还能很好地自主决策和沟通的老年痴呆早期，就提前了解到最终会发展到上述的这个地步。如果你是张丽，你会选择使用喂食管吗？

1. 会，我会选择做手术把管子接入胃里，然后使用喂食管。
2. 不会，不用喂食管。