CHILD CARE IN AN AGING SOCIETY: ASSESSING PEOPLE'S ATTITUDES

TOWARDS THE SOCIALIZATION OF CARE IN JAPAN

A Thesis

by

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ABSTRACT

Populations are rapidly aging in many developed nations including Japan. Providing care for the elderly is one of the major social problems facing Japanese society. Exacerbating the demographic problem of the aging population, Japanese family structure has shifted from a traditional multigenerational household to the modern nuclear household. This change significantly impacts caregiving for both the elderly and children. To accommodate the aging population Japanese government agencies have developed elderly care policies. These policies cover a wide variety of needs of the elderly ranging from medical care to daily living. However, policies have not been adequately developed to address the rising economic costs and social burden of raising children in the context of nuclear families in modern Japan.

I use Japanese General Social Survey data from 2002 and 2012 to analyze people's attitudes towards elderly and child care. Four outcomes are investigated; people's attitudes towards responsibilities of livelihood security for elderly, elderly care, education, and child care. The answers are coded on a range from 1, individuals and families' responsibility, to 5, governments' responsibility. This study finds that the age group of 35 to 65 believes both elderly care and child care to be governments' responsibility compared to other age groups in both 2002 and 2012. The age group of 66-90 believes elderly care to be the individual's responsibility compared to the middle age group. Females tend to believe elderly livelihood security and education to be the individual's responsibility in 2012. Although chi-square tests show that respondents in 2012 believe in the socialization of care more than respondents in 2002, the results of ordered logit regression and t-tests show that the effect of age group, gender, and being a parent do not explain the change across this time period.

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1. INTRODUCTION AND LITERATURE REVIEW

1.1 Introduction

Elderly people are a rapidly increasing proportion of many developed nations (Shanas 1968; Sorrentino 1990). Japan is one of the fastest aging countries. It has the highest old-age dependency ratio in the world (Garcia et al., 2019). The proportion of population younger than 15 years old has been steadily decreasing since 1950, and it represents 12.2% of the total population in 2018, which is the lowest ever reported. Contrary to the trend for young population, the proportion of old population shows a drastic increase. The proportion of population older than 65 years constitutes 28.1% of the total population, and more than half of the elderly population is older than 75 years old. The proportion of 65 year olds to the total population is the highest ever recorded since 1950 (Statistics Japan, 2019).

Many researchers have examined problems associated with aging society both in Japan and elsewhere, and some policy changes have made accordingly. Health care is one of the most discussed problems. The cost and sustainability of health care for old population is a primary issue in many aging countries, as the source of the care (i.e., tax) is limited (Campbell and Ikegami 2000; Campbell, Knickman, and Snell 2002; Minichiello and Coulson 1999).

Japan has been continuously developing its elderly care policies. The Japanese government first launched a policy in 1963, and gradually expanded the system. Medical care for elderly was fully covered in 1973, and in 1982 the government introduced medical insurance plan for elderly in which old people pay about 10% of their medical cost. The remaining 90% of the cost was covered by the local and the federal government. In 2000, the Japanese government started a universal elderly medical/health care program, mandatory long-term care insurance.

People older than age 40 must pay for the insurance so that they receive 70% to 90% covered medical/health care when they become older. Services covered with this insurance is not only limited to the cost for living in assisted living facilities, but also for at home care provided by professional care givers (Campbell and Ikegami 2000; Campbell et al. 2002; Coulmas 2007).

This program aims to split the responsibility of elderly care with families and society. Campbell and Ikegami (2000) call this shift "socialization of care." With a strong cultural norm, caregiving has long been considered a woman's job in the family in Japan. According to Japanese tradition on Confucian ideology, family structure (known in Japanese as *ie*) is idealized as consisting of the male (i.e., husband) breadwinner and a female (i.e., wife) housewife (Coulmas 2007; Lee 2010; Marshall 2017). In Japanese culture, wives are seen as "professional housewives" rather than "stay-at-home-mothers" because of the demanding caregiving work that the culture requires of them. A housewife is "expected to manage household *by herself* [emphasis in original]" (Marshall, 272). Her job is not limited to taking care of children, but also providing care for the elderly (typically parents or parents-in-law) and managing the household finances by utilizing the husband's salary and giving him an allowance (Lee 2010; Marshall 2017).

In regard to the caregiving for older parents, the eldest son and his family (wife of the eldest son) have traditionally been the typical care providers (Coulmas 2007; Lee 2010; Ochiai 2009). With population expansion of the nuclear family and women entering the labor market, the cultural obligation of full caregiving for the whole family is no longer feasible (Lee 2010). The socialization of elderly care is meant to free individuals, especially women, from the burden of intensive caregiving at home (Campbell and Ikegami 2000).

Although research regarding aging society and change in family structure have been conducted to address problems associated with elderly care, few studies focus on the other end of the population age structure that requires care—namely, children. Generally speaking, child care has always been an important function of the family. In contrast to the challenges of elderly care which have received sufficient public attention to "socialize" elderly care by financial support by the government, research has been limited in regard to public policy to ameliorate the possible difficulties faced by families in terms of childcare.

In the following sections, caregiving in contemporary Japan is investigated. What is the role of the family? What has changed in caregiving within and outside the family? What are the potential problems with current caregiving structure in Japan? The discussion focuses on socialization of care and intergenerational exchange by exploring the general public's attitudes toward elderly care and child care in Japan.

1.2 Literature Review

1.2.1 Family Structure in Japan

The structure of the family in Japan has rapidly changed over the past several decades. Sorrentino's (1990) international comparison of family formation describes the proportion of three generation households in Japan had declined from about 25% in 1960 to 12% in 1985. Traditional Japanese family structure is based on Confucianism. *Ie* (family) is formed with parents, their elderly son, the son's wife, and their children. Daughters are expected to get married and leave their parents' *ie*, and join their husbands' *ie*. Non-successor sons leave their parents' *ie* and start their own *ie* once they get married. With this ideology of *ie* family formation, Japanese traditional family consists of only three generations of the family unlike in

other Asian cultures such as India and China, where households with more extended family members are common (Coulmas 2007; Lee 2010; Marshall 2017; Ochiai 2009).

Although three generation households are still more prevalent in Japan compared to Western countries, the dramatic shift from traditional *ie* family structure to nuclear family has been observed (Coulmas 2007; Sorrentino 1990). Data from Comprehensive Survey of Living Conditions traces family formations since 1986. Three generation household represented 15.3% of the total households in 1986, whereas it decreased to only 5.9% of the total households in 2016. Contrary to the trend of three generation family, non-traditional family structures such as couples without a child, and one-person households are becoming common. The proportion of nuclear families, couples without a child, and one-person households was 60.9%, 14.4%, and 18.2% in 1986, respectively, whereas it was 60.5%, 23.7%, and 26.9% in 2016, respectively. Households of couples with unmarried children is declining in the nuclear family category; its proportion to total household was 41.4% in 1986, and 29.5% in 2016 (Director-General for Statistics and Information Policy 2018). Coulmas (2007) analyzes that the change in Japanese household structure is due to a combination of low fertility, industrialization and increased women labor force participation.

Living arrangements for people older than 65 years old have shown drastic change since 1986 with the shift from the traditional three-generational family structure to a nuclear family structure. In 1986, 10.1% of population older than 65 years old lived in one-person household, 22% lived only with their spouse, 46.7% lived with their children's family, and 17.6% lived with their unmarried children. Now more elderly live by themselves with their spouse only, or just with their unmarried children, and less elderly live with their children's family. Data from 2016 show that 18.6% of population older than 65 years old live alone, 38.9% live only with their

spouse, 11.4% live their children's family, and 27% live with their unmarried children. Among the elderly with children, 3.1% live in the same house as their children, 4.7% live in the same property but in a different building or unit, 17.3% live in the same neighborhood area, 27% live in the same municipality, and 43.3% live in other places (Director-General for Statistics and Information Policy 2018).

As is evident from the foregoing statistics, the Japanese family structure has changed from the traditional three generation family to nuclear families, especially one generational families. It is also notable that the proportion of household with only one person has increased in the past several decades. Of population older than 65 years old who do not co-reside with their children, many live quite far from their children's family. More Japanese individuals live by themselves or only with their immediate family, and less people live in a traditional household.

1.2.2 Development of Elderly Care

As the family structure changes in Japan and elderly care within family becomes less common, the Japanese government has been implementing new laws and policies to support well-being of elderly starting in around 1960s. In 1963, the first law for elderly welfare was enacted. The purpose of this law is to clarify the principle of elderly welfare and to provide needs for elders' mental and physical health and stable living. Although the law states they plan to provide support for elderly for their well-being and mentions establishment of elderly care centers, scholars have argued that this law's intention was to support elderly in poverty with no family to take care of them (Yamato 2006).

In 1970s, the government started a special health care system for the elderly. In 1973, medical payment for elderly older than 70 years old was fully covered by federal and local tax.

However, due to the escalation of medical cost and the increase of elderly patients who visit clinics for socializing (i.e., to "hang out"), the government switched their elderly health care from full coverage directly from tax to insurance-type system which the patient pay for the medical bill partially. Since the first enactment in 1982, the law for elderly health insurance has seen multiple revisions to set age cut points and to balance costs of payment for different age groups (Izumi 2010). As of 2014, elderly aged between 70 to 74 receive 80% medical bill coverage by government, and elderly older than 75 of age receive 90% medical bill coverage, excluding individuals with approximate annual income of 3,700,000 yen (33,200 USD) or more (Ministry of Health, Labour and Welfare of Japan 2018).

In addition to universal health care for the elderly, elderly care insurance was implemented in 2000 considering the rapid growth of the elderly population in the country. At this point, the proportion of population older than 65 to total population was 17.3%. The government intended to solve persistent problems of elderly care at home, such as lack of caregivers due to increase of nuclear family and aging of caregivers themselves. Elderly care insurance expands the coverage of care needs for old population. It covers the cost of most types of elderly care from assisted-living cost to adult day care services. With this law, individuals older than 40 are required to pay insurance premium to be eligible for insurance in the future (Ministry of Health, Labour and Welfare of Japan 2018).

The cost to maintain public care for the elderly has always been discussed. The center of the discussion is "who pays for the elderly care." Because of unequal population distribution in the country, it is impossible to operate public care system at local government level alone. Some prefectures with advanced population aging cannot secure elderly care with their tax revenue. Therefore, some federal level of assistance in financing elderly care system is needed, however,

the debate is still continuing around the dependency on the federal level assistance and the tax

revenue from the working age people (Izumi, 2010). Moreover, with the expanding medical cost

and increasing number of elderly patients, the governmental expenditure on elderly care has been

accelerating. In 1983, the total medical cost for the elderly aged 65 or older was 331,850,000,000

yen, which is approximately 3 billion US dollars. Of that cost, 98.4% was covered by the

government. The total medical cost for elderly was 1,329,910,000,000 yen (almost 12 billion US

dollars) in 2011, and 91.8% of the cost was covered by the government (Ministry of Health,

Labour and Welfare of Japan 2019). Elders are utilizing elderly care insurance intensively too.

The number of individuals older than 65 years who joined the insurance grew 1.6 times since the

implementation of the system in 2000 to 2018, whereas the total number of people who utilize

the service expanded 3.2 times (Ministry of Health, Labour and Welfare of Japan 2018). The cost

of care for the elderly amounts to 27.5% of the total federal government expenditure (Ministry of

Finance Japan 2018).

1.2.3 Changes in Childrearing

Contrary to the development of the thorough elderly care provided by the government to

compensate the shortage of caregivers due to changes in family formation, not much has been

done to support the other end of caregiving within family: child care. The Japanese government's

spending on child care to its GDP is one of the lowest among developed nations (Ministry of

Health, Labour and Welfare of Japan 2005). A major reason for this is the cultural norm that

child care should be a private work within family (Henneck 2003).

In contemporary Japanese society, informal/private care of children seems to be

incompatible with the new family settings (i.e., nuclear family, both parents work outside of

home). As I stated earlier, caregiving in general is considered women's job. One of the most conspicuous caregiving jobs of women is child care. Taking care of children is the most valuable work for women in Japan (Marshall 2017). With the gendered division of labor and cultural ideology of family, men, including fathers, rarely participate in child care. In the traditional three-generational family structure, women, including grandmothers, jointly engage in childrearing practices based on the norms of gender role in family and intergenerational exchange. However, with the shift from traditional family structure to nuclear family structure, mothers in modern Japan receive less support with child care from their family (Coulmas 2007). In addition, as forms of labor change and more women obtain jobs outside of their home, mothers suffer from the burdens of taking care of their children by herself and work outside of home without much help from their family (Coulmas 2007; Henneck 2003; Ochiai 2009).

Although there are clear needs of extra support for working mothers in Japan because of persistent gender role ideology in family, changes in family formation, and labor market opening to women, there have not been many policy changes to help those mothers. Following policies in Europe, Japanese government implemented parental leave policy in 1992 to make it possible for both male and female workers to take a paid leave for child care and return to work. The law was revised later and banned firing or downgrading workers for their paternity leave. However, many still hesitate to take the leave because of the pressure from other workers, and many mothers quit their job upon their childbirth (Henneck 2003).

In order to increase fertility rate, child care allowance was introduced in 1971, and enacted in 1972. The law intends to support children's well-being and socialize child care to boost fertility rate. The allowance is paid on monthly basis from their birth to March of the year when the child turns 15. The monthly allowance was 3,000 yen when the law was first

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implemented (Asai 2018). The amount has changed over time with revisions of the law, and it is now 15,000 yen for children aged between 0 to 3, 10,000 yen for children from 3 years old to completion of elementary school (15,000 yen for the third and later children), and 10,000 yen for middle school children in 2018. This amount may or may not be enough to support children, based on the recipients' residence; rates for daycare and kindergarten vary by city or prefecture. According to Consumer Price Index Annual Report, the annual nursery fee for 4-year-old in public kindergarten ranges from 0 yen to 246,000 yen across 80 cities with population of 150,000 or more (Consumer Price Index, 2018). Although some cities provide free daycare and kindergarten, the monthly allowance may not be sufficient to provide care for children especially when parents work overtime. Total government expenditure on child care allowance was about 216,940,000,000 yen, which is approximately 1.9 billion US dollars (Cabinet Office of Japan, 2019). The expenditure on child care allowance is less than 15% of the expenditure on elderly care.

Education is a key component of child development. Japanese government focuses offering high quality education. Current Japanese school system takes 6-3-3 operation (6 years of elementary school, 3 years of middle school, and 3 years of high school), with elementary and middle school education being mandatory. In order to distribute equal education opportunity through children of different social economic status, textbooks for mandatory education are free (Cummings 1980). Yet, the cultural ideology of education as something provided within family is persistent. Many families in middle and high social economic status send their children to private afterschool learning facilities such as *juku* and *yobiko* to enhance their learning (Cummings 1980; Morgan and Hirosima 1983). Education as part of child care is seen as mixture of formal and informal care. Total government expenditure on education which includes free

textbooks for elementary and middle school students and parts of teachers' salary consist 4% of the total budget of the government (Ministry of Finance Japan 2018).

1.2.4 Intergenerational Exchange

Both elderly care and child care suit well with the idea of intergenerational exchange mainly established based on intergenerational stake hypothesis and intergenerational solidarity theory. Both perspectives focus on the generational differences of care receiver and care provider. Intergenerational exchange is exchange that takes place between people who are in different generation. The exchanges commonly come in three types of support; practical support, financial support, and social support. Practical support includes physical work to support others in different generation such as caring for old parents and babysitting for grandchildren. Financial support is a support involves money and items with monetary value, such as paying for children's college tuition and inheritances. Social support is support that do not come in material form, such as check-ins for parents through visiting or calling and asking for advice (Giarrusso, Stallings, and Bengtson, 1995; Bengtson and Kuypers 1971; Bengtson and Roberts 1991; Wan and Antonucci, 2016).

It is common for these exchanges to be not at the same time like purchasing items. Intergenerational exchanges often delay as a part of life course phenomenon. Children are the generation that need the most help and receive the most support from older generation. They pay back the support by providing their parents help when they get old and need assistance. This life course phenomenon is understood as an insurance element of intergenerational exchange from parents' point of view with support giving to their children as insurance premium. Since delay in support exchange is so common, prospective exchange is developed. Prospective exchange

occurs when people offer care anticipating support in return in the future. For example, children provide support for their parents in order to receive inheritance (Giarrusso, Stallings, and Bengtson, 1995; Bengtson and Kuypers 1971; Bengtson and Roberts 1991; Wan and Antonucci, 2016). It is important to note that intergenerational exchange does not always have gaps in time of provision and reception. Direct exchanges are common when three generations are involved in the process. Babysitting is perhaps the most frequently observed direct exchange; when grandparents babysit their grandchildren, grandparents provide practical support while all three generations receive practical and social support at the same time (Bordone et al. 2017; Fingerman et al. 2011; Wan and Antonucci, 2016).

Intergenerational exchange within family is a well-studied topic internationally. It is especially receiving attention as forms of family changes with growing divorce rate, increasing family outside of wedlock such as cohabitation, and decrease of traditional three generation family especially in Japan. Taking this perspective in international scope is very interesting, as different cultures have different forms of family and norms. However, many of previous research report that there are some constant findings across cultures. Regarding intergenerational exchange within family, studies have found exchange happen more often within kin and marital relationships, and much less often between step relationships (Albertini and Garriga 2011; Daatland and Herlofson 2003; HURD 2009; Pezzin and Schone 1999; Shapiro 2004). Research also show that quality of relationship between mother and child tend to be better than that of father and child (Shearer, Crouter, and McHale 2005). This gender difference might be due to the fact that women report more contact with their children than men do (Albertini and Garriga 2011; Pezzin and Schone 1999; Shapiro 2004).

Life course perspective of intergenerational exchange has been found to be prevalent in caregiving exchanges within family. Fingerman et al. (2011) reveal that middle-aged adults tend to provide more care than any other generation because they need less support at that point of life and have means to provide. They find that middle-aged adults are inclined to provide more support to grown children than to their aging parents, but this pattern varies by family (Fingerman et al. 2011).

The three-generational caregiving structure is also well-studied across cultures. Ko and Hank (2014) report that the gender difference in caregiving is persistent in three generational caregiving. They discovered that grandmothers are more likely to provide child care than grandfathers (Ko and Hank 2014). Several studies have found that grandparents offer more child care support when mothers obtain a job, especially a full-time one (Bordone, Arpino, and Aassve 2017; Ko and Hank 2014).

Bordone et al. (2014) examine the grandparent-grandchild relationship deeply using the Survey of Health, Ageing and Retirement in Europe (SHARE), which is a longitudinal survey that includes population of 50 years and older in Europe. They claim that intergenerational exchanges between grandparents and grandchildren positively affect both grandparents' lives and grandchildren's lives. Comparing the data from the first wave in 2004 and the second wave in 2006, they find that grandparents' involvement in child care improves their cognitive skills (Arpino and Bordone 2014).

Three-generational caregiving is quite affected by government policy in the given country. Bordone et al. (2017) utilize data from SHARE and country-specific policy information regarding support for working mothers in their analyses. They categorized countries in their dataset into three groups based on their policies: (1) Defamilialisation, policies that take most of

child care duties from family by providing "hands-on care or financial support shifting care services to the state;" (2) Supported familialism, policies that partially support child care by providing some financial support but leaving caring responsibility to the family; and (3) Familialism by default, policies that do not offer any support to child care and keep all duties of it to the family. Their analyses reveal that grandparents in limited child care support policies (i.e., familialism by default) provide high level of daily child care, and those in expanded child care support policies (i.e., defamilialisation) provide less child care ranging from weekly to less than that. Moreover, they find a strong association between grandparents' child care and mothers' occupational status. In countries with a larger proportion of mothers taking part-time jobs, like the Netherlands, working mothers receive more weekly child care from grandparents than non-working mothers do. However, in countries with high female labor force participation, child care by grandparents are less common since they tend to have other child care institutions to rely on (Bordone et al. 2017).

1.2.5 Life Course Theory

Life course theory (Elder, 1998) offers a way to understand people's attitudes and views based on their lives and how they change during the life course. According to this approach, there are four major aspects to consider when analyzing lives: historical time and place; timing in lives; linked lives; and human agency. Human's lives are greatly affected by historical times and places that they experience over their life course. It is natural for people born in 1950s and 1990s to have different perceptions of the same matter. Timing in life refers to life transitions or events experienced in individual's life course. Life transitions include but are not limited to entry into school, entry into the labor force, marriage, and the birth of a child. Linked lives explains

influence of shared experiences in life. As humans live in societies, people in the same community or people living in the same historical period share experiences to some extent. Human agency describes that individuals' lives are constructed with their own decisions and choices over the course of their life trajectory. This is what makes people's lives unique. Life course theory explicates that human lives are formed by these four components (historical time and place, timing in lives, linked lives, and human agency) so, some parts of a life and experiences are shared with others, while individuals nonetheless hold unique life course because of their own decisions (Elder 1998).

Taking life course perspective, people's perceptions of intergenerational exchange of care and socialization of care is expected to differ by their own experiences. How does the life course affect people's attitudes toward socialized elderly care and child care in Japan? Specifically, how does the transition of family structure from the traditional three-generational family to nuclear family impact people's perceptions toward systems of elderly care and child care? Does age or generation affect people's opinions about caregiving? How do cultural gender roles of caregiving affect people's attitudes toward socialization of care? How life transitions such as the birth of a child or a grandchild affect people's perception towards socialized child care?

Based on these questions, I formulated four hypotheses: (1) Respondents in 2002 are more likely to believe that both elderly and child care should be provided by individuals than respondents of 2012 do; (2) Middle aged people are more likely to believe in socialization of both elderly and child care than old and young people do; (3) Females are more likely to believe that both types of care should be socialized than males do; and (4) People with a child believe that caregiving should be socialized more than people with no child.

Considering the changes in household structures and culture, I expect that people in 2012 are more supportive of socialization of care for both young and old. In other words, I expect that the concept of "care" shared by Japanese people to change from traditional (i.e., provided and received within family) to socialized (i.e., provided by the government). More specifically, based on intergenerational exchange in life course and intergenerational stake hypothesis, I expect people who tend to provide care, who are typically in their middle age, female, and have at least one child, to be more supportive of socialization of care for both young and old. Because of the transformation to the modern life style in Japan, caregiving is less reciprocal compared to when people used to live in the close proximity of family and female stayed at home to be the designated caregiver. I expect that those who tend to provide care to believe that the government should be responsible for caregiving so that caregiving is less of a burden for them.

2. DATA AND METHODS

2.1 Data

To test my hypotheses, I use Japanese General Social Survey (JGSS) data from 2002 and 2012. The data is publicly available on ICPSR for free. The 2002 data is the oldest with questions regarding socialization of care for both elderly and children, and the 2012 is the latest among the available data. JGSS is a cross-sectional survey founded by Japanese Ministry of Education, Culture, Sports, Science and Technology (MEXT) and operated by JGSS Research Center, Osaka University of Commerce in Japan. The sample for this survey was collected by two-stage stratified random sampling, and it is nationally representative. The valid sample size for this study is 2,125 for 2002 data and 3,524 for 2012 data. This survey is especially suitable for this project since it contains a question regarding public support of care for both elderly care and child care. The survey also provides great number of variables regarding respondent's demographic information to attitude, which allows me to conduct a careful analysis with many control variables.

Four variables are used as dependent variables for the analyses. The dependent variables measure people's attitudes on who should be responsible for the following types of care: care for elderly; livelihood security for elderly; child care; and education. The original questions for each variable are "Who do you think should be responsible for the following? Choose a number from 1 to 5 for each." Care for elderly is described as "Medical and nursing care of the elderly;" livelihood security for elderly is described as "Livelihood of the elderly;" responsibility of child care is described as "Raising and taking care of children;" and education is described as "Education of children" in the questionnaire. Respondents are provided with scaled answers, 1 being responsibility of "individuals and families," and 5 being responsibility of "governments."

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These questions allow me to measure people's attitudes toward government support of care by care recipients. "Supportive of socialization of care" in this paper means that they believe that the government should be responsible for care.

Independent variables for this study are respondent's age, gender, and number of children. Respondent's age ranges from 20 to 89 years. Gender includes two categories, males and females. The number of children ranges from 0 to 11. Control variables include annual household income, main income source, last school attended, view on gender role, the number of family members residing in the same household, satisfaction with family life, and satisfaction with household budget situation.

2.2 Measurements

To assess the differences in attitudes among the young and the old, the respondents' age is categorized in three groups: 20 to 34, 35 to 65, and 66 to 89. This allows comparisons of attitudes in different life stages. The number of children is recoded to a binary distinction of no child versus at least one child. Annual household income in the original dataset is in 19 categories. In this analysis, the annual household income is converted into five categories (zero to 1.3 million Yen, 1.3 to 5.5 million Yen, 5.5 to 12 million Yen, 12 to 23 million Yen or more, and "do not want to state"). Major income type is also recoded by the source of income: respondent's own income; spouse or other family members; and government assistance. Family life satisfaction and household budget satisfaction are treated as continuous variables.

Given the wide age range of the respondent, the original variable for last school attended contains school categories from both old and current Japanese school systems. For easier analysis, I recoded educational attainment in old system to match with the new system based

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on MEXT school system chart (Ministry of Education, Culture, Sports, Science and Technology, 2019). Ordinary elementary school and higher elementary school in the old system are recoded to junior high school; junior high school/girls' high school and vocational school/commerce school in the old system to high school; normal school in the old system to college of technology; high school or vocational school in the old system to 2-year college; and university/graduate school in the old system to university. To avoid losing statistical power, I grouped high school and 2-year college, and university and graduate school together.

  View on gender role is based on the question "Do you agree or disagree with the following statements? A husband's job is to earn money; a wife's job is to look after the home and family." The respondents are provided with the scaled answers; 1. Agree; 2. Somewhat agree; 3. Somewhat disagree; and 4. Disagree. Survey data from 2012 contains more questions that asks about the respondent's attitudes on gender role, however, the question given above is the only shared one with the survey data from 2002. The ordinal scaled answers are used as categorical (not changed) in this study.

  Satisfaction with family life and household finance are also coded in scales in the original data. The question asks "How much satisfaction do you get from the following areas of life?" and "Your family life" for family life satisfaction and "the current financial situation of your household" for household finance satisfaction. The answers are ordinally scaled from 1, Satisfied to 5, Dissatisfied. The test analyses (information available upon request) show that the changes in coefficients are steady between scales for both variables. In this study the scales are converted to continuous numeric values in order to avoid losing statistical power.

2.3 Methods

In order to examine the changes over time, I conduct separate ordered logistic regression analysis by year and make comparisons by calculating t-tests. Ordered logistic regression is used for the multivariate analyses. In addition to odds ratio and ordered logit coefficient (used for t-tests), robust standard errors are obtained. This method is well suited with the data, because dependent variables are ordered scale that is scored from 1 (given care is responsibility of individuals and families) to 5 (given care is responsibility of the government). In the original scale, there is no label for the scores except for 1 and 5.

I constructed three models for each dependent variable. The independent variables are grouped by their characteristics; major independent variables (used for hypotheses testing), other demographic variables, and attitudinal variables. Model 1 includes the major independent variables, which are age group, gender, and having at least one child. Model 2 adds other demographic variables, which are number of people in the household, highest education, annual household income, and income type to Model 1. Model 3 adds attitudes on gender equality, family life satisfaction, and household budget satisfaction to Model 2. I conducted some tests analyses which tests major independent variables individually, however, I decided not to include those models since they were not statistically significant. The results for the individual major independent variables are available by request. T-tests using predicted probability of care preference (either individual or government) are calculated to assess the change from 2002 and 2012. All analyses are conducted with Stata 15.0.

3. RESULTS

3.1 Descriptive Analyses

Table 1 shows the frequency distribution of survey respondents' attitude on elderly livelihood security, elderly care, child education, and child care. In 2002, 48.2% (elderly livelihood security 4 and 5 combined) and 61.1% (elderly care 4 and 5 combined) of the respondents thought livelihood of the elderly and medical and nursing care of the elderly (overall support for elderly) should be government's responsibility. The rate increased slightly in 2012 with 56.4% of the respondents are for government's responsibility for elderly livelihood security and 68.9% for elderly care. Although the increase in the rate is small for both types of elderly support, chi-square tests show that the differences are statistically significant at X^2 (4, N=5,649) = 41.59, $p < .00001$ for elderly livelihood security and at X^2 (4, N=5,649) = 41.20, $p < .00001$.

Compared to the changes in overall support for the elderly, people's attitudes towards socialization of child education and child care changed drastically in the observed 10 years. As shown in the table, in 2002, the majority of people believed that child education and child care were individuals and families' responsibility. In 2012, the proportion of people who believe in socialization of child education and care more than doubled from 2002. The percentage of the respondents who are in favor of socialization of child education (4 and 5 combined) increased from 14.8% to 29.7%, and for child care the ratio increased from 12.5% to 30.7%. Chi-square tests confirm that the changes are statistically significant at X^2 (4, N=5,649) = 218.88, $p < .00001$ for elderly livelihood security and at X^2 (4, N=5,649) = 389.61, $p < .00001$. Based on the descriptive analyses, it is clear that the socialization of care, especially overall support for children, gained favor by Japanese in the observed years. From chi-square tests, hypothesis 1

which assumes that respondents of 2012 are more likely to support both types of socialization of care compared to respondents of 2002 is supported.

Table 2 shows changes in people's views towards gender role by sex. More people in 2012 disagree with traditional gender role which men to be the breadwinners and women to be the caregivers compared to people in 2002 for both sexes. The result of chi-square test is X^2 (4, N=2,728) = 18.93, $p < .00028$ for male and X^2 (4, N=2,921) = 16.45, $p < .00092$ for female. Views on gender role have significantly changed from 2002 to 2012 for both sexes.

Table 3 shows changes in people's views on gender role by sex and education attainment. The attitude towards gender role among Junior high school graduate men become polarized; less people "somewhat agree" with the traditional gender role in 2012 compared to 2002, while more people "agree," "somewhat disagree," and "disagree." The result is statistically significant at .05 level with X^2 (4, N=435) = 8.2, $p < .04202$. More men who have been to 4-year university or higher disagree with the traditional gender role in 2012 compared to 2002 and the changes are statistically significant at X^2 (4, N=942) = 17.94, $p < .00045$. Females with 4-year university or higher education increased their proportion of people who "somewhat disagree" and "agree" with the traditional gender role from 2002 to 2012 while the number of people who "somewhat agree" and "disagree" with the traditional gender role decreased. The results are statistically significant with X^2 (4, N=697) = 13.05, $p < .00453$. Results in other education groups are not statistically significant. Although the views on gender role have changed in observed 10 years for both sexes as shown in Table 2, educational attainment might not be as important for the change.

Table 1. Frequency Distribution for Responsibility of Care

		1. Individuals and Families	2	3	4	5. Governments
Elderly Livelihood						
	2002	8.33	12.47	31.01	25.36	22.82
	2012	5.82	10.56	27.24	28.26	28.12
Difference		**-2.51*****	**-1.91*****	**-3.77*****	**2.9*****	**5.3*****
Elderly Care						
	2002	4	8.14	26.73	33.65	27.48
	2012	2.61	6.44	22.11	35.56	33.29
Difference		**-1.39*****	**-1.7*****	**-4.62*****	**1.91*****	**5.81*****
Child Education						
	2002	27.62	29.88	27.67	8.52	6.31
	2012	18.08	21.59	30.68	15.89	13.76
Difference		**-9.54*****	**-8.29*****	**3.01*****	**7.37*****	**7.45*****
Child Care						
	2002	32.94	28.99	25.55	7.91	4.61
	2012	16.71	21.2	31.41	16.71	13.96
Difference		**-16.23*****	**-7.79*****	**5.86*****	**8.8*****	**9.35*****

All numbers in percentages

For Chi-square tests *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 2. Frequency Distribution for View on Traditional Gender Role by Sex

		Agree	Somewhat agree	Somewhat disagree	Disagree
Male					
	2002	17.43	43.39	28.54	10.63
	2012	12.89	40.44	33.43	13.24
Difference		**-4.54***	**-2.95***	**4.89***	**2.61***
Female					
	2002	11.01	36.45	33.21	19.33
	2012	8.59	31.36	37.23	22.83
Difference		**-2.42***	**-5.09***	**4.02***	**3.5***

All numbers in percentages

For Chi-square tests *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 3. Frequency Distribution for View on Traditional Gender Role by Sex and Education

	Junior high school			High school and 2-year college			University +		
Male	2002	2012	**Difference**	2002	2012	**Difference**	2002	2012	**Difference**
Agree	26.3	32.1	**5.8****	16.2	12.9	**-3.3**	13.5	6.0	**-7.4*****
Somewhat agree	51.6	38.1	**-13.5****	41.2	41.2	**0.0**	41.3	40.2	**-1.1*****
Somewhat disagree	15.2	20.6	**5.4****	30.6	33.3	**2.7**	34.3	38.2	**4*****
Disagree	6.9	9.2	**2.3****	12.0	12.6	**0.6**	11.0	15.6	**4.6*****
Female	2002	2012	**Difference**	2002	2012	**Difference**	2002	2012	**Difference**
Agree	22.6	21.4	**-1.2**	8.5	8.1	**-0.4**	1.7	3.8	**2.1*****
Somewhat agree	42.3	38.3	**-4.1**	35.6	32.2	**-3.4**	29.3	26.8	**-2.5*****
Somewhat disagree	27.0	25.1	**-1.9**	36.1	37.0	**0.9**	28.4	43.0	**14.5*****
Disagree	8.1	15.2	**7.2**	19.8	22.7	**2.9**	40.5	26.4	**-14.1*****

All numbers in percentages

For Chi-square tests *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 4 and 5 show the frequency distribution of survey respondents' family life satisfaction and household financial satisfaction by sex, respectively. More men are satisfied with their family life in 2012 compared to 2002, and the results are statistically significant at X^2 (5, N=2,728) = 50.81, $p < .00001$. Similarly, more women are satisfied with their family life in 2012 compared to 2002 with X^2 (5, N=2,921) = 41.49, $p < .00001$. Satisfaction with household financial situation shows the similar results. Both male and female are more satisfied with their financial conditions in 2012 than 2002 and the results are statistically significant for both groups at X^2 (4, N=2,728) = 41.07, $p < .00001$ for male and X^2 (4, N=2,921) = 45.05, $p < .00001$ for female.

Table 4. Frequency Distribution for Family Life Satisfaction by Sex

Family Life Satisfaction					
Male	1. Satisfied	2	3	4	5. Dissatisfied
2002	16.67	32.09	39.27	9.96	2.01
2012	28.21	30.17	32.54	7.3	1.78
Difference	**11.54***	**-1.92***	**-6.73***	**-2.66***	**-0.23***
Female					
2002	20.54	30.25	37.37	9.62	2.22
2012	29.62	31.79	30.38	6.58	1.63
Difference	**9.08***	**1.54***	**-6.99***	**-3.04***	**-0.59***

All numbers in percentages

For Chi-square tests *** p<0.01, ** p<0.05, * p<0.1

Table 5. Frequency Distribution for Household Financial Situation by Sex

Financial Satisfaction					
Male	1. Satisfied	2	3	4	5. Dissatisfied
2002	7.18	17.91	38.7	24.9	11.3
2012	13	21.97	36.1	21.56	7.36
Difference	**5.82*****	**4.06*****	**-2.6*****	**-3.34*****	**-3.94*****
Female					
2002	8.51	20.35	36.54	24.33	10.27
2012	15.22	23.04	35.82	17.39	8.53
Difference	**6.71*****	**2.69*****	**-0.72*****	**-6.94*****	**-1.74*****

All numbers in percentages

For Chi-square tests *** $p<0.01$, ** $p<0.05$, * $p<0.1$

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3.2 Ordered Logistic Regression Analyses

3.2.1 Overall Support for Elderly

Table 6 and 7 show the results of ordered logistic regression in odds ratio of responsibility of elderly livelihood and elderly care for 2002 and 2012. As predicted, middle age people (age 35 to 65) tend to believe that both forms elderly support should be government's responsibility compared to the older age group (age 66 and above). The comparisons with older age group is statistically significant, except for Model 3 in elderly livelihood security in 2012. The middle age group-young age group comparisons are not statistically significant in any model of either years. People of age 66 to 90 in 2002 have 28% lower odds (OR = 0.72; 95% CI: Upper level 0.94; Lower level 0.54) to believe in socialization of elderly livelihood security compared to people of age 35 to 65, and 15% lower odds (OR = 0.85; 95% CI: Upper level 1.03; Lower level 0.69) for that of 2012 (not statistically significant). People of age 66 to 90 in 2002 have 21% lower odds (OR = 0.79; 95% CI: Upper level 1.03; Lower level 0.60) to believe that medical and nursing care for elderly are government's responsibility compared to people of age 35 to 65, and the odds ratio is slightly lowered to 22% (OR = 0.78; 95% CI: Upper level 0.95; Lower level 0.63) in 2012.

Hypothesis 2 is partially supported. Middle age group are more likely to believe that the government is responsible for overall support for elderly than the older age group do, except for the responsibility of elderly livelihood in 2012. There is no significant difference observed between the young age group and the middle age group in beliefs of socialization of care for overall support for elderly.

Table 6. Logistic Regression Analysis for Responsibility of Livelihood of the Elderly 2002 and 2012 in Ordered Odds Ratio (Robust SE)

Ordered Logistic Regression Results of Responsibility of Elderly Livelihood (2002)				Ordered Logistic Regression Results of Responsibility of Elderly Livelihood (2012)			
Independent variable	Model 1	Model 2	Model 3	Independent variable	Model 1	Model 2	Model 3
Age				Age			
20-34	1.050 (0.125)	1.054 (0.133)	1.041 (0.131)	20-34	1.038 (0.094)	0.989 (0.093)	0.979 (0.093)
35-65	Ref.	Ref.	Ref.	35-65	Ref.	Ref.	Ref.
66-90	0.672*** (0.073)	0.556*** (0.076)	0.715** (0.101)	66-90	0.726*** (0.055)	0.772** (0.079)	0.847 (0.087)
Male	Ref.	Ref.	Ref.	Male	Ref.	Ref.	Ref.
Female	0.836** (0.069)	0.874 (0.097)	0.837 (0.095)	Female	0.831*** (0.051)	0.878* (0.069)	0.859* (0.069)
No child	Ref.	Ref.	Ref.	No child	Ref.	Ref.	Ref.
Have at least 1 child	0.826* (0.096)	0.807* (0.100)	0.818 (0.102)	Have at least 1 child	0.952 (0.079)	0.855* (0.078)	0.866 (0.079)
# of people in household		1.026 (0.031)	1.023 (0.031)	#of people in household		1.094*** (0.029)	1.089*** (0.029)
Highest education Less than high school		Ref.	Ref.	Highest education Less than high school		Ref.	Ref.
Highschool or 2-year college		0.913 (0.112)	0.901 (0.111)	Highschool or 2-year college		0.918 (0.102)	0.927 (0.103)
University or Graduate school		0.789 (0.116)	0.825 (0.123)	University or Graduate school		0.789** (0.094)	0.825 (0.099)
Annual household income (in million)				Annual household income (in million)			
Less than 1.3		Ref.	Ref.	Less than 1.3		Ref.	Ref.
1.3- 5.5		1.193 (0.213)	1.263 (0.226)	1.3- 5.5		0.880 (0.144)	0.935 (0.154)
5.5 - 12		1.028 (0.198)	1.206 (0.234)	5.5 - 12		0.731* (0.128)	0.832 (0.148)
12 - 23 or more		0.748	0.954	12 - 23 or more		0.718	0.850

Table 6. Continued

Ordered Logistic Regression Results of Responsibility of Elderly Livelihood (2002)				**Ordered Logistic Regression Results of Responsibility of Elderly Livelihood (2012)**			
Independent variable	Model 1	Model 2	Model 3	Independent variable	Model 1	Model 2	Model 3
		(0.176)	(0.231)			(0.161)	(0.194)
Do not want to state		1.427*	1.617**	Do not want to state		0.890	0.977
		(0.305)	(0.346)			(0.166)	(0.185)
Income type				Income type			
Own income		Ref.	Ref.	Own income		Ref.	Ref.
Spouse or other family		0.871	0.863	Spouse or other family		0.872	0.878
		(0.110)	(0.110)			(0.081)	(0.082)
Government assistance		1.195	1.181	Government assistance		0.833*	0.854
		(0.171)	(0.171)			(0.090)	(0.091)
Gender equality				Gender equality			
Agree			Ref.	Agree			Ref.
Somewhat agree			1.133	Somewhat agree			0.834
			(0.176)				(0.108)
Somewhat disagree			1.345*	Somewhat disagree			0.950
			(0.217)				(0.123)
Disagree			2.042***	Disagree			1.220
			(0.395)				(0.179)
Family life satisfaction			1.050	Family life satisfaction			0.969
			(0.056)				(0.037)
Home economy satisfaction			1.316***	Home economy satisfaction			1.169***
			(0.064)				(0.042)
Observations	2,125	2,125	2,125	Observations	3,524	3,524	3,524

Robust standard error in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Robust standard error in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 7. Logistic Regression Analysis for Responsibility of Elderly Care 2002 and 2012 in Ordered Odds Ratio (Robust SE)

Ordered Logistic Regression Results of Responsibility of Elderly Care (2002)				Ordered Logistic Regression Results of Responsibility of Elderly Care (2012)			
Independent variable	Model 1	Model 2	Model 3	Independent variable	Model 1	Model 2	Model 3
Age				Age			
20-34	0.834	0.833	0.814	20-34	0.917	0.879	0.863
	(0.104)	(0.111)	(0.107)		(0.083)	(0.083)	(0.083)
35-65	Ref.	Ref.	Ref.	35-65	Ref.	Ref.	Ref.
66-90	0.724***	0.622***	0.786*	66-90	0.738***	0.724***	0.775**
	(0.076)	(0.085)	(0.109)		(0.057)	(0.074)	(0.080)
Male	Ref.	Ref.	Ref.	Male	Ref.	Ref.	Ref.
Female	0.797***	0.844	0.801**	Female	1.025	1.050	1.022
	(0.066)	(0.092)	(0.089)		(0.064)	(0.083)	(0.083)
No child	Ref.	Ref.	Ref.	No child	Ref.	Ref.	Ref.
Have at least 1 child	0.870	0.838	0.854	Have at least 1 child	1.103	1.044	1.058
	(0.105)	(0.107)	(0.109)		(0.094)	(0.097)	(0.099)
# of people in household		1.031	1.026	# of people in household		1.055**	1.048*
		(0.032)	(0.032)			(0.029)	(0.028)
Highest education				Highest education			
Less than high school		Ref.	Ref.	Less than high school		Ref.	Ref.
Highschool or 2-year college		0.847	0.826	Highschool or 2-year college		1.014	1.024
		(0.102)	(0.102)			(0.113)	(0.115)
University or Graduate school		0.796	0.802	University or Graduate school		0.873	0.906
		(0.117)	(0.121)			(0.104)	(0.110)
Annual household income (in million)				Annual household income (in million)			
Less than 1.3		Ref.	Ref.	Less than 1.3		Ref.	Ref.
1.3- 5.5		1.341*	1.392*	1.3- 5.5		0.938	0.997
		(0.237)	(0.246)			(0.154)	(0.166)
5.5 - 12		1.132	1.298	5.5 - 12		0.739*	0.832
		(0.219)	(0.252)			(0.130)	(0.149)
12 - 23 or more		0.931	1.153	12 - 23 or more		0.647*	0.741
		(0.220)	(0.284)			(0.149)	(0.172)

Table 7. Continued

Ordered Logistic Regression Results of Responsibility of Elderly Care (2002)				**Ordered Logistic Regression Results of Responsibility of Elderly Care (2012)**			
Independent variable	Model 1	Model 2	Model 3	Independent variable	Model 1	Model 2	Model 3
Do not want to state		1.405	1.542**	Do not want to state		0.908	0.990
		(0.307)	(0.338)			(0.171)	(0.188)
Income type				Income type			
Own income		Ref.	Ref.	Own income		Ref.	Ref.
Spouse or other family		0.889	0.866	Spouse or other family		0.921	0.926
		(0.113)	(0.111)			(0.086)	(0.088)
Government assistance		1.129	1.118	Government assistance		0.913	0.925
		(0.157)	(0.157)			(0.098)	(0.099)
Gender equality				Gender equality			
Agree			Ref.	Agree			Ref.
Somewhat agree			1.191	Somewhat agree			0.702***
			(0.179)				(0.093)
Somewhat disagree			1.464**	Somewhat disagree			0.837
			(0.231)				(0.112)
Disagree			2.206***	Disagree			1.125
			(0.418)				(0.168)
Family life satisfaction			1.049	Family life satisfaction			0.950
			(0.057)				(0.037)
Home economy satisfaction			1.282***	Home economy satisfaction			1.138***
			(0.065)				(0.041)
Observations	2,125	2,125	2,125	Observations	3,524	3,524	3,524

Robust standard error in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Robust standard error in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Contrary to the hypothesis, the results of regression analyses show that females do not believe in governments' responsibility of overall support for the elderly as much as their male counterparts do. In 2012, females have 14% lower odds (OR = 0.86; 95% CI: Upper level 1.01; Lower level 0.73) to believe in socialization of elderly livelihood security compared to males. The analysis for the responsibility of elderly livelihood in 2002 show the similar results, however, the result is not statistically significant in Model 2 and Model 3. The analyses for the responsibility of elderly care show some interesting results. In 2002, females have 20% lower odds (OR = 0.80; 95% CI: Upper level 0.99; Lower level 0.64) to believe that the government is responsible for medical and nursing care for the elderly compared to male. The results for 2012 are not statistically significant. Hypothesis 3, which states that females are more likely to believe that the government is responsible for both types of care is not supported for the overall support for elderly. The effect of having at least one child is not statistically significant in Model 3 after controlling for all independent variables for both types of elderly support. Hypothesis 4 that states people with a child are more supportive of socialization of care is not supported for overall elderly support either.

There are some notable findings outside of the hypothesis tests. In 2012, the number of people that respondents live together is positively correlated with beliefs in government's responsibility for both elderly livelihood and elderly care. The correlations between the household size and beliefs in socialization of care for elderly are positive but not statistically significant in 2002. Home economy satisfaction is also strongly correlated with the support for socialization of care. In both 2002 and 2012, people with poor home economy satisfaction believe that the government is responsible for elderly livelihood and elderly care.

3.2.2 Overall Support for Children

Table 8 and 9 show the results of ordered logistic regression for responsibility of child education and child care in 2002 and 2012. Old age group tend to believe less in socialization of education in 2002 compared to the middle age group, although the results are not statistically significant in Model 3 after controlling for all independent variables. The results of age group analysis for the responsibility of child education are not statically significant in any model for 2012 data. Age group is not a significant factor for people's belief in socialization of education. For child care, people of age 66 to 90 show lower odds of believing in governments' responsibility than middle age group do in 2002 before controlling the attitudinal variables. In 2012, the results show old age group in Model 2 are less likely to believe in government's responsibility of child care compared to the middle age group. However, none of the results for age groups are statistically significant after controlling for all independent variables.

Table 8. Logistic Regression Analysis for Responsibility of Child Education 2002 and 2012 in Ordered Odds Ratio (Robust SE)

Ordered Logistic Regression Results of Responsibility of Education (2002)				Ordered Logistic Regression Results of Responsibility of Education (2012)			
Independent variable	Model 1	Model 2	Model 3	Independent variable	Model 1	Model 2	Model 3
Age				Age			
20-34	0.902	0.928	0.943	20-34	0.908	0.876	0.872
	(0.117)	(0.125)	(0.130)		(0.085)	(0.083)	(0.083)
35-65	Ref.	Ref.	Ref.	35-65	Ref.	Ref.	Ref.
66-90	0.782**	0.672***	0.821	66-90	0.962	0.953	1.030
	(0.082)	(0.088)	(0.108)		(0.071)	(0.096)	(0.105)
Male	Ref.	Ref.	Ref.	Male	Ref.	Ref.	Ref.
Female	0.952	0.928	0.888	Female	0.923	0.895	0.868*
	(0.079)	(0.100)	(0.096)		(0.056)	(0.071)	(0.070)
No child	Ref.	Ref.	Ref.	No child	Ref.	Ref.	Ref.
Have at least 1 child	1.012	0.999	1.068	Have at least 1 child	1.175*	1.151	1.194**
	(0.121)	(0.129)	(0.142)		(0.098)	(0.103)	(0.108)
# of people in household		0.993	0.995	# of people in household		1.012	1.010
		(0.030)	(0.030)			(0.028)	(0.028)
Highest education Less than high school		Ref.	Ref.	Highest education Less than high school		Ref.	Ref.
High school or 2-year college		1.026	1.008	Highschool or 2-year college		1.217*	1.191
		(0.115)	(0.116)			(0.134)	(0.132)
University or Graduate school		1.080	1.076	University or Graduate school		1.197	1.184
		(0.146)	(0.151)			(0.141)	(0.142)
Annual household income (in million)				Annual household income (in million)			
Less than 1.3		Ref.	Ref.	Less than 1.3		Ref.	Ref.
1.3- 5.5		1.135	1.161	1.3- 5.5		1.159	1.172
		(0.210)	(0.216)			(0.172)	(0.176)
5.5 - 12		1.397*	1.497**	5.5 - 12		1.117	1.167
		(0.272)	(0.292)			(0.178)	(0.190)
12 - 23 or more		0.865	0.920	12 - 23 or more		0.733	0.773
		(0.205)	(0.225)			(0.156)	(0.168)

Table 8. Continued

Independent variable	Ordered Logistic Regression Results of Responsibility of Education (2002)			Independent variable	Ordered Logistic Regression Results of Responsibility of Education (2012)		
	Model 1	Model 2	Model 3		Model 1	Model 2	Model 3
Do not want to state		1.172 (0.254)	1.185 (0.258)	Do not want to state		1.030 (0.179)	1.058 (0.186)
Income type				Income type			
Own income		Ref.	Ref.	Own income		Ref.	Ref.
Spouse or other family		1.094 (0.132)	1.074 (0.130)	Spouse or other family		1.056 (0.100)	1.067 (0.101)
Government assistance		1.475*** (0.209)	1.446*** (0.203)	Government assistance		1.102 (0.115)	1.136 (0.118)
Gender equality				Gender equality			
Agree		Ref.	Ref.	Agree		Ref.	Ref.
Somewhat agree			1.502*** (0.223)	Somewhat agree			1.097 (0.145)
Somewhat disagree			1.928*** (0.305)	Somewhat disagree			1.324** (0.176)
Disagree			1.940*** (0.360)	Disagree			1.439** (0.219)
Family life satisfaction			1.216*** (0.067)	Family life satisfaction			1.058 (0.040)
Home economy satisfaction			1.046 (0.055)	Home economy satisfaction			1.058 (0.038)
Observations	2,125	2,125	2,125	Observations	3,524	3,524	3,524

Robust standard error in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Robust standard error in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 9. Logistic Regression Analysis for Responsibility of Child Care 2002 and 2012 in Ordered Odds Ratio (Robust SE)

Ordered Logistic Regression Results of Responsibility of Child Care (2002)				Ordered Logistic Regression Results of Responsibility of Child Care (2012)			
Independent variable	Model 1	Model 2	Model 3	Independent variable	Model 1	Model 2	Model 3
Age				Age			
20-34	1.001	1.018	1.029	20-34	0.961	0.973	0.964
	(0.124)	(0.130)	(0.137)		(0.088)	(0.091)	(0.091)
35-65	Ref.	Ref.	Ref.	35-65	Ref.	Ref.	Ref.
66-90	0.734***	0.686***	0.849	66-90	0.903	0.848*	0.919
	(0.080)	(0.091)	(0.113)		(0.067)	(0.084)	(0.092)
Male	Ref.	Ref.	Ref.	Male	Ref.	Ref.	Ref.
Female	0.951	1.055	0.984	Female	0.921	0.943	0.911
	(0.079)	(0.115)	(0.108)		(0.056)	(0.076)	(0.073)
No child	Ref.	Ref.	Ref.	No child	Ref.	Ref.	Ref.
Have at least 1 child	0.973	0.974	1.049	Have at least 1 child	1.098	1.143	1.184*
	(0.116)	(0.122)	(0.136)		(0.090)	(0.102)	(0.106)
# of people in household		1.005	1.010	# of people in household		0.963	0.959
		(0.030)	(0.030)			(0.026)	(0.026)
Highest education				Highest education			
Less than high school		Ref.	Ref.	Less than high school		Ref.	Ref.
Highschool or 2-year college		1.098	1.059	Highschool or 2-year college		1.093	1.061
		(0.126)	(0.123)			(0.122)	(0.118)
University or Graduate school		1.220	1.174	University or Graduate school		1.098	1.068
		(0.167)	(0.165)			(0.131)	(0.130)
Annual household income (in million)				Annual household income (in million)			
Less than 1.3		Ref.	Ref.	Less than 1.3		Ref.	Ref.
1.3- 5.5		1.029	1.046	1.3- 5.5		1.457**	1.460**
		(0.191)	(0.195)			(0.223)	(0.222)
5.5 - 12		1.219	1.273	5.5 - 12		1.513**	1.565***
		(0.241)	(0.252)			(0.246)	(0.257)
12 - 23 or more		1.012	1.010	12 - 23 or more		1.029	1.080
		(0.235)	(0.244)			(0.230)	(0.242)

Table 9. Continued

Ordered Logistic Regression Results of Responsibility of Child Care (2002)				Ordered Logistic Regression Results of Responsibility of Child Care (2012)			
Independent variable	Model 1	Model 2	Model 3	Independent variable	Model 1	Model 2	Model 3
Do not want to state		0.838	0.832	Do not want to state		1.494**	1.524**
		(0.186)	(0.185)			(0.265)	(0.270)
Income type				Income type			
Own income		Ref.	Ref.	Own income		Ref.	Ref.
Spouse or other family		0.887	0.860	Spouse or other family		0.955	0.960
		(0.108)	(0.104)			(0.089)	(0.090)
Government assistance		1.227	1.203	Government assistance		1.096	1.133
		(0.172)	(0.166)			(0.115)	(0.119)
Gender equality				Gender equality			
Agree		Ref.	Ref.	Agree		Ref.	Ref.
Somewhat agree			1.815***	Somewhat agree			1.199
			(0.255)				(0.158)
Somewhat disagree			2.275***	Somewhat disagree			1.437***
			(0.340)				(0.192)
Disagree			2.740***	Disagree			1.628***
			(0.487)				(0.248)
Family life satisfaction			1.235***	Family life satisfaction			1.025
			(0.070)				(0.039)
Home economy satisfaction			0.984	Home economy satisfaction			1.063*
			(0.051)				(0.038)
Observations	2,125	2,125	2,125	Observations	3,524	3,524	3,524

Robust standard error in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Robust standard error in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Females are less likely to believe that overall support for children should be the government's responsibility compare to males, although the results are not statistically significant except for the responsibility of education in 2012. Hypothesis 3 that females compared to males are more likely to support socialization of care for both elderly and children is not supported. People with at least one child tend to believe that overall support for children are the government's responsibility: People with at least one child have 7% higher odds (OR = 1.07; 95% CI: Upper level 1.39; Lower level 0.82) to believe that the government is responsible for child's education in 2002 and 19% higher (OR = 1.19; 95% CI: Upper level 1.42; Lower level 1.00) in 2012 compared to those without a child; people with at least one child have 5% higher odds (OR = 1.05; 95% CI: Upper level 1.35; Lower level 0.81) in 2002 and 18% higher odds (OR = 1.18; 95% CI: Upper level 1.41; Lower level 0.84) in 2012 to believe that raising and taking care of a child is government's responsibility compared to those without a child. The result for child education is statistically significant at $p<0.05$ level in 2012, and for child care the result is statistically significant at $p<0.1$ level in 2012. The results are not statistically significant in 2002. The hypothesis 4 is partially supported: People with at least one child are more likely to believe that overall support for children should be the government's responsibility, however, findings for education and child care in 2002 and overall support for the elderly are not statistically significant.

It is noteworthy that the view on gender role and family life satisfaction have significant effects on people's belief on socialization of overall support for children. In both years, people who disagree or agree less to the traditional gender role (i.e., men should the breadwinners and women should stay home) are more likely to believe that the government should be responsible for both education and child care. Similarly, people with low family life satisfaction tend to

believe in socialization of overall support for child, although the results are statistically significant only in 2002.

3.2.3 2002 and 2012 Comparisons

To assess the possible cause of the changes in people's attitudes towards socialization of care from 2002 to 2012, I conducted t-tests for the regression results. T-tests allows me to compare if there is a significant change in the effect of independent variables on dependent variables from 2002 to 2012. Table 10 to 13 are the results of t-tests using ordered log-odds regression coefficient from 2002 to 2012 for the main independent variables (i.e., age categories, gender, and have at least one child) and attitudinal variables (i.e., view on gender role, family life satisfaction, and satisfaction with household finance) for each dependent variable, responsibility of elderly livelihood, responsibility of medical and nursing care for the elderly, responsibility of child education, and responsibility of raising and taking care of a child, respectively.

The results of the t-tests show that none of the coefficients for the major independent variables are significantly different from 2002 to 2012 except for gender in elderly care. In other words, the attitude changes in the responsibility of care shown in chi-square tests are not driven from age group, gender, or parental status. The coefficients for view on gender role are scientifically different from 2002 to 2012 for all dependent variables. Coefficients difference in satisfaction with family life is significant for people's attitudes towards education and child care. Coefficients change in satisfaction with household financial situation have significant effects on people's attitudes towards elderly livelihood and elderly care. The results suggest that the reason for the increase in the number of people who are in favor of socialization of care might be from a change as a society in general, such as changes in view on gender role or life satisfaction.

Table 10. T-test Results for Responsibility of Livelihood of the Elderly

T-test results for responsibility of livelihood of the elderly

Independent variables		2002	2012	*t-test*
Age category 20-34	Coef.	0.04	-0.021	
	SE	(0.126)	(0.095)	0.387
Age category 66-90	Coef.	-0.335	-0.166	
	SE	(0.141)	(0.102)	-0.971
Female	Coef.	-0.178	-0.152	
	SE	(0.113)	(0.08)	-0.188
Have at least one child	Coef.	-0.201	-0.144	
	SE	(0.125)	(0.091)	-0.369
View on gender role				
Somewhat agree	Coef.	0.125	-0.182	
	SE	(0.155)	(0.129)	1.522
Somewhat disagree	Coef.	0.297	-0.051	
	SE	(0.161)	(0.13)	1.682*
Disagree	Coef.	0.714	0.199	
	SE	(0.194)	(0.147)	2.116**
Family life satisfaction	Coef.	0.049	-0.031	
	SE	(0.054)	(0.038)	1.212
Household finance satisfaction	Coef.	0.275	0.156	
	SE	(0.049)	(0.036)	1.957*

The table shows the comparisons of ordered log-odds regression coefficient from 2002 to 2012

*** p<0.01, ** p<0.05, * p<0.1

Table 11. T-test Results for Responsibility of Elderly Care

T-test results for responsibility of elderly care

Independent variables		2002	2012	*t-test*
Age category 20-34	Coef.	-0.206	-0.147	
	SE	(0.132)	(0.096)	-0.361
Age category 66-90	Coef.	-0.24	-0.254	
	SE	(0.139)	(0.103)	0.081
Female	Coef.	-0.222	0.022	
	SE	(0.111)	(0.081)	-1.776*
Have at least one child	Coef.	-0.158	0.056	
	SE	(0.123)	(0.094)	-1.382
View on gender role				
Somewhat agree	Coef.	0.175	-0.354	
	SE	(0.15)	(0.132)	2.648**
Somewhat disagree	Coef.	0.381	-0.178	
	SE	(0.158)	(0.134)	2.698**
Disagree	Coef.	0.791	0.118	
	SE	(0.189)	(0.149)	2.796**
Family life satisfaction	Coef.	0.048	-0.051	
	SE	(0.054)	(0.039)	1.486
Household finance satisfaction	Coef.	0.248	0.13	
	SE	(0.051)	(0.036)	1.890*

The table shows the comparisons of ordered log-odds regression coefficient from 2002 to 2012
*** p<0.01, ** p<0.05, * p<0.1

Table 12. T-test Results for Responsibility of Education

T-test results for responsibility of education

Independent variables		2002	2012	*t-test*
	Coef.	0.029	-0.036	
Age category 20-34	SE	(0.133)	(0.094)	0.399
	Coef.	-0.164	-0.084	
Age category 66-90	SE	(0.134)	(0.1)	-0.478
	Coef.	-0.016	-0.093	
Female	SE	(0.11)	(0.081)	0.564
	Coef.	0.048	0.169	
Have at least one child	SE	(0.13)	(0.089)	-0.768
View on gender role				
	Coef.	0.407	0.093	
Somewhat agree	SE	(0.148)	(0.132)	1.583
	Coef.	0.656	0.281	
Somewhat disagree	SE	(0.158)	(0.133)	1.816*
	Coef.	0.663	0.363	
Disagree	SE	(0.186)	(0.152)	1.249
	Coef.	0.196	0.056	
Family life satisfaction	SE	(0.055)	(0.037)	2.112**
	Coef.	0.045	0.056	
Household finance satisfaction	SE	(0.052)	(0.036)	-0.174

The table shows the comparisons of ordered log-odds regression coefficient from 2002 to 2012
*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 13. T-test Results for Responsibility of Child Care

T-test results for responsibility of child care

Independent variables		2002	2012	*t-test*
Age category 20-34	Coef.	-0.058	-0.137	
	SE	(0.138)	(0.095)	0.472
Age category 66-90	Coef.	-0.197	0.03	
	SE	(0.131)	(0.102)	-1.367
Female	Coef.	-0.119	-0.142	
	SE	(0.108)	(0.08)	0.171
Have at least one child	Coef.	0.066	0.177	
	SE	(0.133)	(0.09)	-0.691
View on gender role				
Somewhat agree	Coef.	0.596	0.181	
	SE	(0.141)	(0.132)	2.149**
Somewhat disagree	Coef.	0.822	0.363	
	SE	(0.149)	(0.134)	2.291**
Disagree	Coef.	1.008	0.487	
	SE	(0.178)	(0.152)	2.226**
Family life satisfaction	Coef.	0.211	0.025	
	SE	(0.056)	(0.038)	2.748**
Household finance satisfaction	Coef.	-0.017	0.061	
	SE	(0.052)	(0.036)	-1.233

The table shows the comparisons of ordered log-odds regression coefficient from 2002 to 2012
*** p<0.01, ** p<0.05, * p<0.1

4. DISCUSSION AND CONCLUSION

Population aging is a global phenomenon, especially among the developed nations. Japan is one of the fastest aging and most aged countries in the world with the highest old-age dependency ratio (Garcia et al., 2019). In addition to the changes in demographics, the culture surrounding the family structure is transforming from traditional to modern. Traditional family structure with three generations of the family living under the same roof or close by is disappearing. Instead, more and more Japanese families are becoming a nuclear family. Moreover, as more female participate in the labor market, the caregiving system which depends on unpaid female (typically family members) has become unsustainable. These transition makes it difficult to sustain familial intergenerational support.

The Japanese government implemented health care plans and policies to cover rising medical costs among the elderly. The government also provides financial support for parents with a young child. However, it is clear that not much attention has been given to overall support for children and their care providers compared to elderly support. While the total medical cost for the elderly was almost 12 billion US dollars and 91.8% of the cost was covered by the government (Ministry of Health, Labour and Welfare of Japan 2019), total government expenditure on child care allowance was only about 1.9 billion US dollars (Cabinet Office of Japan, 2019).

In this paper, I examined the changes in people's attitudes towards responsibility of elderly and child care using JGSS 2002 and 2012 data. The JGSS data allowed me to assess whether people believe elderly or child care should be the government's or individual's responsibility. Moreover, the data allows to observe changes in the 10-year period. Based on

intergenerational exchange theory and life course theory, I developed four hypotheses: (1) Respondents in 2012 are more likely to believe that both elderly and child care should be provided by individuals than respondents of 2002 do; (2) Middle aged people are more likely to believe in socialization of both elderly and child care than old and young people do; (3) Females are more likely to believe that both types of care should be socialized than males do; and (4) People with a child believe that caregiving should be socialized more than people with no children.

Frequency distribution of responses and the results of chi-tests show that people in 2012 are more likely than people in 2002 to believe in government's responsibility on all forms of care; care for elderly (i.e., medical and nursing care of the elderly), livelihood security for elderly (i.e., livelihood of the elderly), child care (i.e., raising and taking care of children), and education (i.e., education of children). The results of chi-square tests are statistically significant at p< .00001 level for all four types of care. Hypothesis 1 is supported.

Age group has some effect on people's attitudes towards socialization of care. Middle-aged adults (35 to 65 years old) are more likely than older adults (66 and older) to believe that the government should be responsible for elderly care in both years, but there is no significant difference between the middle-aged and the young (20 to 34 years old). In terms of life course, older adults tend to support the traditional view of caregiving compared to middle-aged and younger adults. There is no significant difference in belief in socialization of education and child care across the age groups. Hypothesis 2 that states the middle-age people are more supportive of socialization of care for both elderly and children than other age groups is partly supported.

Females tend to believe that individuals and families should be responsible for both types of care compared to male, except for elderly care in 2012. In addition, the coefficient for gender

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is statistically significant for elderly livelihood in 2012, elderly care in 2002, and education in 2012. Hypothesis 3 is not supported; rather, the finding from this research suggest the opposite. Marshall (2017) provides a possible explanation to this result. In his research on Japanese *Ie* structure and gender equality, he finds that women in *Ie* have autonomy as a caregiver in the household. In other words, women, especially wives and mothers, are responsible for other family members' success outside of home, and it's their role to let the family members to depend on them inside the home. Considering this cultural factor, it might not be surprising that women in the Japanese society think that it must be women to provide care to fulfill their role in *Ie*.

The parental status has a significant effect on education and child care in 2012. People with at least one child tend to believe that it is the government's responsibility to educate and provide support for children than people without a child do in 2012. The effect of parental status is positive on education and child care in 2002, but not statistically significant. There is no difference across parental status in their attitudes towards responsibility of overall elderly support in both years. Hypothesis 4 is partly supported. The results of t-tests confirm that the 2002-2012 changes in people's attitudes towards socialization of care is not driven by age group, gender, or parental status.

The results of ordered logistic regression analyses and t-tests suggest that people's attitudes change from 2002 to 2012 are perhaps connected to a societal change in general. For example, view on gender role has significant effects on support for socialization of elderly livelihood in 2002, elderly care, education, and child care in both years. This means that people who do not agree with the traditional view of gender role (men should be breadwinners and women should stay home) are more likely to favor socialization of care especially for overall support for children. Life satisfaction is also an important factor to determine people's belief in

socialization of care. People with low satisfaction on home economy tend to believe in government's responsibility on elderly livelihood and elderly care in both years and in child care in 2012. Moreover, people with low family life satisfaction tend to believe that the government should be responsible for education and child care in 2002. Further analysis is required to determine what might be the cause of the change in people's attitudes towards socialization of care.

There are several limitations to this study. First, the JGSS data does not have questions about how far the respondent's immediate and extended family resides. As mentioned earlier, the percentage of the traditional three-generation family is decreasing while the nuclear family and couples without children are becoming common. Moreover, 43.3% of elderly with a child live in a different city or municipality from their child (Director-General for Statistics and Information Policy 2018). The residential location and the distance of the family members might have consequential effects on intergenerational exchange, especially for the practical and social exchange, since it sways the difficulty to engage in the exchange.

Second, the survey does not have a reliable question which asks if the respondent has a grandchild. For elderly, it might be important to look at their family structure based on life course theory. People with a grandchild might relate to current issues with lack of federal support on education and child care more than those without a grandchild. The survey has a set of questions where the respondent needs to list "all family members" and describe these relationships. The questionnaire lacks descriptions on what counts as "a family member" and is not adequate to measure if the respondent has a grandchild or not.

Third, the JGSS questionnaires does not provide solid definitions of elderly livelihood, elderly care, education, and child care. In most cases it does not state what type of care (e.g.,

financial, practical, or social) they are referring to. Even if some descriptions are provided, it has some room for varieties of interpretation. For example, responsibility of education is defined as "education for children," however, it is not clear if it means mandatory education (up to 9th grade) or if it includes high school and college. Moreover, the definition of "elderly care" and "child care" are slightly different; elderly care is specified as "medical and nursing care for the elderly," whereas child care is defined as "raising and taking care of children." The phrasing might cause bias in respondents, since it implies that elderly care has legitimate use to its budget and can be costlier than child care. More suitable survey data might be required for future analyses.

In addition to the limitations in the survey data, statistical models might need to be refined for future analyses. Although ordered logistic regression models are acceptable for data with ordinal dependent variables, multinomial logistic regression models allow for more precise analysis. While ordered logistic regression models assume that the distance between each pair of outcomes in the ordinal scale is equal (proportional odds assumption), multinomial logistic regression models take in to consideration if and how each scale differ from one another. Moreover, for simpler analyses, future research might combine the two dataset and treat the survey year as an independent variable. This eliminates t-tests and makes it possible to examine the effect of survey year on people's attitudes towards socialization of elderly and child care.

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