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# Social Integration and Healthy Aging in Japan:

# A Longitudinal Study

by

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**Abstract**

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The current study used the 1999 wave of the Nihon University Japanese Longitudinal Study of Aging to measure intrafamilial and extrafamilial social integration scores for people aged 65-plus, and their self-ranked health reported in follow-up interviews in 2001. An innovation was the usage of ordinal logit regressions of this ordinally-measured dependent variable on the two dimensions of social integration. Higher scores on each dimension of social integration in 1999 predicted more favorable rankings on self-rated health scores in 2001. The five conclusions of this study are: (1) the relationship between social integration and self-rated health did not vanish during the "lost decade" of the 1990s; (2) the relationship is causal; (3) both intrafamilial and extrafamilial dimensions of social integration cause more favorable rankings of self-perceived health; (4) extrafamilial roles have a stronger effect than intrafamilial roles, and (5) the role-enhancement perspective is more useful than the role-strain perspective in understanding the relationship of social integration to health.

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## Introduction

In Japan, ever-larger numbers of elderly people are surviving to ever-older ages while the numbers of children and grandchildren to care for them have shrunk. Because Japan has publicly funded universal health care, public concern has arisen over how to postpone permanent disability and to promote healthy aging. In Japan, the public concern over the capacity of younger generations to take care of the elderly has led to a gradual ideological shift of responsibility from solely family-based care to include community-based services created by new welfare policies (Campbell 2000). In the process of such transition, various self-advocacy groups, including People First, shed light on the civil rights of people with disability (Hayashi and Okuhira 2001). Increasing public awareness is observed through the media, politics, and law addressing people with disability in respectful way (Gottleib, 2001). As the aging of Japan proceeds, the expansion of the culturally assigned responsibility for eldercare to include the public sector has invited research on how to postpone disability and promote healthy aging. Healthy elders can promote economic well-being in their families and their nations by being caregivers to their oldest-old relatives and active participants in community development.

Two alternative perspectives have been advanced to explain how social integration in later life, as represented by someone's activity in multiple social roles, might affect health and the timing of death. (Multiple roles is a concept isomorphic with *status set* (Moen et al. 1989), defined as behavior that fulfills multiple positions under responsibility, expectations, and rights.) According to the role strain perspective, the occupancy of multiple roles can hasten the onset of

chronic disease, disability, or death if it creates competing demands that produce overload and stress (Barnett, Marshall and Pleck 1992; Kandel, Davies and Raveis 1985; Voydanoff and Donnelly 1999). On the other hand, the role enhancement perspective argues that engaging in multiple roles can lead to higher levels of physical and emotional health than having fewer roles, because the accumulation of social identities or roles enhances individual resources, social connections, prestige, emotional gratification, and social identity (Barnett and Marshall 2001; Chrouser and Ryff 2006; Moen et al. 1989; Wethington et al. 2000). Individuals with diverse social roles can fall back on another relationship if they encounter difficulties in a particular role (Chrouser and Ryff 2006; Kikuzawa 2000).

In Japan, although the average size of the family and the proportion of three-generational households have been declining in the period since the Second World War (Figure 1), it is still more common for Japanese elders to co-reside with children and/or grandchildren than is true in most other industrialized nations, including the United States (U.S.). It is often believed that cultural norms derived from the idea of Confucianism that emphasize the importance of respecting the elderly define multigenerational households as an ideal type of household for the elderly to avoid social isolation. However, hidden behind the image of togetherness in the harmonious extended family portrayed in television programs, movies, and magazines, various scholars pointed out the stress experienced by the elderly and the family caregiver (Hashimoto and Traphagan 2004; Traphagan 2008), In addition, although the proportion of the elderly living in three-generational households in Japan is still higher than in Western countries, "*sūpu no samenai kyori*" (indicating a distance which does not allow the soup to get cold) became a popularized metaphor as an ideal form of family-based support for the elderly (Kweon 1997). Since 1980s, such a new form of two household family homes, *nisetai jutaku,* became a popular

option to reduce the tension observed in three generational households (Brown,2003). Social commentators and mass media suggested this ideal distance to reduce conflicting values between traditional family-based care for the elderly and postwar socio-demographic changes. This "ideal distance" emphasizes familial love based on traditional intergenerational relationships within the family; however, it does not necessarily require intergenerational coresidence. Through fieldwork in an urban city in Japan, Kweon (1997: 372) interpreted this distance of "togetherness and separation" as a result of both generations trying to maintain a balance of independence and closeness. The number of older people living independently but close to their children in the same community appears to have increased in recent years (Maeda and Ishikawa 2000). Thus, it is questionable whether the household composition offers a simple explanation of the well-being of the Japanese elderly. In such context, rather than different household types, it raises the question of which type of social integration – as represented by activity in social roles within and beyond the household context– might be more important for creating health and a sense of well-being for older adults in Japan, as in the United States.

**(Figure 1 about here)**

The purpose of this study is to review the international literature on social integration and older adults' health for evidence on the role enhancement perspective v. the role strain perspective. To overcome the limitations we identify in previous studies, we then use the first two waves (1999 and 2001) of the Nihon University Japanese Longitudinal Study of Aging (NUJLSOA) to test the hypothesis that greater social integration, measured by the number of roles within and beyond the family context, enhances older adults' self-rated health. The number of roles within the family context is our index of intrafamilial integration; the number of roles

involving non-relatives is our measure of extrafamilial integration. The implications of our findings for public policy and future research are explored in the final section.

**Background**

In the U.S., research by Adelman (1994a; 1994b) showed that elderly people with a larger number of social roles had better self-reported health, fewer chronic conditions, and fewer disabilities. Similarly, a more recent study by Barnett and Hyde (2001) found that having multiple roles was associated with a greater level of self-reported health and lower levels of mental and physical health problems. Moen et al. (1989, 1992) found that holding multiple roles could be the mediating factor in the positive relationship between health and socioeconomic status (SES), because those with higher SES are active in more complex social networks than those with lower SES. However, because these and most other previous studies are based on Western contexts, little is known about the connection between social integration and health in non-Western contexts (Cornman, Goldman, Glei, et al. 2003).

As in the U.S., several studies in East Asia support the applicability of the role enhancement perspective to the well-being of the elderly (Beckett et al. 2002; Cornman et al. 2003; Krause et al. 1999; Sugisawa, Liang, and Liu 1994; Wu and Rudkin 2000). In Taiwan, poor health is associated with low SES, childlessness, low participation in social activities, and limited networks of friends (Beckett et al. 2002). Negative perceptions of social support are significantly related to higher levels of depression in Taiwan (Cornman et al. 2003). Social integration reduces the negative effects of low SES on health in Malaysia, where low SES is associated with poor health for all three major ethnic groups (Malay, Chinese, and Indian); however, this association is stronger for older people with less rather than more frequent contact with their adult children (Wu and Rudkin 2000).

In Japan, Sugisawa, Liang, and Liu (1994) sampled 2,200 people ages 60 or older from the Resident Registries and interviewed them in November, 1987. A respondent's social participation in extrafamilial roles was measured by organizational attendance (any or none). A "social-contacts" measure involved the frequency of visiting with children, other relatives, or friends (any or none), but placed emphasis on intrafamilial contacts. A two - dimensional scale of social support was created by assessing: (1) the amount of love and caring the respondent could expect from significant others; and (2) the willingness of significant others to listen to the respondent's problems and inner feelings. Self-rated health in 1987 was measured on a five-point scale ranging from (1) poor to (5) excellent. The researchers used an ordinary least squares (OLS) regression of self-rated health on these three measures of social integration, plus several control variables. Social support and participation in extrafamilial organizations were related to a better self-rated health score in 1987, but intrafamilial participation was unimportant. Sugisawa et al. (1987: S10) acknowledged that the cross-sectional nature of their data prevented them from ruling out a causal effect of self-rated health on social participation. Another, unacknowledged limitation is that their OLS regression treated self-rated health as a ratio-level variable rather than an ordinal one.

Using this same data set, Kikuzawa (2006) elaborated this research by looking at which social roles (spouse, parent, grandparent, worker, friend, and voluntary organization member) might be more important in avoiding depressive symptoms that could lead to a neglect of one's health. Kikuzawa (2006) found that having more roles was associated with lower depression for both American and Japanese older people, but the benefits of each additional social role were greater in the U.S. than in Japan. Particular roles mattered: belonging to a voluntary organization protected Americans from depression, but not Japanese; and being a parent protected Japanese

from depression, but not Americans. Kikuzawa (2006: 73) interpreted the differential impact of specific roles to mean that the "[c]oncentration of support resources within particular social groups (e.g., the family) is more likely in societies that emphasize collectivism [Japan] , because collectivism facilitates intimate interactions among group members while discouraging the members from interacting with people outside the group."

In summary, Sugisawa et al. (1994) and Kikuzawa (2006) contributed to the literature by demonstrating positive relationships between social integration and self-rated health (Sugisawa et al. 1994) and depression (Kikuzawa 2006). The relationships between social networks and health measures found in their 1987 survey could have vanished during the "lost decade" of the 1990sin the changing social and cultural context of aging and care in Japan. Another limitation of their now-old, cross-sectional data set was an inability to show that social integration was the cause of, rather than the effect of, the health measures. The current investigation will overcome these two limitations by analyzing two waves of therecent national longitudinal study of older adults in Japan.

**Research Question**

Given the gaps in the literature and using two waves (1999 and 2001) of the Nihon University Longitudinal Study of Aging (NUJLSOA), we will answer the question: Does greater social integration measured by household composition and extrafamilial social roles at the earlier wave mean more favorable self-rated health at the later wave? [Kimiko, your tables retained the household composition measure. I think it will give more information if we keep household composition. If it doesn't turn out to be statistically significant, then we can point out that new proximity living arrangements (being close enough to keep the soup warm) may be the reason.]

It is crucial to measure the dependent variable at a time later than the measurement of the independent variables, since a hypothesized effect must follow its causes.

## Data and Methods

### *Data*

The analysis focuses on the first two waves (1999 and 2001) of the NUJLSOA. A third wave has now been conducted but is not yet in the public domain. Despite the fact that the first two waves were conducted 10-12 years ago, they are part of the only nationally representative survey of adults aged at least 65 in Japan and are rich with data to assess social integration both within and outside the family, along with many health indicators.

Three methods were used to encourage participation in Wave 1. First, newspaper articles advertised the forthcoming survey as an important task of a major University research group whose findings would be relevant to older people's lives. Second, there were also two pretests before the first wave and one pretest before the second wave, all consisting of 50 respondents. Finally, respondents to the NUJLSOA were given a small incentive worth about $10 US, two New Year's cards, two other greeting cards, and a summary of the results from the first interview. The sampling plan took population size within regions and prefectures into account. The number of respondents to the first wave, which was collected in November and early December, 1999, was 4,640 (= 69.3 percent). Three months later, additional attempts were made to interview 710 respondents. This added 357 respondents and brought the total number of respondents to 4,997, an overall response rate of 73.6 percent at Wave 1.

The second wave was conducted in November and December, 2001. The weighted sample of 4,040 participants in the second wave represented a retention rate of 80.9 percent from

the first wave. Of the 957 respondents from Wave 1 who were absent from the second wave, 270 had died between the waves; and the remaining 687 were either unlocatable or refused to be interviewed again. We discarded the 270 decedents, because their self-rated health at Wave 2, the dependent variable in the current analysis, is irrelevant. Thus, the present analysis focuses on the 4,727 respondents to Wave 1 not known to die before Wave 2.

*Dependent Variable, Measured at Wave 2*

At Wave 2, an interviewer asked the respondent: "In general, how would you describe your state of health?" Respondents rated their overall health using five categories: 1= very unhealthy; 2 = somewhat unhealthy; 3= average; 4 = healthier than average; and 5 = very healthy. For the 679 respondents who had stated valid replies to this question at Wave 1 but then had dropped out of the study before Wave 2 but without known deaths, we assigned their valid reply at Wave 1 as their Wave 2 score. To the eight drop-outs at Wave 2 who were presumed living at Wave 2 and had no valid response at Wave 1, we assigned the modal category of the self-rated health scores validly reported at Wave 1.

As a result, the modal response category of self-rated health at Wave 2 was “average” (39.3%). The percentage who were “very healthy” (14.7%) exceeded that who were “very unhealthy” (5.5%; Table 1). This distribution seems reasonable for a population that has the world’s longest life expectancy at birth (Population Reference Bureau 2009).

**(Table 1 about here)**

*Independent variables, Measured at Wave 1*

Various scholars use role-based integration measures to assess participation in different types of social relationships. In these studies, social integration is conceptualized as "the number of social roles (types of social relationships) for which respondents report active participation"

(Brissette et al. 2000: 56). These social positions or statuses become "social roles" when they occur in a system of interaction. For our study, we measured social integration in two ways. First, we counted the number of categories of extrafamilial social groups to which a respondent belonged: (1) respect-for-the-aged associations; (2) women's clubs; (3) senior citizen's clubs; (4) educational or study groups; (5) town associations; (6) volunteer work (public service activities); (7) hobby clubs; and (8) sports clubs. Notice that a 60.3% majority replied affirmatively to at least one category (Table 1), but the arithmetic average was one category. Thus, we dichotomized the variable: (1) one or more categories; or (0) no categories.

[Kimiko, please restore this paragraph that you have deleted.]

*Control Variables, Measured at Wave 1*

Aside from the effects of social integration on self-rated health, the physical and mental statuses of the older person may affect it. Including physical and mental well-being of the elderly at Wave is therefore important to reduce the possibility of reverse causality: that physically and mentally challenged elderly people at Wave 1 will be less likely to hold social roles outside of the family context. To assess the physical disability of individuals, we used seven Activities of Daily Living (ADLs) by counting the number of the following seven actions he/she had difficulty performing without any help: (1) bathing or showering; (2) dressing; (3) eating; (4) standing up from a bed/chair or sitting down on a chair; (5) walking around the house; (6) going outside (leaving the house); and (7) toileting. The maximum score ranged from 0 to 7 and averaged 0.425 (Table 1). We discarded the small number of cases with invalid or no responses.

A second indicator of physical disability was the total number of problems in performing seven Instrumental Activities of Daily Living (IADLs) without help: (1) preparing meals; (2) leaving home to purchase necessary items or medications; (3) taking care of financial matters (e.g., paying utility bills or newspaper bills); (4) using the telephone; (5) dusting, cleaning, or other light housework; (6) taking the bus or train to leave home; and (7) taking medications as prescribed. The sum of "yes's" (scored "1") ranged from 0 to 7. Since there was a large proportion of cases with missing data on this sum (15.2%), we trichotomized the score as none, some, or missing. About 74% of the study respondents had no IADLs at Wave 1 (Table 1).

A third health indicator was a measure of psychological health. We used a nine-question version of the Centers for Epidemiologic Studies in Depression (CES-D) scale. These questions covered depressive-affect symptoms ("felt depressed" "felt sad"), somatic symptoms ("trouble sleeping," "didn't have much appetite", "trouble feeling motivated," "ordinary things felt troublesome"), and interpersonal difficulties ("felt lonely," "felt people were unfriendly," "felt hated by others"). Respondents were asked the frequency with which they experienced a symptom. No point was given to those who answered "rarely;" one point, to those who answered "sometimes;" and two points, to those who answered "often." Since these frequencies were used to weight the nine items, which were then summed, the summary score ranged from a theoretical low of "0" to a theoretical high of "18." The higher the score, the greater was the mental depression. However, there were many omitted responses to these questions; and a single omission made the summary score immeasurable. Therefore, we trichotomized the summary score as follows: (1) 0; (2) 1-18; and (3) missing data. The modal category at Wave 1 was no symptoms (43.9%; Table 1).

[Kimiko, I believe that we must restore this as the second "test" variable. I have indicated this above.] The final four control variables were age, sex, education, and income. Age at Wave 1 was measured in single years, ranging from 65 – 99 and averaging 73.5 years. About 56% percent of the study sample were women. The very few cases without a valid score on education were discarded, and the remainder were scored in the four categories in Table 1. Income was obtained from the following question in Wave 1: "Approximately, how much do you and your spouse receive as income annually, including bonuses before tax?" Since the income question is very sensitive, it had the largest nonresponse rate (20.4%) of all study variables measured at Wave 1. Thus, we trichotomized income to include the "missing" category.

*Statistical Procedures*

The dependent variable, self-rated health at Wave 2, has five ordinal categories. Sugisawa et al.'s (1994) analysis of self-rated health used an OLS regression, which assumes a ratio-level dependent variable, an assumption that their and our measure of self-rated health did not meet. Thus, we innovatively use an ordinal logistic regression of self-rated health at Wave 2 upon the independent and control variables measured at Wave 1. For theoretical discussions and examples of ordinal logistic regressions, see Agresti (1996) or the SPSS documentation at www.ats.ucla.edu/stat/SPSS/output.ologit.htm.

## Results

Control Variables

As expected, being at an older age, having a larger number of ADLs, some (versus no) IADLs, some (versus no) depressive symptoms, and at a lower level of household income

represented lower odds of being in the higher (increasingly favorable) categories of self-rated health at Wave 2 ( see beta coefficients in Table 2). Unexpectedly, sex was not significantly related to self-rated health at Wave 2. Perhaps that is due to the higher level of education of men than women of this generation.

(Table 2 about here)

Two Test Variables

The first measure of social integration was holding roles beyond the family context. Compared to older adults with any participation in a variety of social groups outside the family at Wave 1, those with no extrafamilial roles had lower odds of being in the more favorable categories of self-ranked health at Wave 2 (beta = - .376, $P < .001$). This result supports the role enhancement perspective.

The second measure of social integration was a dense generational composition of the household where the elderly Japanese respondent lived at Wave 1. As compared to elders who lived in a three-generation household then, those who lived in a two-generation, spouse-only, or a one-person household had significantly less favorable (v. more favorable) self-rated health scores at Wave 2 (respective betas are -.282, -.261, and -.223; Table 2). This finding is important because it shows that despite the increasing practice of children and grandchildren living within walking distance of an ancestor rather than with this elder, the practice of co-residence is still associated with the ancestor's more favorable self-rating of health. This result cannot refute the role enhancement hypothesis.

**Discussion**

The current study used the 1999 wave of the Nihon University Japanese Longitudinal Study of Aging to measure age in single years and IADLs, ADLs, and CES-D scores for adults aged 65 or older. Intrafamilial social support was indexed by the number of coresident generations in the respondent's household in 1999; and extrafamilial social support, by whether or not the respondent was a member of any of six formal or informal organizations. These variables were used as predictors in an ordinal logit regression of self-rated health at the 2001 wave. Higher scores on the measures of physical and mental health in 1999 predicted more favorable scores on self-rated health in 2001. But, *ceteris paribus*, living in a three-generation household or being a member of an extrafamilial social group in 1999 was associated with better (rather than worse) measures of self-ranked health two years later. There are five conclusions: (1) the relationships between social integration and self-rated health support the role-enhancement perspective over the role-strain perspective; (2) these relationships did not vanish during the "lost decade" that followed the 1987 survey analyzed by Kikuzawa and Sugisawa et al.; (3) the relationship is likely causal (since the predictor variables temporally pre-date the measure of self-rated health; (4) both intrafamilial and extrafamilial social integration causes more favorable rankings of self-perceived health, but (5) extrafamilial social integration has the stronger influence (Table 2).

A policy implication is that the world-record longevity of Japan (Population Reference Bureau 2009) can be extended even further by policies promoting social integration of the elderly. For example, the current "baby bust" in Japan means that many colleges and universities will continue to see a decline in enrollment. But this trend could be tempered by enrolling older adults in life-long education programs, where they could extend their intergenerational ties while

earning degrees. Government-provided scholarships could boost the matriculation of older adults.

The present study sets an agenda for future research on how to promote a long and healthy life in Japan. Future work should look at whether a recent loss of social roles, as by retirement from the labor force, widowhood, or dropping out from social clubs, might negatively affect an elderly person's self-rated health and chance for survival over the next few years. Also, it would be fruitful to explore how social support can deter suicide, a significant cause of death among elderly people in Japan. Future waves of the NUJLSOA can offer answers to these new research questions.

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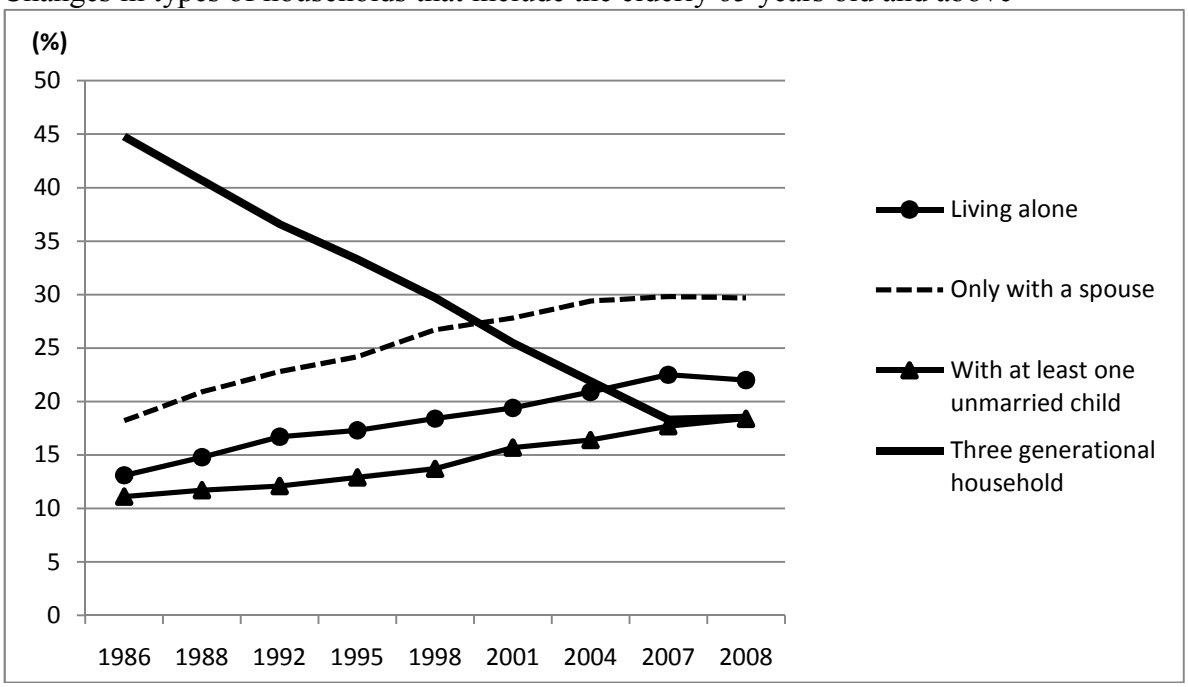
Figure 1
Changes in types of households that include the elderly 65 years old and above




Source: Ministry of Health, Labour and Welfare, Basic Survey of National Life 2008

Note: 1995 data excludes Hyogo Prefecture

Table 1 Descriptive Statistics

| **Variables** | | |
|---|---|---|
| Mean Age (yrs.) | | 73.5 (.089) |
| Sex | Men | 44.1% |
| | Women | 55.9% |
| Education | Junior high school | 60.5% |
| | high school | 30.5 |
| | College | 2.9 |
| | university and higher | 6.1% |
| Income | More than 2 million | 44.8% |
| | Less than 2 million | 34.9 |
| | Missing | 20.4% |
| Mean # of ADLs | | 0.425 (.020) |
| IADLs | No disability | 74.1% |
| | Have some disability | 10.7 |
| | Missing | 15.2% |
| CES-D | No symptom | 43.9% |
| | Have some symptoms | 40.0 |
| | Missing | 16.2% |
| Extrafamilial Social participation | Yes | 60.3% |
| | No | 39.7% |
| Household type | Three-generation | 30.8% |
| | Two-generation | 21.9 |
| | Spouse only | 35.0 |
| | Alone | 12.4% |
| Self-rated health | Very unhealthy | 5.5% |
| | Somewhat unhealthy | 23.7 |
| | Average | 39.3 |
| | Healthier than ave. | 16.8 |
| | Very healthy | 14.7% |

Table 2
Ordinal Logistic Regression of Self-Rated Health Status at Wave 2 on Independent and Control Variables from Wave 1: Nihon University of Longitudinal Study of Aging, 1999 and 2001.

| *Variables* | | *beta* | | *(standard error)* |
|---|---|---|---|---|
| **Age** | | -0.027 | *** | (.005) |
| **Sex** | Women | --- | | |
| | Men | 0.084 | | (.060) |
| **Education** | | 0.146 | *** | (.035) |
| **Income** | More than 2 million | --- | | |
| | Less than 2 million | -0.217 | ** | (.070) |
| | Missing | -0.101 | | (.077) |
| **ADLs** | | -0.275 | *** | (.031) |
| **IADLs** | No disability | --- | | |
| | Have some disability | -1.113 | *** | (.119) |
| | Missing | -0.414 | *** | (.082) |
| **CES-D** | No symptom | --- | | |
| | Have some symptoms | -0.505 | *** | (.062) |
| | Missing | -0.479 | *** | (.087) |
| **Extrafamilial social participation** | yes | --- | | |
| | No | -0.376 | *** | (.058) |
| **Household type** | Three generation | --- | | |
| | Two generation | -0.282 | *** | (.078) |
| | Spouse only | -0.261 | *** | (.072) |
| | Alone | -0.223 | * | (.095) |
| **Df** | | **14** | | |
| **-2 log likelihood** | | **10471.03** | | |
| **Chi-square** | | **829.025** | *** | |

Note: * <.05 **<.01 *** <.001