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# Social engagement and depressive symptoms: do baseline depression status and type of social activities make a difference?

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## Abstract

**Objectives:** our purpose is to examine whether the association between social engagement and depressive symptoms differs by initial level of depressive symptoms and by the types of social engagement in which older adults engage.
**Design:** persons aged 60 years and older in 2006 ($n$ = 4,098) were drawn from Wave 1 of the Korean Longitudinal Study of Ageing and followed through Wave 3 (2010). Growth curve analyses were conducted to identify the association between engagement in multiple types of social activities and 4-year change in depressive symptoms. Depression trajectories are examined separately by baseline depression status.
**Results:** attending religious services was related to an increase in depressive symptoms and participating in social gatherings with friends and neighbours was related to a decrease in depressive symptoms, but only among persons with CES-D 10 scale score below 10 at baseline.
**Conclusions:** our findings suggest that the positive effects of participating in social gatherings with friends and family are manifest among older adults who have good mental health to begin with. Our findings also suggest that the association between social engagement and mental health varies by type of engagement and initial depression level.

**Keywords:** *depression, Korean, older adults, social engagement*

## Introduction

Maintaining good mental health in older adulthood is critical for physical health [1, 2] and well-being [3]. Research shows a positive relationship between involvement in social activities and mental health. Older adults who are embedded in social networks, for instance, have fewer depressive symptoms [4, 5]. Social network activities can promote psychological well-being by cultivating a sense of purpose and belonging and providing access to supportive relationships that can buffer against psychological distress [6, 7]. Engagement in social activities, therefore, may be an important predictor of mental health in older adults.

Previous studies using cross-sectional data found that social engagement is associated with fewer depressive symptoms [8–12]. These associations have been replicated with longitudinal data, but only in select populations [13–16]. For instance, a study of Japanese older adults found an association between social engagement and fewer depressive symptoms in women, but not men [16]. Another study found an association between social engagement and fewer depressive symptoms among residents of select long-term care facilities in Hong Kong [15], but this association was not examined in community-dwelling populations. In a study of older adults in the USA, an association between social engagement and fewer depressive symptoms was also found, but only among those who were not depressed at baseline [13]. In contrast, a study of French older adults found an association only among those who were depressed at baseline [14].

Inconsistent findings across studies may arise from differences in social engagement measures [8–16]. Combining multiple social activities into one measure makes it difficult to determine whether certain types of social engagement are more relevant to depression [17, 18]. The association

between social engagement and mental health also differs depending on forms of social engagement, and studies come to different conclusions on this front [19, 20]. One study found negative associations between depression and volunteering, exercise and attending sports events or movies, but no association between depression and attending religious services and social gatherings [19]. Another study found that participation in religious organisations was associated with less depression over time, as opposed to other activities (e.g. volunteering, sports and social clubs) [20].

Links between social engagement and depression may differ across countries because social activities differ or have different effects. Time spent volunteering is higher in the USA and Germany than in South Korea and China; time spent in religious activities and civic obligations is much higher in South Korea and the USA than Japan and England [21]. Furthermore, many Asian cultures value interdependence among family members, compared to the Western focus on independence and self-distinctiveness [22]. These differences may affect how and why individuals engage in social networks as well as their derived benefits [23]. Social engagement informs the development of meaningful social roles, which can benefit mental health through increasing self-efficacy, self-esteem or a sense of belonging [6]. Still, little is known about the link between social engagement of various types and mental health among Koreans. Existing studies of Koreans have not considered how social engagement relates to changes in depression over time [24, 25].

The present study contributes to examine the association between social engagement and depressive symptom trajectories in Korean older adults and extends current scientific knowledge of this association by examining: (i) the association between social engagement and depressive symptoms over time according to baseline depression status and (ii) changes in depression associated with different forms of social engagement.

## Methods

### Sample

The data are from the Korean Longitudinal Study of Ageing (KLoSA), a nationally representative panel survey of Koreans aged 45 and older. We limited the sample to those aged 60 and older. The sample consisted of 5,533 respondents at baseline in 2006, and 4,689 and 4,216 respondents in 2008 and 2010, respectively. The analytic sample for the current study consists of the 4,098 participants with information on depressive symptoms in all three waves.

### Social engagement

In this paper, we examine three types of formal social engagement: (i) attending religious activities, (ii) social gathering with friends or neighbours and (iii) reunions with school/hometown/relatives. These are based on the following questions: 'I am participating in "religious organizations" (23.1%); "social gatherings (e.g. through fraternal organizations, at seniors' centers)" (49.1%); "school or family reunions" (12.7%)'. Although respondents were asked about participation in leisure/cultural/sports activities (3.7%), volunteering (1.6%) and participating in political parties or interest groups (0.4%), we did not examine these aspects of social engagement due to their low prevalence. Each item was coded as 1 = yes and 0 = no.

### Depressive symptoms

Depressive symptoms were assessed using the Korean version of the Center for Epidemiologic Studies Depression (CES-D) 10-item scale [26]. Two items are positively phrased (e.g. generally satisfied, feel pretty good) and eight items are negatively phrased (e.g. trouble concentrating, feeling alone, feeling tired, etc.). The score for each item ranges from 0 (rarely or none of the time) to 3 (most or all the time during the past week). Total depression scores in each wave were calculated by adding responses across all 10 items, with reversed scores for positively phrased items. Possible scores range from 0 to 30 with higher scores indicating more depressive symptoms. The scale reliability was high ($a = 0.87$).

To determine whether social engagement influences depression trajectories differentially according to baseline depression level, we also created a dichotomous indicator of baseline depression. We use a previously validated cut-point for identifying individuals who are positive for depressive symptomology [27–29], and categorized those with scores of 10 or higher on the CESD-10 as depressed and those with lower scores as not depressed.

### Control variables

Age, gender, education, marital status, employment status and self-rated health at baseline were included as control variables as previous studies link these to elevated depressive symptoms. We coded females as 1. Four groups designate level of education: elementary school or less (reference group), middle school, high school and college or more. There are three marital status categories: married (reference group), widowed and other (never married, divorced, separated). Participants who work full- or part-time at a job are coded as 1, with others coded as 0. Self-rated health ranges from 1 to 5; 1 being very good, 2 good, 3 fair, 4 poor and 5 very poor. Higher scores indicate worse health.

### Statistical analysis

Growth curve models (GCM) were used to examine the relationship between baseline social engagement and depressive symptom trajectory. The sample was stratified into depressed and not depressed at baseline in a multiple group model to test whether the findings differed by baseline depressive symptoms.

GCM were used to predict the intercept of depressive symptoms at baseline and changes in depressive symptoms over three survey waves, spanning 4 years. Depressive symptom changes were modelled using a linear term (with only three time points we were not able to fit a quadratic model). In the first model, we estimated the unadjusted

intercept and slope. In the second, we investigated the effect of social engagement on depressive symptoms at baseline and change in depressive symptoms. In the third model, we included gender, age, education, baseline marital status, working status and self-rated health.

Models were estimated using Mplus 7 software. The robust maximum-likelihood estimation procedure was used to account for missing data. Sample weights were used to adjust for sample selection.

## Results

### Sample characteristics

Table 1 shows the descriptive characteristics. The sample is over half women (57.2%). The average age at baseline is 69.5; two-thirds of participants have less than elementary education. Over 70% of participants are married. About a quarter of people attend religious activities and about half report regular social gatherings with friends and neighbours. Reunions with people from schools and hometowns are the third most common type of social engagement (12.7%). About a quarter of people (23.6%) report being employed at baseline. The average self-rated health is between fair and poor. Those not depressed at baseline engage in more activities across all types of activities at baseline.

### Association between social engagement and depressive symptoms

Table 2 shows results from the model of depressive symptoms at baseline (intercept) and change over time (slope). Model 1 shows the average score for depressive symptoms at baseline was 7.3, and depressive symptoms increased over time ($\beta = 0.35$, $P < 0.001$).

Model 2 shows depression scores are higher with age ($\beta = 0.004$, $P < 0.01$), being widowed ($\beta = 1.40$, $P < 0.001$) and poorer health ($\beta = 2.16$, $P < 0.001$). Being employed is associated with a lower depression score ($\beta = -0.43$, $P < 0.01$). Being at least a college graduate relates to lower depressive symptoms at baseline than elementary school or less, and its effect is constant over time. The gap between the widowed and married becomes smaller over time ($\beta = 0.32$, $P < 0.001$).

As shown in Model 3, people who participate in religious services ($\beta = -0.57$, $P < 0.01$), social gatherings ($\beta = -0.89$, $P < 0.001$) and school or hometown reunions ($\beta = -0.42$, $P < 0.05$) have fewer depressive symptoms at baseline. However, social engagement is not related to fewer depressive symptoms over time. In fact, religious service attendance is associated with increasing depressive symptoms over time ($\beta = 0.22$, $P < 0.001$).

### Association of social engagement and depression by baseline depression

Table 3 shows the association between social engagement and depression trajectories by baseline depression level. Among those not depressed at baseline (CES-D < 10), religious service attendance was associated with an increase in depression scores ($\beta = 0.19$, $P < 0.01$) over time, while social gatherings was associated with a decrease in depressive symptoms ($\beta = -0.17$, $P < 0.01$).

Among those who were depressed at baseline, there was an overall decline in depressive symptoms over time ($\beta = -1.77$, $P < 0.01$), but there was no association between social engagement and change in depression.

Table 1. Descriptive characteristics of sample ($n$ = 4,098)

| Variable | Total ($n$ = 4,098) Mean (SD) / % | CES-D < 10 ($n$ = 3,024) Mean (SD) / % | CES-D 10 + ($n$ = 1,074) Mean (SD) / % |
|---|---|---|---|
| Control variables | | | |
| Age | 69.50 (6.75) | 68.90 (6.56) | 70.08 (7.51) |
| Female | 57.2 | 53.0 | 69.2 |
| Education | | | |
| Elementary school or less | 67.4 | 62.0 | 82.4 |
| Middle school | 12.3 | 13.6 | 8.6 |
| High school | 14.2 | 16.9 | 7.0 |
| College or more | 6.1 | 7.5 | 2.0 |
| Marital status | | | |
| Married | 71.1 | 76.2 | 56.6 |
| Widowed | 27.2 | 22.7 | 39.7 |
| Others | 1.7 | 1.1 | 3.6 |
| Working | 23.6 | 26.7 | 15.1 |
| Self-rated health | 3.2 | 3.0 | 3.9 |
| Social engagement | | | |
| Religious service | 23.1 | 23.9 | 21.0 |
| Social gathering | 49.1 | 53.5 | 36.5 |
| Reunion (school/hometown) | 12.7 | 15.4 | 5.3 |
| CES-D | | | |
| Wave 1 2006 | 7.25 (5.57) | 4.76 (2.69) | 14.26 (4.3) |
| Wave 2 2008 | 8.45 (5.85) | 7.12 (5.15) | 12.18 (6.07) |
| Wave 3 2010 | 8.70 (6.02) | 7.54 (5.41) | 11.96 (6.43) |

**Table 2.** The association of social engagement with depression at baseline and change in depression ($n$ = 4,098)

| | Model 1 | | Model 2 | | Model 3 | |
|---|---|---|---|---|---|---|
| | Intercept | Slope | Intercept | Slope | Intercept | Slope |
| Constant | 7.30 (0.09)*** | 0.35 (0.03)*** | −2.41 (0.94) | 0.46 (0.33) | −1.07 (0.96) | 0.41 (0.34) |
| Control variables | | | | | | |
| Age | – | – | 0.004 (0.01)** | 0.01 (0.01) | 0.03 (0.01)* | 0.01 (0.01) |
| Female | – | – | 0.02 (0.18) | 0.06 (0.06) | −0.00 (0.18) | 0.02 (0.06) |
| Education (Ref. ~ Elementary) | | | | | | |
| Middle school | – | – | −0.37 (0.23) | −0.11 (0.08) | −0.27 (0.23) | −0.13 (0.08) |
| High school | – | – | −0.72 (0.21)*** | 0.09 (0.08) | −0.55 (0.21)** | 0.07 (0.08) |
| College or more | – | – | −1.19*** | −0.25 (0.10)** | −0.90 (0.27)** | −0.27 (0.10)** |
| Marital status (Ref. Married) | | | | | | |
| Widowed | – | – | 1.40 (0.22)*** | −0.32 (0.07)*** | 1.39 (0.22)*** | −0.32 (0.07)*** |
| Others | – | – | 3.84 (0.67)*** | −0.35 (0.20) | 3.55 (0.67)*** | −0.22 (0.20) |
| Working | – | – | −0.43 (0.19)* | −0.04 (0.06) | −0.44 (0.18)* | −0.03 (0.06) |
| Self-rated health | – | – | 2.16 (0.09)*** | −0.16 (0.03)*** | 2.13 (0.09)*** | −0.16 (0.03)*** |
| Social engagement | | | | | | |
| Religious service | – | – | – | – | −0.57 (0.17)** | 0.22 (0.06)*** |
| Social gathering | – | – | – | – | −0.89 (0.15)*** | 0.04 (0.05) |
| Reunion (school/hometown) | – | – | – | – | −0.42 (0.21)* | −0.06 (0.08) |
| $\chi^{2(df)}$ | 21.231 (1)*** | | 57.681 (10)*** | | 65.070 (13)*** | |
| RMSEA | 0.070 | | 0.034 | | 0.031 | |
| CFI | 0.987 | | 0.985 | | 0.985 | |

RMSEA, root mean square error of approximation; CFI, comparative fit index.
*$P$ < 0.05; **$P$ < 0.01; ***$P$ < 0.001.

**Table 3.** The association of social activities with depression at baseline and change in depression among those with CES-D less 10 at baseline and among those with CES-D 10+ at baseline

| | CES-D < 10 at baseline ($n$ = 3,024) | | CES-D 10+ at baseline ($n$ = 1,074) | |
|---|---|---|---|---|
| | Intercept | Slope | Intercept | Slope |
| Constant | 2.89 (0.61)*** | −0.00 (0.32) | 5.27 (1.45)*** | −1.77 (0.62)** |
| Control variables | | | | |
| Age | 0.01 (0.01) | 0.01 (0.00) | 0.03 (0.02) | 0.02 (0.01)* |
| Female | −0.00 (0.12) | −0.02 (0.06) | 0.25 (0.29) | 0.11 (0.12) |
| Education (Ref. ~ Elementary) | | | | |
| Middle School | 0.01 (0.15) | −0.24 (0.08)** | 0.41 (0.48) | −0.25 (0.19) |
| High School | −0.31 (0.14)* | −0.05 (0.07) | 0.72 (0.52) | 0.02 (0.23) |
| College or more | −0.19 (0.20) | −0.46 (0.09)*** | −0.57 (0.64) | −0.21 (0.40) |
| Marital Status (Ref. Married) | | | | |
| Widowed | 0.25 (0.13) | −0.02 (0.21) | 1.02 (0.29)*** | −0.52 (0.12)*** |
| Others | 0.50 (0.46) | −0.03 (0.21) | 2.61 (0.78)** | −0.09 (0.33) |
| Working | −0.32 (0.12)** | −0.05 (0.06) | 0.43 (0.34) | −0.19 (0.14) |
| Self-rated health | 0.46 (0.06)*** | 0.10 (0.03)*** | 1.69 (0.14)*** | −0.02 (0.06) |
| Social engagement | | | | |
| Religious service | −0.39 (0.11)** | 0.19 (0.06)** | 0.01 (0.29) | 0.10 (0.13) |
| Social gathering | 0.01 (0.10) | −0.17 (0.05)** | −1.22 (0.23)*** | 0.15 (0.11) |
| Reunion (school/hometown) | −0.39 (0.15)** | −0.04 (0.07) | −0.41 (0.44) | 0.07 (0.22) |
| $\chi^{2(df)}$ | 302.352 (26)*** | | | |
| RMSEA | 0.072 | | | |
| CFI | 0.860 | | | |

RMSEA, root mean square error of approximation; CFI, comparative fit index.
*$P$ < 0.05; **$P$ < 0.01; ***$P$ < 0.001.

## Discussion

Maintaining mental health in older age is fundamentally important to both individuals and society: mental health declines put older adults at risk of poor health and reduced functioning [30] which may increase healthcare burdens for individuals, families and caregivers [31]. Although social engagement has been emphasised as important for maintaining mental health and well-being in old age, the literature is inconsistent with respect to whether it is equally important

among those already experiencing poor health and we lack clarity on whether different forms of social engagement have similar influences on mental health. In addition, there have been few studies showing this connection using longitudinal data, particularly in Asian countries. This study examined whether engaging in different social activities was associated with future changes in depressive symptoms over 4 years. We found that three types of social engagement are associated with fewer depressive symptoms at baseline, which is consistent with prior research [8–12]. However, we found that social gatherings and participating in school or hometown reunion was not associated with change in depression over time. In addition, religious service attendance was associated with increasing depressive symptoms over time. Thus, our analysis helps clarify some of the differences in the literature between cross-sectional and longitudinal studies.

Although some studies have reported beneficial influences of engagement in religious activities on mental health [20, 32], a meta-analysis of 34 studies found church attendance was associated with worse mental health, and that only attitude towards, or personal devotion to, religiosity showed a positive association with mental health [33]. Thus, the differences in reports of the relationship between engagement in religious activities and mental health may arise from differences in what aspects of religious activities are being measured. Another potential explanation for our findings is that religious service attendance has a curvilinear relationship with mental health [34], with those who are more distressed feeling a greater need to attend religious service for support [35]. Further exploration of the meaning and characteristics of religious service attendance would be helpful in future examinations of the longitudinal dynamics of religious activities and depression.

We also sought to determine whether the relationship between social engagement and changes in depressive symptoms. We found that, among those not depressed at baseline, interactions with friends and neighbours are associated with fewer depressive symptoms over time. Social support provided by friends and neighbours can help buffer against psychological distress, resulting in a decline in depressive symptoms over time. For those who were not depressed at baseline, the 0.17 points decrease in depression score per year associated with participating is equivalent to a reduction of approximately 0.7 points on the depressive symptoms measure over the 4-year study period. This change may lack clinical relevance for those with severe depression, but may be relevant for those bordering on depression (5% of the study population). Social engagement was not associated with changes in depressive symptoms among those who were depressed at baseline.

There are several limitations to the present study. Although we used longitudinal data, we do not have information on pre-baseline trajectories of depression and engagement. Thus, it is hard to rule out the possibility that less depressed individuals were more likely to be socially engaged prior to the survey whereas depressed people had stopped engaging socially prior to the survey.

Our results also show the importance of examining social activities separately. We found that both the association between social engagement and depressive symptoms and the direction of this association differed across activities. However, due to the low prevalence of leisure and volunteer activities, the current study was unable to examine these forms of social engagement, which are popular in Western countries. Exploring a wider range of social engagements would expand our understanding of associations between social engagement and depression. Furthermore, this study did not examine frequencies of social engagement. Considering participation frequency would be beneficial for a fuller understanding of social engagement and depression dynamics.

In conclusion, our findings suggest that social gathering has a positive effect on depressive symptoms over time in non-depressed persons at baseline, but no such effect exists amongst those who are already depressed. We found that religious service attendance was associated with increased depressive symptoms only in the non-depressed at baseline. Our results suggest that efforts to improve mental health in older adults should consider the potential benefits of interventions depending on whether the aim is to prevent depression or reduce depression among the depressed. Proponents of social activity and social engagement to improve mental health in older adults need to consider both depression status and types of social engagement when making these recommendations.

## Key points

- The positive effects of participating in social gatherings are manifest only in the non-depressed at baseline.
- The negative effect of attending religious service is present only with lower depressive symptoms at baseline.
- The impact of social engagement on mental health varies by type of social engagement.

## Conflicts of interest

None declared.

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