

volunteers are promising, in that they are numerous, are themselves influential residents in the community, and they have a close connection to the public sector, thus promoting prompt intervention by mental health professionals.

Conclusion

The present study suggests that commissioned welfare volunteers, quasi-formal and quasi-informal organizations specific to Japan, are associated with a lower risk of suicidal ideation, especially among women. These volunteers are many in number, influential to residents, well organized, and backed up by the public sector, making them possible candidates for community resources for suicide prevention. Future prospective research should be conducted to investigate the impact of home visits by commissioned welfare volunteers on the risk of suicide.

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The Bright Side and Dark Side of Workplace Social Capital: Opposing Effects of Gender on Overweight among Japanese Employees

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Abstract

Background: A growing number of studies have sought to examine the health associations of workplace social capital; however, evidence of associations with overweight is sparse. We examined the association between individual perceptions of workplace social capital and overweight among Japanese male and female employees.

Methodology/Principal Findings: We conducted a cross-sectional survey among full-time employees at a company in Osaka prefecture in February 2012. We used an 8-item measure to assess overall and sub-dimensions of workplace social capital, divided into tertiles. Of 1050 employees, 849 responded, and 750 (624 men and 126 women) could be linked to annual health check-up data in the analysis. Binomial logistic regression models were used to calculate odds ratios and 95% confidence intervals for overweight (body mass index: ≥ 25 kg/m², calculated from measured weight and height) separately for men and women. The prevalence of overweight was 24.5% among men and 14.3% among women. Among men, low levels of bonding and linking social capital in the workplace were associated with a nearly 2-fold risk of overweight compared to high corresponding dimensions of social capital when adjusted for age, sleep hours, physiological distress, and lifestyle. In contrast, among women we found lower overall and linking social capital to be associated with lower odds for overweight even after covariate adjustment. Subsequently, we used multinomial logistic regression analyses to assess the relationships between a 1 standard deviation (SD) decrease in mean social capital and odds of underweight/overweight relative to normal weight. Among men, a 1-SD decrease in overall, bonding, and linking social capital was significantly associated with higher odds of overweight, but not with underweight. Among women, no significant associations were found for either overweight or underweight.

Conclusions/Significance: We found opposite gender relationships between perceived low linking workplace social capital and overweight among Japanese employees.

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Introduction

Obesity and overweight are now a global concern, as an estimated 1.46 billion adults worldwide are overweight or obese [1]. Historically, Japan has had a low prevalence of obesity compared to western populations [2]. However, even in Japan, the rise in obesity and overweight has caused concern, particularly among men and older women [3]. The main cause for obesity is an energy imbalance between intake and expenditure, fuelled by unhealthy behaviors [4] such as the consumption of sugar-sweetened beverages [5], fast food [6], and alcohol [7], physical inactivity [8], short sleep duration [9], as well as individual's genetic disposition [10]. In addition to these factors, there is growing evidence that disadvantaged socioeconomic status [11,12], as well as adverse working conditions (e.g. shift work

[13], long work hours, and psychosocial factors [14]) increases the risk for the overweight.

In 2008, the Japanese Ministry of Health, Labour and Welfare introduced a national strategy to combat obesity and metabolic syndrome. The so-called "Metabo Law" requires companies' health insurers to provide weight loss classes for overweight employees who meet certain criteria at their annual health check-up. If the insurers fail to achieve designated coverage of attending the classes, they are penalized by the government [15]. Although the effectiveness of the new law remains controversial [16], its success may depend on the social cohesion and social capital in the workplace. Although the earliest mention of social capital can be traced back to the beginning of the 20th century [17], it became more formally discussed in the work of Pierre Bourdieu, James S. Coleman, and others [18]. This concept from the fields of sociology, economics, and political science entered the public

health literature in the 1990s and has since accumulated a growing evidence base [19]. Social capital is defined as the resources that individuals can access through social networks (e.g. in their neighborhoods, or workplaces) [19]. Such resources can take the form of exchanges of information and expression of solidarity between members. Social networks with more dense ties between members generate more trust as well as reciprocity exchanges, and are hypothesized to be more effective in the maintenance of social norms and their ability to undertake collective action [19].

As an important source of social capital among working populations where people spend a considerable amount of time is the workplace [20], previous studies have examined the relationship between workplace social capital and several health outcomes such as all-cause mortality, hypertension, self-rated health, smoking, depression in Japan [21–23], Finland [24–29], the Netherlands [30], and China [31]. For example, Suzuki, *et al.* [23] found that lack of individual perceptions of workplace social capital was associated with poor self-rated health in Japan, while no clear associations were found with smoking status [22]. Another Japanese study reported a beneficial effect of workplace social capital on systolic blood pressure [21]. Although most western studies have also consistently suggested beneficial effects of workplace social capital [32], no study has examined its association with overweight. Previous evidence from residential areas in the U.S. suggests that social capital is associated with obesity at state level [33], state or county level [34] as well as neighborhood or regional level [35]. We hypothesized that more socially cohesive workplaces (i.e. workplaces with higher social capital) will be more effective in transmitting norms to keep weight employees at a healthy level. For example, employees in a high social capital workplace may be more likely to encourage their co-workers to stay lean (e.g. by organizing group activities that promote physical activity). On the other hand, by this rationale, socially cohesive workplaces might also exert the opposite effect. For example co-workers might enjoy socializing after hours at drinking parties – or “*nomikai*” – leading to weight gain. “*Nomikai*” parties illustrate workplace social networks, a channel for social support and an occasion to build social capital. Nonetheless, evidence suggests that the risk of overweight might spread in social networks [36].

Besides, research on social capital and health has explored different effects of sub-dimensions of social capital. Previous studies have suggested that social capital of the “bonding” variety (social ties between members who are similar with respect to their social class, gender, age-group, and so forth) can exert a differential effect on health compared to the “bridging” variety (ties between members who are dissimilar in social characteristics) [19]. In the present study, using a multi-dimensional measurement of workplace social capital that has mainly been used in Finnish studies [24,26,28], we assessed the associations for overall workplace social capital as well as the three sub-dimensions (bonding, bridging, and linking social capital) [37].

Furthermore, despite the Japanese Equal Employment Opportunity Law enacted in 1986, several traditions have endured, particularly concerning gender roles in the workplace. Career development is completely different for men and women in the typical Japanese workplace. Many women still tend to be employed for non-career-oriented work, and are expected to leave work when they get married or after childbirth [38]. In this patriarchal environment, career-oriented male workers tend to consider themselves as standing apart from women in terms of their identity. Accordingly, we speculated that effects of workplace social capital on overweight might differ by gender.

In the present study, we sought to examine the association between individual perceptions of workplace social capital, as well

as its sub-dimensions, and overweight among Japanese employees of a private sector company separately by gender.

Methods

Ethics statement

The study received ethical approval from the Ethics Committee on the Research of Epidemiology at Graduate School of Medicine, Dentistry and Pharmaceutical Sciences, Okayama University, and written informed consent was obtained from each participant.

Participants

We conducted a cross-sectional survey of full-time employees at a company in Osaka in February 2012. Of 1050 employees surveyed, 849 employees aged 18–64 years responded to the questionnaire (response rate 81%). The questionnaire measured individual perceptions of workplace social capital, sociodemographic characteristics, sleep- and health-related behaviors, and psychological distress. Anthropometric data (i.e. weight and height) were collected from the workers’ annual health check-ups conducted between June and December 2011. Of 849 respondents, 750 (624 men and 126 women) could be linked to their health check-up data and therefore included in the analysis.

Measures

We assessed workplace social capital with eight Likert-scaled items (1 = totally disagree, 5 = totally agree). Of the eight items, only the seventh item was measured as follows: 1 = “very little”, 5 = “very much” [24]. We calculated the mean of these eight scores and divided into three categories based on tertile distributions to avoid arbitrary cut off points, because there has been no standard cut off point of social capital to date (combining male and female responses): low (≤ 3.5), middle ($> 3.5, \leq 4$), and high (> 4). Furthermore, this measure covered multidimensional aspects including bonding/bridging/linking social capital (see Table S1 for list of items). We also calculated the means for each sub-dimension and divided them into tertiles in the same way as the overall social capital. The categories were: for bonding ($\leq 3.5 / > 3.5, \leq 4 / > 4$), bridging ($\leq 3 / > 3, \leq 4 / > 4$), and linking ($< 4 / > 4$).

Body mass index (BMI) was calculated as weight (kg) divided by the square of height (m^2). We classified BMI into three categories based on the new criteria of the Japan Society for the Study of Obesity [39]: underweight ($< 18.5 \text{ kg}/m^2$), normal body weight ($18.5\text{--}25 \text{ kg}/m^2$), and overweight ($\geq 25 \text{ kg}/m^2$). Although $BMI \geq 30 \text{ kg}/m^2$ is defined as obesity by the WHO classification, we combined both overweight and obesity into overweight because of the low prevalence of such obesity in Japan (no more than 2.0% in men and 3.0% in women) [39].

Sociodemographic factors included gender, age (continuous), educational attainment (junior/high school, some college/technical, and college/college graduate) [11], and occupation (clerical, sales, skills, and others) [40]. Sleep- and health-related behaviors included sleep hours (continuous) [4,9], frequencies of alcohol consumption and physical activity (none/rarely, 1 day/month to 2 days/week, and 3 days/week to almost every day) [4,7], and smoking status (never/former vs. current) [4]. Psychological distress was assessed by the Japanese version of the Kessler 6 scale (K6), comprising six questions on depression and anxiety [41]. Each question was measured on a 5-point scale and the total score ranged from 0 to 24. We set the cut-off at ≥ 5 to generate a dichotomous variable in line with previous studies of Japanese population [42].

Statistical analysis

First, we stratified all analyses by gender, because we found that gender modified the association of workplace social capital and overweight ($p=0.001$). Second, we calculated the internal consistency (Cronbach's alpha) and corrected item-total correlations of overall or three sub-dimensions (bonding/bridging/linking) of workplace social capital. Third, we performed a binomial logistic regression analysis to examine the associations between workplace social capital and overweight by combining underweight and normal weight ($BMI < 25 \text{ kg/m}^2$). In this analysis, we used the highest tertile of social capital as the referent category and calculated odds ratios (ORs) and 95% confidence intervals (CIs) for overweight. Model 1 included age, and Model 2 additionally adjusted for educational attainment, occupation, sleep hours, frequencies of alcohol consumption and physical activity, smoking status, and the K6 as covariates. Of covariates, categorical variables were included as dummy variables. These analyses were repeated with different sub-dimensions of workplace social capital. We also calculated p values for linear trend by treating the three categories as ordinal variables following a previous study [26]. Fourth, we conducted multinomial logistic regression analysis to estimate ORs and 95% CIs for underweight or overweight relative to normal weight associated with a 1 standard deviation (SD) decrease in mean workplace social capital. By using normal weight as a referent category, we expect that the associations can be examined more clearly than the binomial logistic regression analysis. We considered p values of less than 0.05 (two-tailed) statistically significant. All analyses were performed using STATA 12.1 (StataCorp, College Station, TX, USA).

Results

The overall Cronbach's alphas were 0.90 for both men and women, and the corrected-item total correlation ranged from 0.62 to 0.75 for men, and from 0.63 to 0.78 for women. The Cronbach's alphas of the three sub-dimensions (bonding/bridging/linking) of workplace social capital were 0.82, 0.88, 0.90 for men and 0.85, 0.89, 0.93 for women, respectively. The corrected-item total correlation of three aspects ranged from 0.62 to 0.86 for men, and from 0.63 to 0.88 for women.

Table 1 shows characteristics of participants by workplace social capital and gender. The overall mean (SD) of workplace social capital was 3.68 (0.62) for men and 3.45 (0.69) for women. The means (SD) of each sub-dimension were: bonding 3.63 (0.68); bridging 3.44 (0.79); linking 3.88 (0.73) for men, bonding 3.39 (0.78); bridging 3.24 (0.78); linking 3.66 (0.86) for women. Of men, 5.1% were underweight and 24.5% were overweight. Of women, 16.7% were underweight and 14.3% were overweight.

Table 2 shows associations between workplace social capital and overweight. Among men, although we observed a statistically significant association in the low overall social capital in Model 1 (OR 1.85; 95% CI 1.11–3.08), this association was slightly attenuated in Model 2 (OR 1.65; 95% CI 0.97–2.79). Low bonding and linking social capital were significantly associated with nearly twice the odds of overweight in Model 2 (bonding: OR 1.95; 95% CI 1.06–3.61; linking: OR 1.88; 95% CI 1.13–3.13). Among women, we found that low overall and linking social capital were significantly associated with reduced odds of overweight in Model 2 (overall: OR 0.14; 95% CI 0.03–0.67; linking: OR 0.15; 95% CI 0.03–0.71). Even after adjusting for covariates, all the p values for linear trend were statistically significant in both genders, except for bridging social capital.

Table 3 shows the results of multinomial logistic regression analysis to estimate relationships of workplace social capital for being underweight or overweight relative to normal weight. Among men, a 1-SD decrease in mean of workplace social capital was significantly associated with higher odds of overweight, except for bridging social capital, and no significant associations were found for underweight. Among women, neither the overall nor any sub-dimensions of workplace social capital were significantly associated with either overweight or underweight.

Discussion

Our findings suggest that men reporting low bonding or linking workplace social capital had increased odds of overweight, whereas women reporting low overall or linking social capital had decreased odds of overweight. Notably, we found a gender difference in the direction of associations between low linking social capital and overweight. Among men, a 1-SD decrease in overall, bonding, and linking social capital was significantly associated with higher odds of overweight, but not with underweight. Among women, no significant associations were found for either overweight or underweight. Our findings indicate that social capital can have bright and dark sides in Japanese workplaces in terms of employee health.

While to date no previous studies in an occupational setting have reported associations between overall workplace social capital and overweight/obesity, our results among women are not consistent with the previous findings that higher social capital in a community setting is inversely associated with obesity in the United States and England [33–35]. Furthermore, in a Finnish cross-sectional study, women reporting low overall workplace social capital had increased odds of poor self-rated health [24]. Therefore, in contrast to these previous findings, our study implies the presence of a dark side of workplace social capital among women. Among Japanese men, strong social solidarity in the workplace is sometimes expressed in the form of informal 'social drinking' after work, known as "nomikai". As reported in a study conducted in 1993–94 [43], middle-aged Japanese men spend several nights a week with male colleagues to relieve stress and to build solidarity. As a result, men reporting strong social support at work appeared to engage in heavier drinking and also reported a higher fat intake pattern, potentially leading to overweight. In contrast to men, the pooled analyses of six Japanese cohort studies have shown that the prevalence of alcohol drinkers among women was quite low compared to male workers [44], and social drinking is also less likely to be common among women in the workplace. In this study, only 7.9% among women reported that they consume alcohol often. Therefore, the "nomikai" effect is not likely to be a plausible explanation for the dark side of workplace social capital among women.

Previous studies tend to suggest that social capital of the "bonding" variety can exert a differential effect on health compared to the "bridging" variety [19]. In a cross-sectional study among residents of a disadvantaged, predominantly minority community in the United States, the researchers suggested that high bonding social capital was associated with higher levels of mental distress [45]. On the other hand, a recent cross-sectional study in two Dutch companies suggested that bonding social capital was positively associated with better self-rated health. In addition, Kim *et al* [46] reported protective effects of community bonding social capital on self-rated health within communities in the United States. With regard to bonding social capital, our findings among men are consistent with these previous studies that suggested beneficial effects of bonding social capital. In contrast to

Table 1. Participants' characteristics and descriptive statistics of workplace social capital, Osaka, Japan (2012).

Characteristics	Men				Women			
	N	%	Workplace social capital Mean	SD	N	%	Workplace social capital Mean	SD
All	624	100	3.68	0.62	126	100	3.45	0.69
BMI categories								
Underweight	32	5.1	3.76	0.46	21	16.7	3.21	0.58
Normal weight	439	70.4	3.72	0.61	87	69.1	3.47	0.70
Overweight	153	24.5	3.52	0.67	18	14.3	3.66	0.69
Age (years; Means, SD)	36.3	9.57	NA	NA	33.3	7.49	NA	NA
Sleep hours (Means, SD)	5.61	1.06	NA	NA	5.44	1.02	NA	NA
Educational attainment								
Junior high school/high school	108	17.3	3.66	0.52	10	7.9	3.05	0.51
Some college/technical	84	13.5	3.53	0.64	36	28.6	3.30	0.74
College/college graduate	432	69.2	3.71	0.64	80	63.5	3.57	0.65
Occupation								
Clerical	44	7.1	3.55	0.55	33	26.2	3.31	0.65
Sales	43	6.9	3.44	0.87	4	3.2	3.16	0.72
Skills	469	75.2	3.66	0.61	87	69.1	3.50	0.68
Others	68	10.9	3.99	0.44	2	1.6	4.31	0.97
Frequency of alcohol consumption ^a								
None/rarely	157	25.2	3.59	0.70	56	44.4	3.43	0.62
Sometimes	270	43.3	3.74	0.61	60	47.6	3.54	0.74
Often	197	31.6	3.66	0.56	10	7.9	3.09	0.62
Frequency of physical activity ^a								
None/rarely	277	44.4	3.62	0.65	73	57.9	3.35	0.67
Sometimes	316	50.6	3.74	0.6	50	39.7	3.60	0.71
Often	31	5.0	3.49	0.51	3	2.4	3.46	0.19
Smoking status								
Never/former	440	70.5	3.66	0.65	121	96.0	3.47	0.69
Current	184	29.5	3.72	0.55	5	4.0	3.15	0.67
K6 (scores ≥ 5)								
No	316	50.6	3.79	0.60	59	46.8	3.67	0.57
Yes	308	49.4	3.56	0.62	67	53.2	3.26	0.72

BMI, body mass index; K6, Kessler 6; NA, not applicable; SD, standard deviation.

^aCategorized as follows: none/rarely (less than 1 day/month), sometimes (1 day/month to 2 days/week), and often (3 days/week to almost every day).

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bonding social capital, we found no significant associations between bridging social capital and overweight either among men or women. Although a population-based study in Japan suggests that bridging social capital was significantly associated with better self-rated health [47], especially among women, further studies are needed to examine possible protective effects of bridging social capital on overweight in workplaces. Linking social capital might yield health benefits by connecting people across "vertical" different authority gradients [37]. Our findings among men appear to be in line with some evidence showing that linking workplace social capital was inversely associated with emotional exhaustion [30]. However, among women, we found that the pattern was opposite to men, i.e., low linking social capital was associated with reduced risk of overweight. The reason for this gender difference is not clear; the empirical evidence for linking social capital in the workplace remains too sparse to draw

generalizations. Further research is needed to investigate the potential gender difference the relation between linking social capital and workers' health.

With regard to the opposing effects of gender on the association between workplace social capital and overweight, a possible explanation may be that women are affected more than men by factors outside work [48]. For example, a study suggested that women are influenced more than men from higher levels of neighborhood social capital [49]. If women with low linking workplace social capital were more likely to compensate higher levels of neighborhood social capital, and neighborhood social capital had protective effects on overweight like previous studies [33,34], in that case, our inability to measure neighborhood social capital could have influenced our findings among women due to exposure misclassification. Further studies are warranted to

Table 2. Odds ratios for overweight associated with workplace social capital, Osaka, Japan (2012).

Variables	Men					Women				
	Overweight/N	Model 1 ^a		Model 2 ^b		Overweight/N	Model 1 ^a		Model 2 ^b	
		OR	(95% CI)	OR	(95% CI)		OR	(95% CI)	OR	(95% CI)
Workplace social capital										
low: ≤3.5	74/231	1.85	(1.11–3.08)	1.65	(0.97–2.79)	6/63	0.18	(0.04–0.74)	0.14	(0.03–0.67)
middle: >3.5, ≤4	52/257	0.99	(0.59–1.67)	0.92	(0.54–1.58)	7/46	0.35	(0.09–1.39)	0.31	(0.07–1.33)
high: >4	27/136	1.00		1.00		5/17	1.00		1.00	
p for trend		0.005		0.021			0.021		0.016	
Bonding social capital										
low: ≤3.5	74/231	2.17	(1.19–3.95)	1.95	(1.06–3.61)	5/60	0.25	(0.04–1.65)	0.18	(0.02–1.45)
middle: >3.5, ≤4	62/298	1.16	(0.64–2.11)	1.13	(0.61–2.06)	11/56	0.81	(0.14–4.65)	0.59	(0.09–3.95)
high: >4	17/95	1.00		1.00		2/10	1.00		1.00	
p for trend		0.001		0.007			0.043		0.039	
Bridging social capital										
low: ≤3	69/258	2.39	(0.97–5.89)	2.13	(0.85–5.31)	9/67	NA		NA	
middle: >3, ≤4	78/320	2.04	(0.83–5.02)	1.95	(0.79–4.82)	9/55	1.39	(0.50–3.85)	1.44	(0.46–4.45)
high: >4	6/46	1.00		1.00		0/4	1.00		1.00	
p for trend		0.082		0.185			0.818		0.819	
Linking social capital										
low: <4	67/204	1.94	(1.18–3.20)	1.88	(1.13–3.13)	5/59	0.25	(0.06–0.94)	0.15	(0.03–0.71)
middle: 4	56/261	1.08	(0.66–1.79)	1.07	(0.64–1.79)	7/40	0.62	(0.17–2.20)	0.53	(0.13–2.17)
high: >4	30/159	1.00		1.00		6/27	1.00		1.00	
p for trend		0.004		0.008			0.035		0.014	

CI, confidence interval; NA, not applicable; OR, odds ratio.

^aAdjusted for age.

^bAdjusted for age, sleep hours, educational attainment, occupation, frequencies of alcohol consumption and physical activity, smoking status, and K6 scores.

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examine these possible work-community (outside work) interactions.

When we analyzed the data by using multinomial logistic regression models, the results were consistent with the results of binomial logistic regression models – i.e. a 1-SD decrease in bonding and linking social capital were associated with increased odds of overweight among men. A possible novel aspect of multinomial regression model is each 1 SD decrease in workplace social capital was associated with between 26–40% increased odds of underweight in women. Although these estimates were not statistically significant, this tendency warrants future investigation and corroboration.

Strengths and Limitations

This is the first study to examine the association of workplace social capital and its sub-dimensions and overweight. The response rate was high, BMI was based on health check-up data rather than self-report, and we assessed sub-dimensions of workplace social capital in addition to the overall score. However, several limitations should be noted. First, although we examined the relationship between individual perceptions of workplace social capital and overweight, an ideal exploration of the effect of social capital on health requires measurement of the construct at both the individual and the collective level (e.g. work unit or company level), implemented within a multi-level analytical framework. The fact that we relied exclusively on individual perceptions means that some of our findings could have been “contaminated” by

individual differences in negative affectivity, attitude towards work, social desirability, and so on. For example, some evidence has shown that obese persons are more likely to report job-related discrimination and lower levels of self-acceptance than normal weight persons [50]. That is, overweight could result in stigma and ostracism from the group, and hence result in lower perceptions of workplace social capital. Second, the cross-sectional study design cannot establish causation. We cannot rule out the possibility that the 3–8 months time lag between collection of BMI and social capital data may have influenced the results of the present study, i.e. our findings reflect a degree of reverse causation (workers who gain weight perceive their workplaces as less cohesive). A stronger design would be to examine changes in body weight in relation to changes in social capital perceptions within a fixed effects framework. Third, the prevalence of overweight among men was nearly twice than among women. Thus, the observed gender differences in this study may reflect this type of selection process. Fourth, our study mainly included skilled workers from a private company, limiting the generalizability of our findings to the total labor force. Fifth, the possibility of residual confounding cannot be ruled out since the information about some potential prior common causes of workplace social capital and overweight was not available. For example, attendance at after-work drinking sessions (*nomikai*) varies by the worker’s marital status and presence of children at home [51,52]; hence these variables affect both the level of workplace social capital (via informal socializing with co-workers) as well as risk of overweight. Finally, because of small numbers and relatively narrow distributions of especially bridging

Table 3. Odds ratios for underweight/overweight per a 1-SD decrease in the mean of workplace social capital relative to normal weight, Osaka, Japan (2012).

	Men				Women			
	Model 1 ^a		Model 2 ^b		Model 1 ^a		Model 2 ^b	
	OR	(95% CI)	OR	(95% CI)	OR	(95% CI)	OR	(95% CI)
Workplace social capital								
Underweight	0.92	(0.62–1.36)	0.90	(0.60–1.34)	1.38	(0.86–2.21)	1.40	(0.82–2.38)
Normal weight	1.00		1.00		1.00		1.00	
Overweight	1.39	(1.16–1.67)	1.35	(1.11–1.63)	0.73	(0.42–1.27)	0.59	(0.30–1.13)
Bonding social capital								
Underweight	1.00	(0.69–1.47)	0.98	(0.66–1.46)	1.31	(0.83–2.07)	1.26	(0.77–2.07)
Normal weight	1.00		1.00		1.00		1.00	
Overweight	1.38	(1.16–1.65)	1.37	(1.13–1.65)	0.78	(0.45–1.36)	0.68	(0.36–1.29)
Bridging social capital								
Underweight	1.08	(0.75–1.55)	1.04	(0.72–1.52)	1.25	(0.79–1.97)	1.30	(0.77–2.18)
Normal weight	1.00		1.00		1.00		1.00	
Overweight	1.18	(0.98–1.41)	1.15	(0.96–1.39)	0.95	(0.56–1.60)	0.86	(0.46–1.62)
Linking social capital								
Underweight	0.76	(0.50–1.15)	0.76	(0.49–1.16)	1.31	(0.84–2.05)	1.35	(0.82–2.22)
Normal weight	1.00		1.00		1.00		1.00	
Overweight	1.38	(1.15–1.65)	1.32	(1.10–1.59)	0.63	(0.35–1.15)	0.50	(0.24–1.02)

CI, confidence interval; OR, odds ratio; SD, standard deviation.

^aAdjusted for age.

^bAdjusted for age, sleep hours, educational attainment, occupation, frequencies of alcohol consumption and physical activity, smoking status, and K6 scores.

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social capital among women, we could not explore these associations in greater depth. In addition, as our study sample was of uniform race/ethnicity and had relatively small variations in social class indicators (all participants worked in the same company), it is possible that we failed to capture bridging social capital differently from bonding/linking social capital.

Conclusions

The present study suggests that gender differences exist in the associations between low linking workplace social capital and overweight among Japanese employees. These results lend support to the notion that social capital has both a bright and a dark side. Further studies should examine the possible link between workplace social capital and overweight to elucidate the reason for the differences based on gender.

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Supporting Information

Table S1 8 items used to measure workplace social capital.
(PDF)

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Author Contributions

Conceived and designed the experiments: TK ST. Performed the experiments: TK ST. Analyzed the data: TK. Contributed reagents/materials/analysis tools: TK ST IK ES TO. Wrote the paper: TK ST IK. Reviewed manuscript: IK ES TO. Approved submitting the final version of manuscript: TK ST.

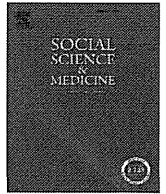
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Are neighborhood bonding and bridging social capital protective against depressive mood in old age? A multilevel analysis in Japan



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ABSTRACT

While the importance of distinguishing between bonding and bridging social capital is now understood, evidence remains sparse on their contextual effects on health. We examined the associations of neighborhood bonding and bridging social capital with depressive mood among older Japanese. A questionnaire survey of all community residents aged 65 and older in the city of Yabu, Hyogo Prefecture, Japan was conducted in July and August 2012. Bonding and bridging social capital were assessed by evaluating individual homogeneous and heterogeneous social networks in relation to age, gender, and socioeconomic status. Individual responses in each neighborhood were aggregated to create an index of neighborhood-level bonding/bridging social capital. Odds ratios (ORs) and 95% confidence intervals (CIs) were calculated to evaluate the associations of such social capital with depressive mood using multilevel binomial logistic regression analysis. Of the 7271 questionnaires distributed, 6416 were analyzed (covering 152 administrative neighborhoods). Approximately 56.8% of respondents were women, and the mean age was 76.2 ± 7.1 years. Neighborhood-level bonding social capital was inversely associated with depressive mood (OR = 0.84, 95% CI = 0.75–0.94), but neighborhood-level bridging social capital was not. Gender-stratified analysis revealed that neighborhood-level bonding social capital was inversely associated with depressive mood in both genders (OR = 0.83, 95% CI = 0.72–0.96 for men; OR = 0.85, 95% CI = 0.72–0.99 for women), while neighborhood-level bridging social capital was positively associated with depressive mood in women (OR = 1.15, 95% CI = 1.00–1.34). There was also a significant interaction between individual- and neighborhood-level bonding social capital, indicating that people with a weaker homogeneous network and living in a neighborhood with weaker bonding social capital were more likely to have depressive mood. Our results suggest that neighborhood social capital does not necessarily benefit mental health in old age. These findings might stimulate further discussion on the relationship of bonding and bridging social capital with mental health.

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1. Introduction

Social capital has been discussed in many academic fields. Putnam (1993) wrote that the term refers to “features of social organization, such as trust, norms and networks that can improve the efficacy of society by facilitating coordinated actions.” The association between social capital and health has been examined in a

number of papers in the public health arena, particularly in social epidemiology. Social capital has been conceptualized using different approaches (Kawachi, 2006). In public health research to date, the most common approach is to define it as a contextual resource (social cohesion definition).

Because social capital is an umbrella concept, subclassification of its aspects and dimensions may help clarify its effects on health. One approach distinguishes between two main components—bonding and bridging social capital (Putnam, 2000). Szreter and Woolcock (2004) stated that bonding social capital refers to aspects of “inward-looking” social networks that reinforce exclusive identities and group homogeneity in social characteristics; while bridging social capital refers to “outward-looking” social

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networks, which extend across different social and ethnic groups that do not necessarily share similar identities. The importance of differentiating between these types of social capital has recently been understood, and empirical studies have investigated their effects on health.

Most previous studies focused on the relationship of individual-level bonding/bridging social capital with health outcomes. Beaudoin (2009) found that stronger bonding and bridging social capital—defined based on the relationships of an individual with people of (dis)similar race/ethnicity—were both associated with better self-rated health, and that stronger bonding social capital was associated with reduced stress among general adults living in various parts of the United States. Mitchell and LaGory (2002) defined these types of social capital as strength of trust and ties with others whose race and education are (dis)similar to those of the respondent, and reported interesting associations with mental distress. In an impoverished U.S. community, stronger bridging social capital was associated with lower levels of mental distress, opposite to greater bonding social capital.

Designs of earlier studies on the associations of bonding/bridging social capital with health can be improved in at least two respects. First, very few focused on their contextual effects on health with a multilevel analysis. Kim et al. (2006) focused on the contextual effects on health of bonding and bridging social capital, defined as above by Szreter and Woolcock (2004). They reported that, among U.S. adults, community-level bonding social capital (determined by examining the relationships of an individual with people of similar race/ethnicity, gender, and education) was associated with better self-rated health, while community-level bridging social capital was not. From China, Meng and Chen (2014) reported that county-level bridging trust was beneficial toward individuals' self-rated health in both urban and rural areas, and that particularly in urban areas, people who have high individual-level bonding trust and live in a county with a high level of bonding trust evaluated their health more favorably. Even some of the studies that focused on individual-level bonding/bridging social capital implicitly acknowledged the presence of their contextual effects (Murayama et al., 2013; Poortinga, 2012). Murayama et al. (2013) reported that individual perception of neighborhood homogeneity (in relation to age, gender, and socioeconomic status [SES]) was inversely associated with poor self-rated health and depressive mood among older Japanese. As mentioned above, a great deal of public health research has treated social capital as a group-level attribute. Examination of the contextual effects of these types of social capital on health may yield new insights into the design of policies and community interventions to promote health.

A second shortcoming of previous studies on bonding/bridging social capital is that they were mainly limited to data derived from Western countries. To date, Meng and Chen (2014) has been the only work focusing on the contextual effect of these forms of social capital on health from Asian populations, but there are no Japan-based studies. In Japan—viewed as a relatively collectivist society on the whole, with strong group ties—residents within a community feel comfortable under systems of mutual assurance and monitoring (Nakane, 1970; Yamagishi et al., 1998; Yamagishi and Yamagishi, 1994). In view of the differences in background between the populations of Western countries and Japan, it is important to examine the effects of bonding/bridging social capital on health in Japan.

Previous studies on Western countries have defined bonding and bridging social capital based on relationships with racially or ethnically (dis)similar people (Beaudoin, 2009; Kim et al., 2006; Poortinga, 2012). However, because Japan has low racial/ethnic diversity, we considered this definition inappropriate for Japan.

Moreover, the meaning of social relationships might differ between Japan and Western societies; it was reported that Japanese elderly had fewer social ties compared with U.S. elderly (Sugisawa et al., 1998). For example, in terms of age, because Japanese elderly tend to possess fewer networks with different generations as they age (Cabinet Office, 2009), connections with different age groups might have unique value as age advances. Regarding gender, because predominance of men over women remains rooted in Japanese society, particularly in rural areas and in old age (Gerteis, 2009), older people are apt to maintain relations with those of the same gender. Connections with the opposite gender can therefore be seen as heterogeneous relationships. Socioeconomic disparity has increasingly widened in Japan (Ministry of Health, Labour and Welfare, 2013), so ties among people with different socioeconomic positions may have a distinct meaning. Taken together, focus on the (dis)similarity of relationships with regard to age, gender, and SES seems more significant than race/ethnicity when considering bonding and bridging social capital in a study targeting Japan.

Another feature of this study is that we considered depressive mood in old age because elderly adults often experience changes in factors such as social functions, social relations, and physical condition (Müller-Spahn and Hock, 1994; Rowe and Kahn, 1997). In fact, scale-based studies of depression symptoms showed the rate of depression increases with age (Luppa et al., 2012; Stordal et al., 2001). Moreover, depression is a risk factor for functional decline in later life (Stuck et al., 1999). In Japan, the importance of preventing depression in old age has been recognized because measuring of depression has been considered a good indicator for developing public health policy, particularly for long-term care prevention (Ministry of Health, Labour and Welfare, 2012). Some studies have reported a preventive contextual effect of social capital on depressive mood (Aslund et al., 2010; Kouvonen et al., 2008; Tomita and Burns, 2013), but the contextual associations of bonding and bridging social capital with depressive mood have yet to be studied.

Given these considerations, to have valuable public health implications and develop population-/community-based approaches, a study exploring the contextual relationship with depressive mood among Japanese elderly appears of critical importance. In this study, we examined the relationship between neighborhood bonding and bridging social capital and depressive mood (i.e., contextual association) among older Japanese. Gender difference in the association between bonding/bridging social capital and health has also been found in some Japanese studies (Iwase et al., 2012; Kishimoto et al., 2013). For example, bridging social capital was found to have a stronger association with self-rated health in women than in men (Iwase et al., 2012). Moreover, some other studies reported a significant interaction between individual- and contextual-level social capital on health outcomes such as self-rated health (Han et al., 2012; Meng and Chen, 2014). This approach suggests that all individuals in areas or groups in a specific context (e.g., neighborhoods, workplaces, schools) are equally exposed, but that health effects may vary among individuals. However, there is little evidence of the interaction between these two different levels and depressive mood. Thus, this study has two purposes in addition to the main one: identify gender difference in the contextual associations of bonding and bridging social capital with depressive mood, and test the interaction between individual- and neighborhood-level bonding and bridging social capital on depressive mood.

We offer the following hypotheses. For older Japanese, (1) neighborhood bonding and bridging social capital are associated with depressive mood, and the net of individual social capital; (2) the associations of these two types of neighborhood social capital with depressive mood are different; (3) the association between

neighborhood bonding/bridging social capital and depressive mood is stronger and/or more likely to be more significant for women than men; and (4) the associations between neighborhood bonding/bridging social capital and depressive mood differ according to the form of individual social capital.

2. Methods

2.1. Study population

We conducted a cross-sectional survey in July and August 2012. The target population was all community residents aged 65 and above in the city of Yabu in Hyogo Prefecture, Japan, who were not certified for long-term care levels 1–5. A questionnaire was mailed to 7271 residents. The study protocol was approved by the Ethical Committee of Tokyo Metropolitan Institute of Gerontology. All

Table 1
Characteristics of study participants ($n = 6416$).

		Total	Men $n = 2771$ (43.2%)	Women $n = 3645$ (56.8%)
Age (years)		76.2 ± 7.1	75.7 ± 7.0	76.6 ± 7.2
Marital status	Unmarried ^a	30.6	13.6	43.8
Year of residence in the neighborhood (years)	1–19	5.7	6.2	5.3
	20–39	10.4	10.9	10.1
	40–59	36.7	17.9	51.0
	60+	47.2	65.0	33.6
Education	Junior high school graduation	57.1	54.7	58.9
	High school graduation	30.5	31.3	29.9
	Junior college/vocational college graduation	6.0	3.9	7.6
	College/graduate school graduation	4.5	8.3	1.5
	Unknown	1.9	1.7	2.1
Annual household income (millions of yen)	<3.00	49.2	49.3	49.2
	3.00–4.99	19.6	23.6	16.2
	5.00–6.99	6.7	8.0	5.6
	7.00+	4.6	5.4	3.9
	Unknown	19.9	13.6	25.1
Current smoking		7.5	15.0	1.6
Body mass index (kg/m ²)	<18.5	9.0	7.8	9.9
	18.5–24.9	67.0	69.4	65.2
	25.0+	24.0	22.9	24.9
Comorbidities	0	21.8	22.7	21.1
	1	37.9	35.5	39.8
	2+	40.3	41.8	39.1
Basic activities of daily living (range: 0–5)	Dependent (score of 0–4)	8.0	6.0	9.5
TMIG-IC (range: 0–13)		11.2 ± 2.7	11.2 ± 2.6	11.2 ± 2.7
Bonding social capital (homogeneous network)	Weak	10.5	11.5	9.8
	Somewhat weak	7.9	9.1	7.0
	Neither	33.0	35.8	30.7
	Somewhat strong	31.6	30.1	32.8
	Strong	17.0	13.5	19.7
Bridging social capital (heterogeneous network)	Weak	20.7	18.6	22.3
	Somewhat weak	16.8	16.7	16.9
	Neither	44.8	46.5	43.5
	Somewhat strong	11.7	12.7	10.9
	Strong	6.0	5.4	6.4
General trust	Weak ^b	54.8	49.3	59.1
GDS (range: 0–15)	6+	39.9	39.0	40.5

GDS: Geriatric Depression Scale. TMIG-IC: Tokyo Metropolitan Institute of Gerontology Index of Competence.

Values are percentages or means ± standard deviation.

^a Unmarried includes never married, divorced, and widowed.

^b Weak consists of the categories of weak, somewhat weak, and neither. Strong consists of the categories of strong and somewhat strong.

participants gave informed consent before their inclusion in the study.

Yabu is located in northern Hyogo and is 100 km northwest of Osaka and Kyoto. As of July 1, 2012, it had a population of 26,642 (12,787 male and 13,855 female), with population density of 63.0 people/km², and contains 161 administrative neighborhoods. The proportion of people aged 14 and younger was approximately 11.8%. In contrast, that of people aged 65 and older was 32.6%. The national average for the latter is 23.0%. From a level of 21.6% in 1990, this proportion is predicted to reach 40.9% by 2025 and 43.5% by 2040 (National Institute of Population and Social Security Research (2014)). From April 2011 through March 2012, the respective rates of inflow (moving to Yabu) and outflow (moving from Yabu) were 1.63% and 2.66% (vs. 4.21% and 4.20% nationally; Ministry of Internal Affairs and Communications (2012)). As a whole, Yabu can be said to be a representative rural area in Japan because of its rapidly aging population and low population density and fluidity. Murayama et al. (2014) gives further details on the participants and study area.

2.2. Measurements

2.2.1. Bonding/bridging social capital

Based on previous studies (Harpham et al., 2002; Kawachi et al., 2008; Poortinga, 2012; Szreter and Woolcock, 2004), Murayama et al. (2013) developed a system of assessing bonding social capital using two factors and bridging social capital by a single factor. As mentioned in the introduction, we focused on the (dis)similarity of relationships with regard to age, gender, and SES. The items assess bonding and bridging social capital by investigating perceptions of homogeneity and heterogeneity in participant networks. Because perceived network homogeneity and heterogeneity are regarded as the strength of personal networks with others who have similar or dissimilar social characteristics, we assumed that homogeneous and heterogeneous networks were not opposing concepts. The concepts of bonding and bridging social capital were examined with the statements: “Do you agree that in your daily life you have networks with people who have similar social characteristics (age, gender, and SES) to you?” and “Do you agree that in your daily life you have networks with people who have dissimilar social characteristics to you?” (1 = agree, 2 = somewhat agree, 3 = neither, 4 = somewhat disagree, 5 = disagree). We conducted a preliminary interview investigation on a sample of elderly residents of Yabu to verify the validity and reliability of these items in this study setting. Overall, the subjects had strong understanding of the items, so we used them in the survey. The responses for the two items were relatively normally distributed (Table 1).

Individuals were grouped within administrative neighborhoods. In addition to individual-level social capital, aggregate-level social capital was created in accordance with the neighborhood units by aggregating individual responses in each neighborhood. The proportions of people with a strong homogeneous/heterogeneous network (response categories 1 and 2) in neighborhoods were calculated for neighborhood-level bonding and bridging social capital.

2.2.2. Depressive mood

Depressive mood was assessed using the Geriatric Depression Scale (GDS) short-form (Burke et al., 1991; Schreiner et al., 2003), which was developed as a basic screening measure of depressive mood in older adults. Respondents answered dichotomized questions, and the answers were summed up (score range: 0–15). Cronbach's alpha was 0.85. A cutoff point of 5/6 was adopted, and a score of ≥6 indicated depressive mood (Schreiner et al., 2003).

2.2.3. Covariates

Gender, age, marital status, educational attainment, annual household income, smoking, body mass index, comorbidities, functional capacity, and general trust were adjusted for in the analysis. The comorbidities of interest were hypertension, cardiovascular disease, cerebrovascular disease, hyperlipidemia, and diabetes mellitus. Functional capacity was composed of basic activities of daily living (BADL) and higher-order competence of independence. BADL was measured using five items (walking, eating, bathing, dressing, and toileting), and the score range was 0–5. Higher-order competence was measured using the Tokyo Metropolitan Institute of Gerontology Index of Competence (TMIG-IC), which consists of a 13-item index (score range: 0–13) (Koyano et al., 1991). A higher score indicated greater independence. For BADL, a score of 5 indicated complete independence.

Both individual- and neighborhood-level general trust was adjusted for as a cognitive aspect of social capital, because in this study bonding and bridging social capital reflected the presence of social structures and differential components of social capital (e.g., cognitive vs. structural) can influence difference in the association of social capital with depressive mood (Bassett and Moore, 2013). The question used to evaluate trust was, “Generally speaking, can most people be trusted?” (1 = agree, 2 = somewhat agree, 3 = neither, 4 = somewhat disagree, 5 = disagree). We dichotomized responses as strong (1 and 2) and weak (3–5). An index of neighborhood-level general trust was created in the same manner as the indices for bonding/bridging social capital. The proportions of people with strong general trust in neighborhoods were calculated.

2.2.4. Neighborhood living environment

Neighborhood living environment might affect social capital because people living in walkable, mixed-use neighborhoods were found to have high levels of social capital (Leyden, 2003). Thus, we asked questions on neighborhood living environment to identify neighborhood characteristics associated with strong bonding/bridging social capital. The questionnaire included items on three aspects of this environment: accessibility to facilities (ease of access to nonresidential facilities), safety, and landscape (neglect concerning presence of litter or graffiti). Responses were made on a five-point Likert scale (1 = agree, 2 = somewhat agree, 3 = neither, 4 = somewhat disagree, 5 = disagree). As with social capital variables, the proportions of the three items were calculated by aggregating individual responses for categories 1 and 2 among the respondents in neighborhoods.

2.3. Statistical analysis

To examine the compositional (individual-level) and contextual (neighborhood-level) effects of bonding and bridging social capital on depressive mood, we conceptualized the analysis as a multilevel structure. We fitted the data using a multilevel binomial logistic regression model that included a random intercept to assess the likelihood of a GDS score of ≥ 6 versus a score of ≤ 5 . Full maximum likelihood procedure was the estimation method. We conducted the analysis for the entire sample and by gender. Individual-level covariates, neighborhood-level population size, and neighborhood-level aging rate were adjusted for in all models. Because social capital at the neighborhood level was composed of aggregated individual responses, social capital at the individual level may be a confounding factor for the contextual effect of social capital on depressive mood (Oakes, 2004). Therefore, we added both individual- and neighborhood-level social capital in the model simultaneously. Individual-level indicators of social capital were centered on the neighborhood mean to overcome the problem of

collinearity between individual-level and neighborhood-level variables. All neighborhood-level variables were centered on their grand mean. The results of the fixed effects are expressed as odds ratios (ORs) with 95% confidence intervals (CIs). Statistical analysis was performed using IBM SPSS 20 and HLM 6.08.

3. Results

Of the 7271 questionnaires distributed, 6652 were returned (91.5% response rate). After excluding 186 from respondents who did not actually reside in the city or had been admitted to the hospital or lived in nursing facilities, 41 that were completely/almost blank, four with missing neighborhood labels, and five that identified neighborhoods with fewer than three respondents, we analyzed data from 6416 respondents gathered in 152 neighborhoods with three or more respondents. The mean number of respondents in a neighborhood was 47.6 (ranging 3–185). The response rates varied by neighborhood between 67% and 100%, but about 90% of the neighborhoods had a response rate of 80% or above. Among the 152 neighborhoods, 10 contained less than 10 respondents within the area.

Table 1 shows the characteristics of the respondents. Approximately 56.8% were women and the mean age was 76.2 ± 7.1 years. Regarding social capital, 48.6% had a strong homogeneous network and 17.7% had a strong heterogeneous network. About 39.9% had a score of ≥ 6 on the GDS.

We calculated correlation coefficients among neighborhood social capital, neighborhood living environments, and neighborhood demographics (Table 2). Neighborhood-level bonding social capital was moderately correlated with neighborhood accessibility to facilities ($r = 0.27$) and landscape ($r = -0.21$), and bridging social capital was correlated with neighborhood safety ($r = -0.29$) and landscape ($r = 0.31$).

Table 3 shows associations of bonding and bridging social capital with depressive mood for the entire sample. Individual-level strong bonding social capital was significantly inversely associated with depressive mood (Models 1 and 3); but after adjusting for general trust in Model 4 this association remained significant only for the “strong” category (OR = 0.68, 95% CI = 0.50–0.92). Regarding the association between individual-level bridging social capital and depressive mood, the category “neither” had lower ORs in Models 2–4 compared with that of “weak” (e.g., OR = 0.77, 95% CI = 0.63–0.95 in Model 4), while OR in the category of “strong” did not significantly differ from that of “weak.” Neighborhood-level bonding social capital was inversely associated with depressive mood, even after adjusting for bridging social capital and general trust in Model 4 (OR = 0.84, 95% CI = 0.75–0.94). In contrast, neighborhood-level bridging social capital was not associated with depressive mood.

In gender-stratified analysis (Table 4 for men and Table 5 for women), neighborhood-level bonding social capital had a significant inverse association with depressive mood in men and women (e.g., in Model 4, OR = 0.83, 95% CI = 0.72–0.96 in men, and OR = 0.85, 95% CI = 0.72–0.99 in women). In contrast, neighborhood-level bridging social capital was significantly positively associated with depressive mood in women (OR = 1.15, 95% CI = 1.00–1.34 in Model 4) but not in men. We also found a significant interaction between bridging social capital and general trust at the neighborhood level in women only (OR = 1.07, 95% CI = 1.01–1.12; data not shown), indicating that women living in the neighborhood who had weaker bridging social capital and higher general trust were less likely to have depressive mood than women living in the other neighborhoods. The predicted probability of depressive mood for women living in the neighborhood with weak bridging social capital and strong general trust was

Table 2
Correlations among neighborhood social capital, neighborhood living environment and neighborhood demographics ($n = 152$).

	Mean \pm SD	Min–Max	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
Neighborhood social capital										
(a) Bonding social capital										
% people who have a strong homogeneous network in the neighborhood ^a	47.8 \pm 12.1	0.0–80.0	1.00	-0.05	0.11	0.27**	0.06	-0.21**	0.01	0.25**
(b) Bridging social capital										
% people who have a strong heterogeneous network in the neighborhood ^a	19.3 \pm 12.0	0.0–66.7		1.00	0.07	-0.08	-0.29**	0.31**	-0.18*	0.05
(c) General trust										
% people who have strong general trust in the neighborhood ^a	44.3 \pm 12.5	0.0–100.0			1.00	0.10	0.21**	-0.02	0.13	-0.31**
Neighborhood living environment										
(d) Accessibility to facilities										
% people who perceive that there are many facilities to visit in the neighborhood ^a	37.1 \pm 15.4	0.0–100.0				1.00	0.09	0.06	0.06	-0.02
(e) Safety										
% people who perceive that their residential area is safe in the neighborhood ^a	65.0 \pm 13.8	15.4–100.0					1.00	-0.18*	0.23**	-0.09
(f) Landscape										
% people who perceive that there is a great deal of litter or graffiti in the neighborhood ^a	18.5 \pm 13.0	0.0–80.0						1.00	0.01	-0.05
Neighborhood demographics										
(g) Population (people)	170.1 \pm 122.8	9–633							1.00	-0.35**
(h) Aging rate										
% people aged ≥ 65 years in the neighborhood	35.5 \pm 11.7	1.7–96.6								1.00

SD: standard deviation.

** $p < 0.01$. * $p < 0.05$.Correlation coefficients represent Pearson's r .^a Proportion was calculated from the number of respondents indicating that they "agree" or "somewhat agree" with the statement and the total number of respondents to each question.

33.8% (95% CI = 32.5–35.1), while that for women in the other neighborhoods was 37.7% (95% CI = 36.5–38.8).

Finally, we examined the effect of the interaction of individual-level and neighborhood-level social capital (i.e., bonding and bridging social capital and general trust) on depressive mood, by separately adding the interaction term into Model 4. There was a significant interaction between individual- and neighborhood-level bonding social capital on depressive mood in the entire sample (Model 5 in Table 3). In the neighborhood with weak bonding social capital, the predicted probability of depressive mood for those with weak bonding social capital was 50.5% (95% CI = 48.2–52.7), while that for those with strong bonding social capital was 32.8% (95% CI = 31.4–34.1). In the neighborhood with strong bonding social capital, it was 39.9% (95% CI = 32.2–47.6) for those with weak bonding social capital vs. 29.4% (95% CI = 26.7–32.0) for those with strong bonding social capital. These indicated that people who had a weaker homogeneous network and lived in a neighborhood with weaker bonding social capital were more likely to have depressive mood. Apart from this interaction, however, no significant interaction between individual- and neighborhood-level social capital was found.

4. Discussion

This questionnaire-based study of older Japanese had a high response rate and is the first to examine the contextual associations of bonding and bridging social capital with depressive mood in older Japanese. Interestingly, we found that the two forms of social capital had contrasting associations with depressive mood. Overall, neighborhood-level bonding social capital was inversely associated with depressive mood in both genders, while neighborhood-level bridging social capital was positively associated with depressive mood among women. With a rapidly aging population and low population density and fluidity, Yabu is a representative rural area in Japan. Generally, rural areas in Japan tend to be more collectivistic than urban areas (Yamazaki, 1990). In rural communities, individuals cooperate with groups because of the presence of a system of formal and informal mutual assurance (or lack of social

uncertainty), monitoring and sanctioning derived from the stability of interpersonal and/or inter-organizational relations (Yamagishi et al., 1998; Yamagishi and Yamagishi, 1994). Japanese societies, seen as collectivistic, therefore have many characteristics not observable in Western countries, which are usually regarded as having individualistic societies. Moreover, the definitions of bonding and bridging social capital in Western societies are often based on (dis)similarity in relation to race/ethnicity. However, in a society with greater racial/ethnic homogeneity, such as Japan, other aspects should be focused on. Although further examination is needed, this study, which focused on (dis)similarity in age, gender, and SES, could provide implications for what elements comprise bonding and bridging social capital in such a society.

Neighborhood bonding social capital was found to be inversely associated with depressive mood among both men and women. Previous studies also reported or implied a beneficial effect of community bonding social capital on health (Kim et al., 2006; Murayama et al., 2013; Poortinga, 2012). According to our definition of bonding social capital, in a neighborhood with stronger bonding social capital there would be dense networks among people with similar social backgrounds, such as networks among elderly adults, men, women, and people in the same area of business. Shared personal characteristics in the neighborhood elicit trust in others as well as social resemblance, which may foster development of a social support system and provide residents with a feeling of security (Kawachi and Berkman, 2000). Moreover, dense homogeneous networks in neighborhoods might facilitate delivery of health interventions to specific groups, such as in improving information distribution in an area (Kawachi and Berkman, 2000). Such networks might therefore improve the mental health of residents.

An alternative explanation for the inverse association between neighborhood bonding social capital and depressive mood highlights the role of neighborhood services and amenities, as in how Haines et al. (2011) reported the close linkage among neighborhood (dis)advantage, social capital, and depressive symptoms. We found a moderate positive correlation between neighborhood bonding social capital and accessibility to facilities. A stronger homogeneous

Table 3
Associations of bonding and bridging social capital with depressive mood in the entire sample: multilevel binomial logistic regression model.

	Model 1		Model 2		Model 3		Model 4		Model 5	
	OR	(95% CI)	OR	(95% CI)	OR	(95% CI)	OR	(95% CI)	OR	(95% CI)
Fixed effect										
Individual level										
Bonding social capital										
Weak	1.00				1.00		1.00		1.00	
Somewhat weak	0.76	(0.57–1.03)			0.85	(0.63–1.17)	0.89	(0.65–1.22)	0.91	(0.66–1.24)
Neither	0.68	(0.53–0.87)			0.82	(0.62–1.09)	0.86	(0.64–1.15)	0.87	(0.65–1.16)
Somewhat strong	0.65	(0.50–0.85)			0.74	(0.56–0.98)	0.83	(0.62–1.11)	0.81	(0.61–1.07)
Strong	0.57	(0.42–0.77)			0.61	(0.45–0.82)	0.68	(0.50–0.92)	0.67	(0.49–0.92)
Bridging social capital										
Weak			1.00		1.00		1.00		1.00	
Somewhat weak			0.83	(0.65–1.05)	0.87	(0.68–1.11)	0.86	(0.67–1.12)	0.87	(0.67–1.13)
Neither			0.76	(0.64–0.90)	0.77	(0.63–0.94)	0.77	(0.63–0.95)	0.78	(0.63–0.96)
Somewhat strong			0.86	(0.68–1.09)	0.90	(0.70–1.16)	0.91	(0.70–1.19)	0.92	(0.71–1.20)
Strong			0.84	(0.60–1.19)	0.92	(0.64–1.34)	1.05	(0.74–1.51)	1.06	(0.74–1.52)
General trust										
Weak							1.00		1.00	
Strong							0.54	(0.46–0.63)	0.53	(0.46–0.62)
Neighborhood level ^a										
Bonding social capital	0.85	(0.77–0.94)			0.86	(0.77–0.95)	0.84	(0.75–0.94)	0.85	(0.76–0.96)
Bridging social capital			1.07	(0.96–1.21)	1.07	(0.95–1.20)	1.07	(0.96–1.21)	1.07	(0.95–1.20)
General trust							1.03	(0.92–1.20)	1.09	(0.98–1.23)
Interaction between individual and neighborhood levels										
Individual bonding social capital by neighborhood bonding social capital										
Individual weak × neighborhood bonding social capital									1.00	
Individual somewhat weak × neighborhood bonding social capital									1.13	(0.78–1.64)
Individual neither × neighborhood bonding social capital									1.09	(0.81–1.47)
Individual somewhat strong × neighborhood bonding social capital									1.55	(1.16–2.09)
Individual strong × neighborhood bonding social capital									1.40	(1.00–2.05)
Random effect										
Neighborhood level variance (SE)	0.025	(0.013)	0.035	(0.015)	0.023	(0.013)	0.025	(0.013)	0.027	(0.014)
Intra-class correlation coefficient	0.008		0.011		0.007		0.007		0.008	

CI: confidence interval; OR: odds ratio; SE: standard error.

Gender, age, marital status, years of residence in the neighborhood, education, annual household income, smoking, body mass index, comorbidities, basic activities of daily living and higher-order competence of independence at the individual level, and population size and aging rate at the neighborhood level were adjusted for in all models.

^a Neighborhood-level social capital is defined as the proportion of people with a stronger homogeneous network (bonding social capital), stronger heterogeneous network (bridging social capital), or stronger general trust within the neighborhood. ORs associated with a change of one standard deviation in each neighborhood-level social capital are shown.

network among those with similar sociodemographic characteristics in a neighborhood (i.e., gathering people of similar backgrounds in a neighborhood) could bring together people's opinions and result in more obvious and greater needs for certain services or amenities. The attempt to meet these resident needs could increase allocation and maintenance of such resources in a neighborhood. Such services and amenities would in turn positively influence the mental health of residents through giving them satisfaction and the ability to use such resources. Moreover, we found a significant interaction between individual- and neighborhood-level bonding social capital and depressive mood. This indicates a buffering effect of neighborhood bonding social capital on depressive mood in that stronger neighborhood bonding social capital partially offset the deleterious effect of possession of a weak homogeneous network on depressive mood. This implies that, for example, in a neighborhood with dense homogeneous networks, relative to those with weak bonding social capital, those with strong individual bonding social capital can more efficiently and effectively obtain useful and personally necessary information from rich sources of information in the area by using their personal homogeneous networks. This finding leads to a possible policy recommendation that it would be effective to strengthen neighborhood bonding social capital to prevent depressive mood particularly among those with a weak homogeneous network, who are thus more likely to have depressive mood.

In contrast, people living in neighborhoods with stronger bridging social capital were at higher risk of depressive mood,

particularly in women. In such neighborhoods, there would be many broad networks among people with different sociodemographic characteristics. Our results showed that greater neighborhood bridging social capital was correlated with lower neighborhood safety and a poorer neighborhood landscape. Moreover, about 85% of our sample had lived in the city for over 40 years. Older people who have lived for a long time in a collectivist community with mutual assurance might have a negative opinion of neighborhoods in which people of varying sociodemographic backgrounds interact. Living in such neighborhoods might increase levels of unease and stress among residents. In particular, because the employment rate of women in Japan is much lower than that among men (Ministry of Internal Affairs and Communications (2013)), women are less likely than men to have experience in committing to active involvement in society outside the residential community (e.g., workplace). Therefore, women may feel more stress than men when living in neighborhoods with strong bridging social capital. Another possible explanation for this association is that, in the neighborhood in which the elderly are more likely to report having heterogeneous networks, these networks may have formed an inferior alternative to preferred social networks (e.g., family connections or support) that are unavailable. That is, the elderly are compelled to have heterogeneous networks because of the difficulty obtaining their preferred networks. Therefore, the circumstances of such residential neighborhoods might negatively relate to individual mental health, particularly among women. Putnam (2000) also argued that people in more diverse

Table 4
Associations of bonding and bridging social capital with depressive mood in men: multilevel binomial logistic regression model.

	Model 1		Model 2		Model 3		Model 4	
	OR	(95% CI)	OR	(95% CI)	OR	(95% CI)	OR	(95% CI)
Fixed effect								
Individual level								
Bonding social capital								
Weak	1.00				1.00		1.00	
Somewhat weak	0.85	(0.54–1.34)			0.95	(0.60–1.52)	1.01	(0.64–1.59)
Neither	0.69	(0.49–0.95)			0.85	(0.57–1.26)	0.91	(0.61–1.36)
Somewhat strong	0.61	(0.43–0.89)			0.72	(0.48–1.09)	0.83	(0.55–1.25)
Strong	0.55	(0.36–0.85)			0.61	(0.40–0.93)	0.68	(0.45–1.04)
Bridging social capital								
Weak			1.00		1.00		1.00	
Somewhat weak			0.78	(0.56–1.08)	0.80	(0.56–1.15)	0.80	(0.56–1.15)
Neither			0.72	(0.55–0.94)	0.74	(0.54–1.03)	0.74	(0.53–1.03)
Somewhat strong			0.79	(0.57–1.11)	0.86	(0.59–1.24)	0.89	(0.61–1.29)
Strong			0.86	(0.50–1.47)	0.99	(0.57–1.72)	1.17	(0.69–1.97)
General trust								
Weak							1.00	
Strong							0.52	(0.42–0.64)
Neighborhood level ^a								
Bonding social capital	0.82	(0.71–0.94)			0.81	(0.71–0.94)	0.83	(0.72–0.96)
Bridging social capital			1.02	(0.86–1.21)	1.01	(0.86–1.19)	0.99	(0.84–1.18)
General trust							0.94	(0.81–1.10)
Random effect								
Neighborhood level variance (SE)	0.002	(0.002)	0.009	(0.008)	0.005	(0.005)	0.005	(0.006)
Intra-class correlation coefficient	0.001		0.003		0.002		0.002	

CI: confidence interval; OR: odds ratio; SE: standard error.

Age, marital status, years of residence in the neighborhood, education, annual household income, smoking, body mass index, comorbidities, basic activities of daily living and higher-order competence of independence at the individual level, and population size and aging rate at the neighborhood level were adjusted for in all models.

^a Neighborhood-level social capital is defined as the proportion of people with a stronger homogeneous network (bonding social capital), stronger heterogeneous network (bridging social capital), or stronger general trust within the neighborhood. ORs associated with a change of one standard deviation in each neighborhood-level social capital are shown.

communities are less likely to trust their neighbors. We in fact found a significant interaction between bridging social capital and general trust at the neighborhood level among women, indicating that women living in the neighborhood who had weaker bridging social capital and higher general trust were less likely to have depressive mood. To further our level of understanding of the association between neighborhood-level bridging social capital and depressive mood, we need to closely investigate the actual condition of social networks in the neighborhood and examine the detailed relationship between bridging social capital (or neighborhood diversity), social trust, and people's mental health.

Regarding individual-level social capital, bonding social capital (homogeneous network) was inversely associated with depressive mood. Meanwhile, the association of bridging social capital (heterogeneous network) with depressive mood was different. People with a moderately heterogeneous network (indicated by a response of "neither") were unlikely to have depressive mood, and this trend of the association remained in the gender-stratified analysis, even though it did not reach statistical significance. Having a heterogeneous network is considered a benefit because people can receive new information and ideas through it (Granovetter, 1973). Some previous studies support the benefit of having heterogeneous ties on people's mental health (Mitchell and LaGory, 2002; Murayama et al., 2013). However, in a traditional Japanese collectivist community, strong ties within the group tend to prevent connections such as trust from developing beyond group boundaries (Yamagishi et al., 1998), suggesting that a strong heterogeneous network may not be preferred in such a community. This might offset the beneficial effect of having strong heterogeneous networks. This sense of tension might lead to a situation in which people who have a moderately (i.e., neither strong nor weak) heterogeneous network can live a more peaceful, less stressful life in a community than those with a strongly or weakly heterogeneous network. In a

previous study that used the same measurements of bonding and bridging social capital among older adults in a Japanese community (Hatoyama, Saitama Prefecture), a stronger individual heterogeneous network was associated with less risk of depressive mood, while a homogeneous network was not (Murayama et al., 2013). Hatoyama was developed as a commuter town for Tokyo (Murayama et al., 2012). It is a typical suburban area and thus tends to be less collectivist than rural areas in Japan (Yamazaki, 1990). Therefore, the discrepancy in the associations reported in these two studies might be due to the background characteristics of the settings. Because members of a more collectivist culture provide mutual assurance in committed relations (Yamagishi and Yamagishi, 1994), older people in such a community (e.g., Yabu) might be reassured when they have a strong homogeneous network. As a previous study reported on the effect of social capital on health varied by area characteristics (i.e., urban and rural) (Meng and Chen, 2014), our findings also suggest that community characteristics can strongly influence the linkage between social capital and health.

There are still few studies on bonding and bridging social capital and depressive mood. One earlier study shows that social ties outside the neighborhood (i.e., a type of bridging social capital) were associated with better self-rated health because they indicate good access to a greater diversity of resources (Moore et al., 2011). However, Bassett and Moore (2013) reported that people with social ties spanning both neighborhood and non-neighborhood locations (i.e., a type of bonding and bridging social capital) had greater likelihood of depressive symptoms compared with those with neighborhood ties only. This difference in associations may be due to fundamental differences in the selected outcome. The current study could contribute to better understanding of the specific linkage between bonding/bridging social capital and depressive mood.

Table 5
Associations of bonding and bridging social capital with depressive mood in women: multilevel binomial logistic regression model.

	Model 1		Model 2		Model 3		Model 4	
	OR	(95% CI)	OR	(95% CI)	OR	(95% CI)	OR	(95% CI)
Fixed effect								
Individual level								
Bonding social capital								
Weak	1.00				1.00		1.00	
Somewhat weak	0.83	(0.54–1.27)			0.96	(0.61–1.49)	1.00	(0.64–1.57)
Neither	0.73	(0.52–1.03)			0.88	(0.60–1.29)	0.90	(0.61–1.33)
Somewhat strong	0.75	(0.52–1.08)			0.86	(0.59–1.26)	0.96	(0.65–1.41)
Strong	0.65	(0.44–0.96)			0.68	(0.46–1.02)	0.78	(0.51–1.19)
Bridging social capital								
Weak			1.00		1.00		1.00	
Somewhat weak			0.92	(0.68–1.25)	0.94	(0.70–1.28)	0.95	(0.69–1.31)
Neither			0.82	(0.65–1.03)	0.81	(0.63–1.04)	0.83	(0.63–1.08)
Somewhat strong			0.90	(0.65–1.25)	0.89	(0.63–1.25)	0.89	(0.62–1.28)
Strong			0.89	(0.55–1.43)	0.95	(0.57–1.58)	1.06	(0.63–1.78)
General trust								
Weak							1.00	
Strong							0.53	(0.43–0.66)
Neighborhood level ^a								
Bonding social capital	0.86	(0.75–0.99)			0.87	(0.76–1.01)	0.85	(0.72–0.99)
Bridging social capital			1.13	(0.97–1.31)	1.13	(0.97–1.32)	1.15	(1.00–1.34)
General trust							1.09	(0.97–1.25)
Random effect								
Neighborhood level variance (SE)	0.031	(0.015)	0.022	(0.012)	0.021	(0.012)	0.012	(0.009)
Intra-class correlation coefficient	0.009		0.007		0.006		0.004	

CI: confidence interval; OR: odds ratio; SE: standard error.

Age, marital status, years of residence in the neighborhood, education, annual household income, smoking, body mass index, comorbidities, basic activities of daily living and higher-order competence of independence at the individual level, and population size and aging rate at the neighborhood level were adjusted for in all models.

^a Neighborhood-level social capital is defined as the proportion of people with a stronger homogeneous network (bonding social capital), stronger heterogeneous network (bridging social capital), or stronger general trust within the neighborhood. ORs associated with a change of one standard deviation in each neighborhood-level social capital are shown.

This study has some limitations. First, further examination of the validity and reliability of the measurements for bonding and bridging social capital would be useful. We cannot rule out the possibility that these items are double-barreled and oversimplified. For example, we measured homogeneous and heterogeneous network in terms of sociodemographics including age, gender, and SES in a single item. The items have a strength in that bonding and bridging social capital can be captured easily. However, we cannot identify what kinds of homogeneity/heterogeneity the respondents' network had (i.e., age, gender, or SES). This study's findings should be carefully interpreted and more robust items concerning bonding and bridging social capital should be developed (e.g., using multiple items for them). We also need to ask some questions to examine whether age, gender, and SES are sufficient components of social characteristics in measuring bonding and bridging social capital. Marital status or family structure, because it has been increasingly changing in Japan, may be another sociodemographic component (Rindfuss et al., 2004). Second, the neighborhood-level variables were created by aggregating the individual responses of only the older people living in the neighborhood. Although the study response rate was high, the target population was limited to Yabu residents aged 65 and older. Thus, to develop contextual indicators that are more genuine and reflective of reality, young and middle-aged populations should be included. Moreover, we included all neighborhoods with three or more respondents in the analysis in accordance with the process by Kouvonen et al. (2008). However, a larger number of the respondents in a neighborhood unit might more powerfully reflect the actual conditions of the neighborhood. We undertook a sensitivity analysis by running the same multilevel modeling excluding neighborhoods with fewer than 10 respondents from the analysis, and obtained similar results as those reported in this study. Third, this was a cross-sectional study. A longitudinal study is necessary to

confirm causal relationships and design an effective intervention. Fourth, the target community was small. Although the current study could provide unique findings on the linkage between neighborhood bonding and bridging social capital and depressive mood, care should be taken when generalizing these findings.

5. Conclusions

Our results showed that stronger neighborhood-level bonding social capital was associated with less likelihood of depressive mood (i.e., protective relation between neighborhood bonding social capital and depressive mood). In contrast, stronger neighborhood-level bridging social capital was associated with likelihood of depressive mood, particularly in women, which suggested that neighborhood social capital does not necessarily benefit mental health in old age. Interventions and policies that leverage neighborhood bonding/bridging social capital to improve mental health later in life should be carefully designed. Fostering bonding social capital in the neighborhood seems effective for improving residents' mental health, but approaches to build bridging social capital in the neighborhood might involve a risk of depressive mood among women. We hope our results will stimulate further discussion of the relationship between bonding/bridging social capital and mental health and provide guidelines for policies on health promotion and community development.

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Competing interests

None declared.

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今、改めて考える「高齢者のボランティア活動」の意味と課題

—プロダクティブ・エイジングの実現に向けた取り組みに関する国内調査から—

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(公財)ダイヤ高齢社会研究財団では、高齢者が地域貢献やボランティア活動に関わる意味について、計2回のシンポジウムを開催した(詳細は、ダイヤ財団新書33、34として刊行)。「シニアが拓くこれからの日本」と題した2013年のシンポジウムでは、それらの活動に関わる高齢者個人の視点から、生きがいや健康増進・介護予防などにつながる可能性が提示された。これを受けた2014年のシンポジウムでは、「都市コミュニティを救うシニアの力」と題し、高齢者への地域社会的な要請と高齢者が力を発揮するための仕組みの在り方について課題提起が行われた。両シンポジウム共に産官学民から多くの参加者があり、地域社会を維持するための住民ボランティア、その主力である高齢者の活躍に対する期待の高さを再確認するものであった。

地域社会の担い手として、これまでよりも多くの高齢者が力を発揮するための仕組みの在り方を考えることは、超高齢社会の渦中にある日本にとって重要な課題といえる。この課題意識に基づき、本稿では著者が研究委員として参画する一般財団法人長寿社会開発センター国際長寿センターによる「プロダクティブ・エイジング(生涯現役社会)の実現に向けた取り組みに関する国際比較研究」(平成25年度 厚生労働省老人保健健康増進等事業「高齢者の健康長寿を支える社会の仕組みや高齢者の暮らしの国際比較研究事業」による研究)¹⁾から、横浜市で行ったボランティアへのインタビューの結果の一部を紹介する。

高齢者とボランティア活動

欧米の老年学(gerontology)分野では、幸福な老い(successful aging)を構成する要素として「病気や病気に関連する障がいの発生可能性が低いこと」「高い水準で

の身体的・認知的機能があること」に加え、「社会活動や生産的活動に関わること」が挙げられ²⁾、社会活動参加に関する多くの知見が積み重ねられてきた。日本でも、1980年代以降、数多くの研究が行われ、主観的健康感³⁾、生きがい形成⁴⁾などの肯定的な関連が明らかにされている。近年では、高齢者を社会・地域資源ととらえるプロダクティブ・エイジングの概念の普及に伴い、多様な社会活動のなかでも「プロダクティブ・アクティビティ(有償労働、ボランティア活動、家庭内無償労働)」に焦点をあてた研究が進められている。これらにおいては、読み聞かせボランティアの効果を検証した研究⁵⁾にみられる様に、活動した高齢者個人の主観的健康感や体力が向上したといったヘルスプロモーションの効果に加え、高齢者が近隣に提供するサポートの増加といった地域社会への寄与についての効果が報告されている。

しかし、日本の高齢者の社会活動は「健康・スポーツ(33.7%)」や「趣味(21.4%)」といった自己の楽しみに関するものが多くを占め、特に「健康・スポーツ」は10年間に顕著に増加している⁶⁾。一方、「地域行事(19.0%)」「生活環境改善(9.0%)」といった他者への貢献活動に関わる割合は高いとはいえ、過去10年間でみても減少傾向にある。世界的にみてもこの割合は決して高いとはいえ、韓国、ドイツ、アメリカ、スウェーデンとの比較を行った調査⁷⁾では、これまでに全くボランティア活動(福祉や環境を改善するなど)を目的としたボランティアやその他の社会活動に参加したことの割合は、韓国(74.2%)に次いで日本(51.7%)が高い割合を占めている。この一方で、他国に比較して、それらの活動に無関心な人の割合は低く、「時間的・精神的ゆとりがない(32.2%)」と「健康上の理由、体

力に自信がない(31.5%)」など、やりたくても活動できていない状況がみてとれる。地域資源として高齢者が活動を開始し、継続していくことを可能にする、多様な活動の在り方を模索することが求められている。

本研究は、インタビュー調査から、高齢者のボランティア活動参加と促進、継続に向けた課題を明らかにすることを目的とする。

インタビュー調査の概要

調査協力者は、神奈川県横浜市で同市の健康福祉局が取り組む「横浜市介護支援ボランティアポイント(よこはまシニアボランティアポイント)事業」の登録者と「元気づくりステーション事業」に世話人として関わる65歳以上の横浜市民に協力を依頼した。

インタビューは、調査への理解が得られたあと、研究の趣旨を説明し、最終的な承諾を得たうえで、協力者の負担を考慮しながら実施した。協力者によっては、2-3名の複数でのグループインタビューや団体スタッフの同席を希望する人も存在し、希望に応じて対応した。一回のインタビューは1.5～2時間程度、調査期間は2014年1月～2月であった。

表1 インタビュー調査の概要

対象事業	調査期間	対象者
よこはまシニアボランティアポイント事業・登録者	2014.1.10 ～1.16	女性3名 男性3名
元気づくりステーション事業・世話人	2014.2.6	女性3名

「横浜市介護支援ボランティアポイント事業」、通称「よこはまシニアボランティアポイント事業」は、高齢者が横浜市内の介護保険施設等でボランティア活動を行った場合に、「ポイント」が得られ、たまった「ポイント」に応じて換金できる仕組みとして2009年10月に開始されている。高齢者本人の健康増進や介護予防、社会参加や地域貢献を通じた生きがいづくり促進をテーマとしており、ボランティア活動を通じて地域の新たな課題に気づき、その担い手として新たに活動を展開するきっかけとなることも期待されている。「よこはまシニアボランティアポイント事業」の登録者数は9,000名(2014年9月現在)を超え、増加傾向に

あるものの、市の高齢者人口の1%程度を占めるに留まっている。事業の運営管理は、横浜市の委託に基づき、かながわ福祉サービス振興会が担っている。近年、ボランティアポイントの受け入れ施設を、病院や子育て支援分野などにも展開している。

「元気づくりステーション事業」は、2012年に同局が、介護予防事業を従来の個別支援重視型から地域のつながりづくりなどを目的とした地域づくり型へと施策転換したなかで中心的な取組に位置付けられる。地域内のつながりを醸造することで互助・共助を引き出し、介護予防を行政と市民・地域の協働で進めることを目的としている。この目的に賛同して登録した65歳以上で構成される10人以上のグループに対し、自治体が運営のサポートを行っている。具体的には、保健師などが活動に関わり、講師派遣や教材の提供、自主化に向けたリーダー育成などを行っている。会場の鍵の開け閉めや準備と片付け、活動のPRや新規メンバーの勧誘などの実質的な運営は、原則的に世話人が担っている。現在、市内で98のグループが、体操、太極拳、ウォーキングなどの教室、畑作業、茶話会など多様な活動(2014年1月末現在)を展開している。

インタビュー調査の結果から

■現在のボランティア活動を開始する動機

：住居から、徒歩圏、バスを利用しても停留所2-3カ所の距離で活動している人が多くみられた。女性は、以下に示す様に介護支援ボランティア(シニアボラ)では、近親者の介護で通っていた施設に恩返しをしたいという思いから、男性は定年退職後に地元の老人会や任意の寄合などへの参加を介しての縁で施設でのボランティアを開始していた。また、元気づくりステーション事業の世話人(元気づくり)は、民生委員などとして活動してきた経験から、地域の高齢者の健康づくりや介護予防に課題意識をもっている女性達であった。他にも多様な活動を行っていたなかで自治体の担当者から声をかけられ、世話人となっていた。いずれの事業においても、高齢の女性で、他に多様なボランティアに関わり、連日の様に活動している人が多くみられた。

「主人の母が認知症で8年患ってしまして、毎日のように