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Living Arrangements and Suicidal Ideation among the Korean Elderly

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Abstract

Objectives—This study examines how living arrangements are associated with suicidal ideation for older adults in South Korea, which has the highest suicide rate among OECD countries, and a particularly high suicide rate for older persons.

Methods—Analyzing a sample of 5,795 women and 3,758 men aged 65 and older from a nationwide representative cross-sectional data set, we examined how many older adults think about suicide over a one-year period, why they think about suicide, and whether living arrangements are associated with suicidal ideation.

Results—About one out of twelve respondents in our sample reported suicidal ideation. While women and men did not differ in the prevalence of suicidal ideation, women attributed their suicidal feelings to health problems, while men attributed theirs to economic difficulties. Logistic regression results indicated that living arrangements are associated with suicidal ideation for men but not women. Older men living with a spouse were less likely to have suicidal ideation than older men with other living arrangements (i.e., living alone, living with children without spouse, living with spouse and others).

Conclusions—Our results highlight the importance of living arrangements to older men's suicidal ideation. We discuss gender differences in the implications of living arrangements to suicidal ideation within the context of Confucian culture.

Keywords

suicidal ideation; living arrangement; Korean older people

Introduction

Suicide is a serious and growing problem in the Republic of Korea (a.k.a., South Korea, and hereafter, Korea). The country's suicide rates—in 2012, 18.0 per 100,000 for women and

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38.2 per 100,000 for men—are the highest among countries in the Organization for Economic Cooperation and Development (OECD) and have grown far more than those for any other OECD countries in recent years (OECD, 2011). Suicide, which was the eighth-leading cause of death in Korea in 2001, had become the fourth leading cause of death by 2012 (Statistics Korea, 2013). In particular, Korea is unique among 54 countries for having increasing suicide rates among men and women at least 65 years of age (Shah, Bhat, MacKenzie, & Koen, 2008).

Although with whom one lives influences the subjective well-being of older adults in Asian countries (Chou, Jun, & Chi, 2005; Jang et al., 2009) and suicidal ideation is a risk factor of suicidal behavior (Alexopoulos, Bruce, Hull, Sirey, & Kakuma, 1999), prior research on the association between living arrangements and suicidal ideation is limited (Fassberg et al., 2012) and has yielded inconsistent findings. First, few studies have examined the relationship between living arrangements and suicidal ideation, and these mainly focused on specific subjects, such as patients (see Fassberg, 2012, for review), limited age groups (Yen et al., 2005), or a specific geographic area (Awata et al., 2005; Yen et al., 2005). Second, previous research found no significant difference in suicidal ideation between those living alone and those who do not in Taiwan (Yen et al., 2005) or Japan (Awata et al., 2005). In Korea, research has shown an association between living arrangements and suicidal ideation, although such research is inconsistent. Jeon, Jang, Rhee, Kawachi, and Cho (2007) found that, for both men and women, the widowed who live with children are more likely to experience suicidal ideation than those who live with only their spouse, and that men (but not women) living alone are also more likely to experience suicidal ideation. Yet, Jang et al. (2014) found that older women who live alone are more likely than women who do not to experience suicidal ideation, and that differences in men do not differ significantly in suicidal ideation by living arrangements.

Traditionally, children may exercise filial piety by co-residing with their elderly parents in Korea. Sung (1995, p. 244) writes, “by putting their family members in a harmonious order, filial persons would care for their parents with love, respect, responsibility, and a desire to repay while making sacrifices for the parent.” In other words, elderly parents deserve to receive material, emotional, and affective support from their children. Also, elderly men are privileged at home due to the still strong traditional patriarchal system in South Korea and so enjoy higher levels of subjective well-being when they live with a spouse and children (Kim & Kim, 2003). Rapid industrialization, urbanization, and modernization, however, have changed traditional living arrangements. For example, the percentage of elderly living alone increased ten-fold from 1960 to 2010: 3% to 31% for females, and 1% to 11% for males (Park & Kim 2015). Kim and Rhee (1997) also showed that older Koreans who are economically independent prefer living in separate residences to co-residing with their children. Although there is a cultural shift towards independent living among older adults, the economic resources of Korean older adults are quite limited. Their poverty rate of 47 percent, for example, is the highest among OECD countries, and nearly four times the average OECD poverty rate for older persons (OECD, 2013, p. 164).

Under these circumstances, older adults may acquire a sense of thwarted belongingness and perceived burdensomeness through their living arrangements. According to the interpersonal

theory of suicide (Van Orden et al., 2010), suicidal ideation is more likely to happen when there is an overlap between “thwarted belongingness” and “perceived burdensomeness.” Thwarted belongingness can be described as the absence of social networks and perceived social support. For example, previous studies showed that lack of community participation (Yen et al., 2005), lack of social support (Alexopoulos et al., 1999; Awata et al., 2005; Corna, Cairney, & Streiner, 2010; Rowe, Conwell, Schulberg, & Bruce, 2006; Vanderhorst & McLaren, 2005), or being widowed or remaining single (Jorm et al., 1995) increase risk for suicidal ideation.

Perceived burdensomeness can be described as the imposition of burden on close others, such as family members, and self-hate or blame. Financial difficulty (Chiu et al., 2012) and physical and mental health conditions, such as disability, hearing or visual impairment, depression (Forsell, Jorm, & Winblad, 1997), or psychological distress (Corna et al., 2010) can make older adults perceive that they are burdensome to close others. For example, older adults living alone may feel that they are isolated from their children but less burdensome to their children. Alternatively, older adults living with children may feel that they are connected with their children but burdensome to them in their daily lives. In other words, different living arrangements may lead to different degrees of thwarted belongingness and perceived burdensomeness, and in turn affect the risk of suicidal ideation. Like other Asian countries (Cheng & Lee, 2000; Chiu, Takahashi, & Suh, 2003), Korea is simultaneously experiencing a rapidly growing population of elderly adults, rapid changes in living arrangements, and relatively high suicide rate among older adults. Despite government welfare policies aimed at assisting the older adults, it failed to provide adequate support for the older adults, so that they still depend upon the large role of family (Croissant, 2004). Although living arrangements are an important indicator of intergenerational relationships (Yasuda, Iwai, Yi, & Xie, 2011), our understanding of whether and how living arrangements of older adults are related to suicidal ideation is limited.

We fill this gap by examining the association between living arrangements and suicidal ideation of older adults in Korea. This study contributes to the literature on the relationship between living arrangements and suicidal ideation in at least two ways. First, it examines a large representative sample of older adults, while previous research focused on special population groups. Second, we incorporate reasons for suicidal ideation. This allows us to explain gender differences across different types of living arrangements in suicidal ideation.

We address the following research questions.

1. Does suicidal ideation vary by living arrangements for older adults?
2. To what extent is there a relationship between living arrangements and the reported reasons for suicidal ideation? Are older adults living alone more likely to attribute suicidal ideation to loneliness? Are older adults living with children more likely to attribute it to family troubles?

3. Does the relationship between living arrangements and suicidal ideation vary by gender?

Methods

Data

We used data from the 2006 Social Statistics Survey (SSS). The SSS is a nationally representative cross-sectional survey collected annually by the Korean Statistical Office in order to understand the quality of life and social changes in Korea. Every year the SSS includes questions on four or five of ten broad issues—family, income and consumption, labor, education, health care, environment, welfare, culture and leisure, safety, and social participation. The item asking about suicidal ideation was included in the 2006, 2008, 2010, 2012 and 2014 SSS surveys. Because the sample size of the 2006 SSS is about twice as large as that for those in 2008, 2010, 2012, and 2014, and the numbers of elderly people living in certain living arrangements are small, we analyzed the 2006 wave.

Trained interviewers visited about 33,000 households selected through multi-stage area sampling in July 2006. All household members at least 15 years old participated in the SSS through face-to-face or self-administration methods. The head of each household provided basic demographic information about household members ages 14 years or younger. We limited our analysis to the 9,553 respondents at least 65 years of age, of whom 60.7% (N = 5,795) were women and 39.3% (N = 3,758) were men.

Measures

We examined suicidal ideation through the yes/no response to the question, “Have you thought about committing suicide over the year (July 15, 2005 to July 14, 2006)?” Those answering “yes” were then asked the main reason for suicidal ideation, choosing among: 1) economic difficulties, 2) physical or mental disease or disability, 3) family troubles, 4) loneliness, solitude, 5) relationship problem with the opposite sex (breakup of an engagement), 6) job (unemployment), 7) school records, 8) discord with friends or colleagues, or 9) other reasons.

We considered six mutually exclusive categories of living arrangements for older Koreans (Kim, Kang, Lee, & Lee, 2007; Waite & Hughes, 1999): a) married persons living only with their spouse; b) married persons living with their spouse and children (and possibly others); c) married persons living with their spouse and others (not their children); d) single persons living alone; e) single persons living with children (and possibly others); and f) single persons living with others (not their children). In this paper, single persons refer to those who do not live with a spouse. Most single older persons in the survey were widowed, but a few of them were divorced, separated, or never married.

Older adults in different living arrangements varied in their social and economic backgrounds. Hence we controlled for some individual demographic features in our models of suicidal ideation because they may confound the association between living arrangements and suicidal ideation. We included age as a linear variable to control for its potential association with suicide and suicidal ideation (Corna et al., 2010). We used a five-point scale

for educational attainment because suicidal ideation varies by educational levels (Yen et al., 2005). Because labor-market participation may help older adults feel a sense of accomplishment and form relationships with colleagues (Kim, Kim & Kim, 2013), making them more resilient in stressful situations, we created a dummy variable to indicate whether respondents are employed.

Because older adults cite poor health as one of their most serious worries (Jeon et al., 2007), and we included two indexes of physical health: subjective assessment of health and scores on Activities of Daily Living (ADL). The 2006 SSS asked, "How is your health?" and provides a five-point response scale (1 = very bad to 5 = very good). It also asked whether individuals usually can do the following six activities for themselves: sitting down and standing up, changing clothes, using the toilet, eating, walking in the house, and taking a bath. The original response consisted of a three-point scale: 1 = can do for myself, 2 = can do for myself with other's help, and 3 = can't do for myself. We collapsed the second and the third responses and recode the new category as 2. The sum of the six scores, ranging from 6 to 12, is an index of ADLs. Older adults with low levels of subjective well-being tend to have more suicidal ideation (Cukrowicz, Cheavens, Van Orden, Ragain, & Cook, 2011; Heisel & Flett, 2004). General life satisfaction was assessed through the question, "how satisfied are you with your general life?" Respondents answered on a five-point scale from 1 = very unsatisfying to 5 = very satisfying.

Intimate relationships forged through alumni associations, hobby activities, and religious gatherings are important protective factors against suicidal ideation (Rowe et al., 2006; Yen et al., 2005). The 2006 SSS asked whether respondents participated in any social meetings or organizations in the previous year and, if so, whether the main social group was 1) social meetings, 2) a religious organization, 3) hobby, sports and leisure groups, or 4) others. For each of these, we created a dummy variable. Given the positive effects of volunteering on mental health, particularly by reducing depression or buffering stress (Wilson, 2012), we also included a dummy variable indicating whether respondents participated in any volunteer activities in the previous year.

Economic situations should also be considered in analyzing suicidal ideation. Household income, for example, can help recipients adjust to everyday difficulties, while home ownership indicates economic assets in addition to household earnings. We used a 9-point scale for household monthly earnings and a yes/no scale point on home ownership. Finally we included a dummy variable for urban residence (urban = 1).

Plans of analysis

We began with detailed descriptions of sample characteristics for respondents by the six living arrangements. We then described prevalence of suicidal thoughts and the main reason for them by groups defined by living arrangements. Finally, controlling socio-demographic variables, we used binary logistic regression models to examine the relationship between living arrangements and suicidal ideation. We analyzed men and women separately because living arrangements may have different implications for suicidal ideation among them (Jang et al., 2014; Jeon et al., 2007; Lee & Lee, 2011).

Results

Korean older people by the living arrangements

Table 1 shows descriptive statistics of the women and men in our sample by the six living arrangements.

Generally speaking, older men have better social and economic standing in Korea than older women. They are younger by 1.3 years ($t=10.0$; $p < .01$), more highly educated ($t=51.4$; $p < .01$), and more likely to be employed than women ($\chi^2=360.1$; $p < .01$). Older men are also more likely to live in their own homes ($\chi^2=67.5$; $p < .01$) and have higher household incomes ($t=6.4$; $p < .01$). Women and men reported similar levels of difficulty in ADLs, but men rated their health better ($t=20.9$; $p < 0.01$). While women were more actively involved in social meetings such as alumni associations ($\chi^2=250.0$; $p < .01$), religious groups ($\chi^2=11.5$; $p < .01$), or leisure clubs ($\chi^2=30.2$; $p < .01$), men participated more in volunteer activities ($\chi^2=360.1$; $p < .01$). On average, men expressed more satisfaction with their life than women do ($t=6.2$; $p < 0.01$).

Older women appeared to vary greatly in background variables by living arrangements. Those living only with husbands actively participated in the labor market and community service and were generally satisfied with life. Older women living with husbands and children had high levels of household earnings and home ownership. Married women living with others were relatively young and thus more likely to join the labor force and social organizations. Single women living alone had low levels of household earnings and home ownership. Single women living with children were the oldest and most likely to need some help with daily activities. While such women resided in households of higher incomes, they did not participate in several forms of social gatherings. Single women living only with others reported low levels of general satisfaction.

Similarly, older men differed in social and demographic characteristics by their living arrangements. Most of the older men in the sample lived with their wives, with most of these working for pay and involving themselves in social organizations and volunteer activities. Men living with their wives and children had high levels of household earnings and home ownership. Older men residing with their wives and others were relatively young and economically active. A little more than one in ten men survived their wives or remained single or divorced for life. Single men who live alone were younger than and more employed than single men with children but the latter had higher levels of home ownership and family earnings. Single men living with others were younger and more employed than single men living alone or with children.

Suicidal ideation by living arrangements

The SSS, as noted, asked respondents whether they have thought about committing suicide in the past year and, if so, why. Table 2 summarizes the answers for the older respondents we analyzed, showing both raw numbers and the percentage of respondents in each category. Overall, 467 older female respondents, or 8.0 percent, reported suicidal ideation, with 34 percent attributing this to health problems. Among older male respondents, 274, or 7.8

percent, reported suicidal ideation in the past year, with 40 percent attributing this to economic difficulties.

The one in twelve older Koreans who reported considering suicide in the past year reflects a higher level of suicidal ideation than is evident in Japan (Awata et al., 2005) or Hong Kong (Yip et al., 2003). There was no overall difference in suicidal ideation among older Korean men and women ($t = 1.33, p > .05$) despite the substantial differences in social and economic backgrounds for them as shown in Table 1. Nevertheless, there were statistically significant differences in suicidal ideation by living arrangements for both women ($\chi^2 = 15.7, 5 \text{ df}, p < .01$) and men ($\chi^2 = 42.6, 5 \text{ df}, p < .01$).

For women, the highest prevalence of suicidal ideation was among single women living with others or living alone; the lowest prevalence was among married women living with only their spouse or with their spouse and children. Health problems, economic difficulties, loneliness, and family troubles were the main reported reasons for older women's suicidal ideation. Health problems and economic difficulties were the top two reasons for suicidal ideation among all living-arrangements groups of older women except those living alone, who cited loneliness more than any other reason for suicidal ideation. Surprisingly, 18% of single women living with children reported loneliness as the main reason for suicidal ideation. Among older women living with both husbands and children, 18% attributed their suicidal ideation to family troubles.

Men showed more differences in suicidal ideation among the six living-arrangements groups. Those living alone or with wives and others were most likely to have suicidal ideation, while older men who live only with their spouse and older widowed men who live with others but without children were least likely to have suicidal ideation. Older men cited economic difficulties most frequently as their reason for suicidal ideation with health concerns being the second-most reported reason for suicidal ideation. In particular, (1) older men living only with wives, (2) older men living with their wives and children, and (3) older men living with wives and others cited economic problems as their most likely reason for suicidal ideation. Like single women, many single men had suicidal ideation due to loneliness: 39% of single men living alone and 28% of single men living with children reported suicidal ideation because of loneliness. Among older men with suicidal ideation in three types of living arrangements—living only with spouse, living with spouse and children, and living with children—more than one in ten cited family troubles.

Living arrangement and suicidal ideation

To remove confounding effects of social and demographic backgrounds in assessing suicidal ideation by living arrangements, we estimated a binary logistic regression model of suicidal ideation (yes=1) for women and men separately with five dummy variables for the living arrangements while controlling for other covariates. Table 3 summarizes the results of this model.

Controlling for health indicators, economic indexes, and other variables, we see women did not differ statistically in suicidal ideation by living arrangements. Instead, health status and social participation most affected whether older women consider suicide. Poor health and

ADL limitations increased suicidal ideation, while age decreased thoughts about suicide. Although older women participating in volunteer work were more likely to think about suicide, those participating in the labor market were less likely to do so.

Older men differed in the prevalence of suicidal ideation by living arrangements. After controlling for social and economic variables, we found that married men living with others but without children, single men living alone, and single men living with children were more likely to think about suicide. Among older Korean men, younger and unemployed respondents were also more likely to consider suicide, as were men in bad health or needing help in daily activities. Those who own their homes were less likely to have suicidal ideation, while those who engage in volunteer activities were more likely to have it.

Discussion

Suicides among older adults lie at the heart of national malaise in Korea. Given the rapid change in living arrangements of older adults and the government's difficulties in supporting them, we investigated whether living arrangements are associated with their suicidal ideation. Although one-year prevalence of suicidal ideation is similar for both men and women (8 %), living arrangements were a significant predictor of suicidal ideation for men, particularly those who lived with their spouse and others without their children, those who lived alone, or those who lived with their children but without a spouse.

Comparing with two previous studies (Jang et al., 2014; Jeon et al., 2007) that look at Korean older adults using the 2001 (N=930) and 2007-9 (N=3,545) Korea National Health and Nutrition Examination Survey (KNHANES), we find our result that men living alone are more likely to have suicidal thoughts is consistent with Jeon et al. (2007), but we do not find widowed women living with children or others to be more likely to have suicidal ideation. The difference may come from the Jeon et al. (2007) having very few respondents for some living arrangements (e.g., only 21 men who lived alone and only 27 men who were widowed but lived with children or others), and from Jeon et al. conflating categories of living arrangements (e.g., grouping together both those living with children and those living with others without their children). It is more difficult to compare our result with Jang et al. (2014)'s study because they only have two living-arrangement groups—"living together (with a partner)" and "living alone"—which showed that both men and women who live alone are more likely to have suicidal ideation.

We have several other noteworthy findings. For both men and women, living with only a spouse appears to reduce suicidal ideation. For women, living with children as long as spouse is present does not increase the likelihood of suicidal ideation. Women who live alone are more likely to be stressed and lack emotional support, especially if not foreseeing such a living arrangement—hence their greater likelihood, if having suicidal ideation, of attributing it to loneliness. Among men, those living alone are more likely to consider suicide and to cite economic difficulties or loneliness as their reasons for doing so. Such men lack intimate interactions at home, intensifying their feeling of solitude. Without a spouse or financial stability, men seem unable to build close relationships with or to get help from their children. Married men living either with children or with others who are not their

children are also more likely to cite economic difficulties for suicidal ideation. Given that men in these households are not in dire economic circumstances (see Table 1), their mention of suicidal ideation due to economic difficulties suggests that they may consider those with whom they share residence as demands rather than resources, even though many adult children at home are employed. Given the increasing number of temporary workers in the workforce and the widening wage gap between regular and non-regular workers (Jones, 2012), growing numbers of parents believe that they should help their adult children financially well beyond school completion or at least until they are economically independent.

Our findings elaborate the link between gendered life courses and suicidal ideation by identifying the specific reason for suicidal ideation by gender. We provide evidence for conjectures that gender differences on suicidal ideation appear attributable to gender roles or socialization (Jeon et al., 2007; Khang, Kim, & Cho, 2010). The life-long gender roles of women as “kin-keeper” and men as “breadwinner” do not well equip them to negotiate changing roles and relationships in later years.

Prior research found no association between age and suicidal ideation (Awata et al., 2005; Jang et al., 2014; Jeon et al., 2007), but our study showed that age is negatively associated with suicidal ideation. As expected, poor health and limited daily activities significantly increase suicidal ideation (Jang et al., 2014; Jeon et al., 2007). Our finding that education is not associated with suicidal ideation is consistent with those reported by Awata et al. (2005) and Jeon et al. (2007), but inconsistent with Jang et al.’s study (2014). While we found both men and women who participate in the labor market are less likely to think about suicide, Jeon et al. (2007) found this to be true only for men. Our finding that household income is not associated with suicidal ideation is concordant with Jang et al.’s study (2014), but inconsistent with Jeon et al.’s study (2007). Previous studies (Jang et al., 2014; Jeon et al., 2007) did not include home ownership, so we cannot compare the negative association we found between home ownership and suicidal thoughts with earlier work.

Just as Wilson (2012) noted that volunteering does not always improve mental health, we find older men and women involved in volunteer activities are more likely to have suicidal ideation. Perhaps such activities are an unsuccessful attempt to obtain social and emotional satisfaction that the elderly are not able to derive from family. Additional research can help understand the relationship between volunteering and mental health among older persons whose level of volunteering is low. We also did not find social participation to be associated with suicidal ideation. Perhaps neither volunteer activities nor social participation help to reduce thwarted belongingness and perceived burdensomeness.

Our findings may be a useful step toward future research in three areas. First, given few studies have examined the relationship between living arrangements and suicidal ideation, and these did not produce consistent findings, detailed classification of living arrangements may provide a more nuanced understanding of this relationship. Even the structure of living arrangements may not suffice to demonstrate relationships with suicidal ideation because a specific living arrangement reveals actualization of preferences and needs of different generations, particularly in Asian countries.

Second, diverse measures of thwarted belongingness and perceived burdensomeness in the study of living arrangements and suicidal ideation of older adults may clarify how a specific living arrangement is related to suicidal ideation. Given that in Korea home ownership is essential for the welfare of the elderly in the absence of a pension for most older adults, as well as the declining role of family in the care of older adults (Doling & Ronald, 2012), future studies should incorporate several economic indicators in addition to household income.

Third, given the concern about data quality in Asian countries (Hull, 2005), as well as high rates of suicide of older adults in Asian countries, it is imperative to replicate our particular findings.

Although our study provides information about suicidal ideation, there are several limitations to it. First, our analysis is based on cross-sectional data, so causality among variables is not clear. It is plausible that suicidal ideation precedes living arrangements. Second, retrospective self-reported suicidal ideation may be biased, and a one-item measure of suicidal ideation is less reliable than more detailed measures such as the Geriatric Suicide Ideation Scale (Chou et al., 2005; Jahn, Cukrowicz, Linton, & Prabhu, 2011). Third, many variables we assess are one-item measures, and some lack complex scales. Fourth, we could not include identified risk factors for suicidal ideation, such as sensory impairments (Kim, Kwak, & Kim, 2014), depression (Awata et al., 2005), support networks, or personality traits (O'Riley, Van Orden, & Conwell, 2014).

Despite these limitations, our study extends previous work on suicidal ideation by using data from a large sample with detailed household-structure categories and by examining why older adults have thoughts about suicide. Currently, living arrangements of older adults in Korea appear to reflect both a complicated nature of cultural tradition of co-residence where filial piety is practiced and a forced choice against each generation's preference. Especially for men, living without a spouse appears to be the context in which thwarted belongingness and perceived burdensomeness occurs. One policy implication is that the Korean government should provide better welfare benefits to older adults given the declining capacity of families to care for older members. It is difficult, however, to determine what form such policies should take. Should the government continue to promote co-residence by giving incentives for parents to co-reside with their children, as practiced in several Asian countries (Chui, 2007; Doling & Ronald, 2012)? How should it deal with the needs of older adults who prefer independent living but cannot support themselves? Should it prioritize the provision of basic income for the survival of older adults before emphasizing services or social activities for them?

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Table 1

Descriptive Statistics by Living Arrangements

	Women						Men						test ^b		
	Total	Couple Alone	Couple with Child	Couple with Other	Single Alone	Single with Child	Single with Other	Total	Couple Alone	Couple with Child	Couple with Other	Single Alone		Single with Child	Single with Other
Age (Year)	72.9	70.3	69.9	69.4	73.6	75.6	73.4	71.7	71.6	70.8	70.4	73.0	75.3	71.8	**
Education (0=no school, 4=college)	0.7	1.0	1.1	0.9	0.6	0.5	0.6	2.0	1.9	2.1	2.0	1.7	1.5	1.9	**
Labor Market Participation ^a	28.2	38.7	28.8	40.2	29.6	17.4	21.2	47.2	51.3	44.9	51.8	36.1	27.4	45.0	**
Self-Rated Health (1=very bad, 5=very good)	2.4	2.5	2.5	2.5	2.3	2.5	2.3	2.8	2.8	2.8	2.8	2.9	2.8	2.3	
Activities of Daily Living (6 to 12)	6.2	6.1	6.2	6.2	6.1	6.4	6.1	6.2	6.1	6.2	6.1	6.1	6.3	6.5	*
Life Satisfaction (1=very unsatisfied, 5=very satisfied)	2.8	3.0	2.8	2.8	2.8	2.8	2.6	3.0	3.0	2.9	2.8	2.7	2.9	3.0	**
Participation in Social Organizations															
Social Meetings ^a	30.5	25.7	20.2	30.9	16.0	8.4	15.3	16.8	33.9	26.8	34.3	23.8	17.2	25.0	
Religious Organization ^a	4.3	5.8	7.9	7.2	7.3	8.2	5.9	7.2	4.2	4.8	4.8	4.0	2.8	5.0	**
Hobby, Sports & Leisure ^a	1.8	1.2	1.0	0.0	0.6	0.5	1.0	0.8	2.2	0.9	2.4	2.0	0.0	0.0	
Others ^a	2.1	0.8	0.4	2.1	0.5	0.3	0.5	0.5	1.9	2.0	3.0	3.6	1.9	0.0	
Voluntary Activities ^a	3.8	6.0	3.6	3.1	3.8	2.1	3.0	8.0	8.9	6.2	7.8	8.6	4.7	10.0	
Home Ownership ^a	78.4	87.4	90.7	86.6	67.6	80.1	62.1	85.1	86.8	88.7	87.4	63.6	83.3	70.0	**
Household Incomes (1=less than 50,000 won, 9=more than 1,000,000 won)	2.5	2.2	3.6	2.3	1.4	3.6	2.1	2.7	2.3	3.7	2.5	1.8	3.8	2.5	**
Urban ^a	57.3	50.5	67.3	56.7	49.3	67.9	66.0	58.4	58.4	71.8	57.8	55.6	65.1	65.0	**
N	5,795	1,466	496	97	1,839	1,694	203	3,758	2,172	883	166	302	215	20	
%	100.0	25.3	8.6	1.7	31.7	29.2	3.5	100.0	57.8	23.5	4.4	8.0	5.7	0.5	

* p < .05,

** p < .01

^a dummy variables and numbers in cells are percentages

^b For dummy variables, Pearson's chi-square test is used and for linear variables, t-test is used

Table 2 Suicidal Ideation and the Main Reason for Suicidal Ideation by the Living Arrangements (N, %)

Living Arrangement	Suicidal Ideation ^a	Thinking about Suicide Mainly due to ^b				
		Economic Difficulties	Physical or Mental Health Problems	Loneliness	Family Troubles	Others
Women						
Couple Alone	97 (6.6)	32.0	41.2	10.3	13.4	3.1
Couple with Child	33 (6.7)	30.3	42.4	9.1	18.2	0.0
Couple with Other	8 (8.3)	37.5	50.0	12.5	0.0	0.0
Single Alone	181 (9.8)	28.2	25.4	34.8	7.7	3.9
Single with Child	125 (7.4)	32.0	37.6	17.6	10.4	2.4
Single with Other	22 (10.8)	36.4	40.9	9.1	13.6	0.0
Total	467 (8.0)	30.7	34.3	21.7	10.5	2.8
Men						
Couple Alone	125 (5.8)	37.6	36.8	11.2	11.2	3.2
Couple with Child	64 (7.3)	43.8	32.8	7.8	12.5	3.2
Couple with Other	20 (12.1)	50.0	35.0	0.0	5.0	10.0
Single Alone	46 (15.2)	47.8	8.7	39.1	4.4	0.0
Single with Child	18 (8.4)	16.7	33.3	27.8	11.1	11.1
Single with Other	1 (5.0)	0.0	100.0	0.0	0.0	0.0
Total	274 (7.8)	40.2	31.0	15.3	9.9	3.7

^aN and percentages in parentheses

^bpercentages among those thinking about suicide

Table 3

Logistic Regression of Suicidal Ideation on Living Arrangements and Controls

Independent Variables	Women			Men		
	Odds Ratio	95% CI	Unstandardized Coefficients	Odds Ratio	95% CI	Unstandardized Coefficients
Living Arrangement (vs. Couple Alone)						
Couple with Child	0.989	(0.633–1.545)	-0.011	1.151	(0.788–1.680)	0.140
Couple with Other	1.052	(0.474–2.335)	0.051	1.894	* (1.094–3.280)	0.639
Single Alone	1.330	(0.999–1.769)	0.285	2.275	** (1.506–3.437)	0.822
Single with Child	1.223	(0.877–1.706)	0.201	1.863	* (1.035–3.354)	0.622
Single with Other	1.263	(0.749–2.128)	0.233	0.751	(0.096–5.862)	-0.287
Age	0.963	** (0.944–0.982)	-0.038	0.927	** (0.900–0.954)	-0.076
Education	0.971	(0.846–1.115)	-0.029	1.012	(0.898–1.141)	0.012
Labor Market Participation (yes=1)	0.754	* (0.581–0.978)	-0.282	0.689	* (0.505–0.940)	-0.372
Self-Rated Health	0.634	** (0.552–0.728)	-0.456	0.667	** (0.569–0.781)	-0.405
Activities of Daily Living	1.202	** (1.093–1.321)	0.184	1.253	** (1.115–1.409)	0.226
Life Satisfaction	0.496	** (0.443–0.555)	-0.702	0.458	** (0.392–0.534)	-0.782
Participation in Social Organizations						
Social Meetings	1.242	(0.934–1.651)	0.217	1.122	(0.808–1.560)	0.116
Religious Organization	1.155	(0.770–1.734)	0.144	0.955	(0.448–2.037)	-0.046
Hobby, Sports & Leisure	1.101	(0.257–4.724)	0.096	1.530	(0.553–4.231)	0.426
Others	2.149	(0.663–6.962)	0.765	1.797	(0.788–4.010)	0.586
Voluntary Activities (yes=1)	2.053	** (1.244–3.389)	0.719	1.977	** (1.211–3.228)	0.682
Home Ownership (yes=1)	0.839	(0.663–1.063)	-0.175	0.666	* (0.482–0.919)	-0.407
Household Incomes	0.918	(0.836–1.009)	-0.085	0.926	(0.822–1.044)	-0.077
Urban (yes=1)	1.012	(0.806–1.270)	0.012	1.145	(0.840–1.561)	0.135
Log Likelihood		-1418.765			-803.869	
Pseudo R ²		0.125			0.181	
N		5,795			3,758	

* p < .05,

** p < .01