Community Based Crime Prevention through Social Capital: Two Year Panel data of Kyoto City Neighbourhood Association Survey

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ABSTRACT

The main theme of this research is to describe the effect of social capital (SC) in community using two years data of Kyoto city Neighborhood Association Survey. In our previous researches we conducted the Neighborhood Association Survey in Kobe and find out that SC can give some advantage for communities to reduce incivilities and actual crime rate (arson, snatching, sneak thief, and car break-in). After that, we conducted the same survey in Kyoto in 2014 and revealed SC has significant impact on community livability to not only reduce fear for crime but also increase family friendliness and senior friendliness of community. In 2016, same survey was conducted in Kyoto. 2014 survey included 3,025 answers (response rate = 46.4%), and 2016 survey included 2,969 answers (response rate = 45.1%). In this paper, first of all, the Structural Equation Modeling (SEM) analysis was conducted to ensure the previous research model was fit to the new 2016 data with the eleven types of street crime data in 2014 (robbery, extortion, indecency assault, vandalism, motor vehicle theft, motorcycle theft, bicycle theft, snatching, vehicle load theft, vehicle parts theft, and vending machine theft) from Kyoto Police Department. After that, these two data sets were combined and used as a longitudinal panel data and conducted the panel model analysis to verify the actual cause and effect of social capital to quality of the community environment. As the panel model analysis, the fixed-effect model and the random-effect model were used to analyze this panel data. The results indicate that 1) there are five important factors of community empowerment (participation of various residents, events, community governance, interests in and attachment to community, and greetings) to enhance SC, 2) SC has significant impact on community livability to reduce fear for crime, and increase family friendliness, senior friendliness and PTA (parents and teachers association) activities, 3) the one year difference of participation of various residents, events, and greetings enriched community social capital and one year of enrichment of social capital increased comfort for families with small children and age-friendliness. These findings can be used as some tools to encourage communities to have capacity to make their own community cozier by their own.

Keywords: *template, writing style, short paper*

INTRODUCTION

In *The Death and Life of Great American Cities*, Jane Jacobs argued that “the public peace -the sidewalk and street peace- of cities .... is kept primarily by an intricate, almost unconscious, network of voluntary controls and standards among the people themselves, and enforced by the people themselves [1].” This idea told that crime can be prevented by creating environments in which residents both consciously and subconsciously participate in local social networks. Jacobs’ book was a catalyst for a number of subsequent theories on how to prevent crime and these theories became the ‘Environmental Criminology [2],’ one of the disciplines in Criminology.

Based on the Jacobs’s argument, the neighborhood association is the key. The neighborhood association is defined as “voluntary groups whose membership is drawn from a small, geographically delimited, and exclusive residential area (a neighborhood) and whose activities are multiple and are centered on that same area [3]”. In Japan, the neighborhood associations are usually called chonaikai (町内会) or jichikai (自治会). In Japanese, chonaikai (町内) means ‘inside community,’ jichi (自治) means ‘autonomy,’ and kai (会) means association. The chonaikai in urban areas are organized from several kumi (組) or han (班) which contain five to ten households. There are several chonaikai inside each elementary school district and they generally organize into

rengo-chonaikai (連合町内会) or rengo-jichikai (連合自治会). Participation in the neighborhood association is arbitrary.

Nowadays, the participation rates of the neighborhood association have declined year by year because of the declining birth rate and aging society in Japan. The board members of neighborhood associations are usually elder men in their 60s and 70s. Spurred by high economic growth, most people now work in urban areas and commute from cities and towns that they do not spend much time in. Younger, working generations who usually live in an apartment or a condominium have little connection to the neighborhood in which they live. This situation saps the neighborhood association's enthusiasm for organizing local activities [4].

This paper focused on 'Social Capital (SC)' as a proxy indicator of community basic power and revealed that community empowerment is NOT the long way around to the community peace. The environmental criminology is categorised as a primary prevention of crime. The primary prevention in the public health aims to prevent disease or injury from occurring by maintaining a healthier population and avoiding unhealthy behaviour. Since that, this paper showed that community empowerment could be one of the most important elements to make communities resilient to any kind of risks from the perspective of Jane Jacobs.

A. Previous studies

Social capital is a new word but the concept itself is not new. In the sociology field, the studies about social capital were started as social solidarity by Emile Durkheim. After Durkheim, Bourdieu focused on the influence of social relationship to the cultural reproduction. Also, Granovetter found the strength of weak ties. These findings were redefined as 'social capital' by Robert D. Putnam. In *Bowling Alone* (2000), Robert D. Putnam reformulated Jacobs' 'networks' as 'social capital' or the "connections among individuals – social networks and the norms of reciprocity and trustworthiness that arise from them." He presented empirical findings that "high levels of social capital, all else being equal, translate into lower levels of crime" [5].

The relationship between social capital and community safety and security was studied in Kobe over a period spanning more than ten years. The starting point of these studies was a follow-up to a 2004 study by the city of Kobe on community recovery and 'machi-zukuri' after the Great Hanshin-Awaji Earthquake of 1995. The city conducted a total of thirty-six grass-roots workshops with earthquake survivors and identified autonomy, solidarity and five other critical elements for life recovery from disaster. At around this time in the early 2000s, some government officers and professionals had taken interest in the applicability of Putnam's social capital theory to Japan, but there was still very little notion of how social capital could be nurtured in neighborhood communities . A study group consisting of local government officers, civilians, university students, business operators and academic experts was established to examine nine case studies of community activity. Since social capital was not a familiar concept outside of academia, the study group began by discussing measures of social capital and ways to enhance it. In summary, they concluded that having rich social capital means that people have learned to take care of, trust, help and become involved in the lives of others through the gradual development of relationships and friendships, and that social capital can be enhanced through eight specific types of activities: 1) interest in and attachment to community, 2) greetings, 3) events, 4) involvement of children, 5) participation of various residents, 6) resolving problems held in common, 7) support of public administration and 8) community governance [6].

Based on these conclusions, Tatsuki (2008) used data from the 2007 Kobe City Neighborhood and Tenants Association Survey to construct a theoretical model on the impact that social capital enrichment factors and social capital amount have on community incivility, crime risk perception, insecurity, and incidents of arson [7]. Community incivility is a broken window concept referring to the level of graffiti, juvenile loitering, littering, and other breaches of public order. Perception of risk refers to the subjective perception of the risk of becoming a victim of some kind of crime, while insecurity refers to the subjective fear of crime. As a result of structural equation model (SEM) analysis, the eight social capital-enhancing factors were consolidated into five factors: 1) diversity of resident participation, 2) community events, 3) community governance, 4) interest in and attachment to community and 5) greetings. The model explains how these five factors specify the amount of social capital, the amount of social capital specifies incivility, and incivility influences the number of arson incidents, crime risk, and fear for crime (Figure 1). It shows how efforts by community residents or activity groups to increase the five factors will enrich community social capital and lead to community safety and security both subjectively and objectively.

Matsukawa and Tatsuki (2011a) then conducted SEM to test this Tatsuki (2008) model using 2007, 2008 and 2010 data from the Kobe City Neighborhood and Tenants Association Survey, arson data from 1996 to 2009, and larceny data from 2006 to 2009 [8]. Results confirmed the stability and reproducibility of the model and newly revealed a direct effect from social capital to criminal record. Since these results were somewhat complicated, however, Matsukawa and Tatsuki used simultaneous multi-group analysis to re-test the Tatsuki (2008) model with the same obtained data [9](2011b). The model became more stable and the identified causal

coefficients were found to be identical across the three separate year samples, suggesting that they were very accurate estimates for future intervention planning (Figure 2).

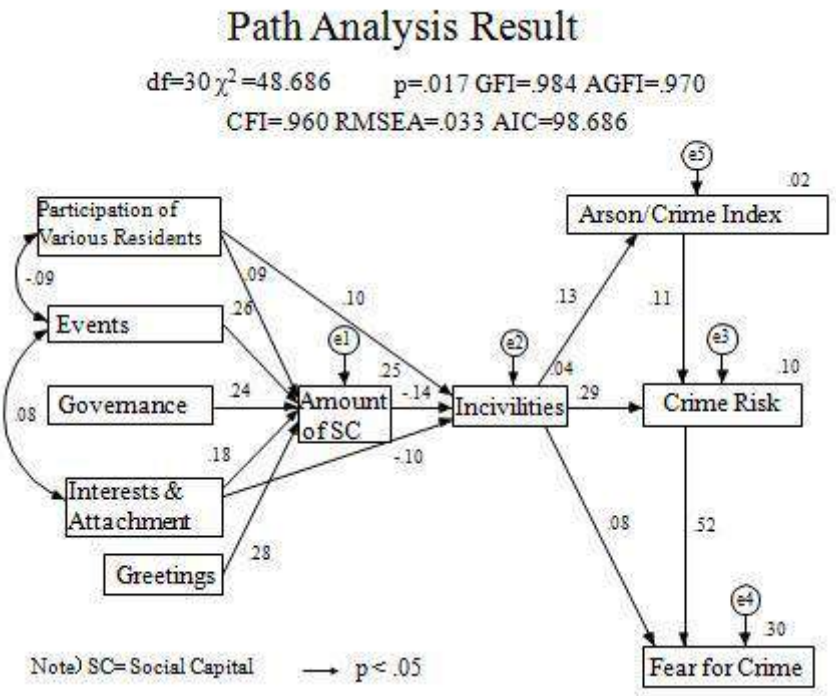

Figure 1: Basic SEM Model

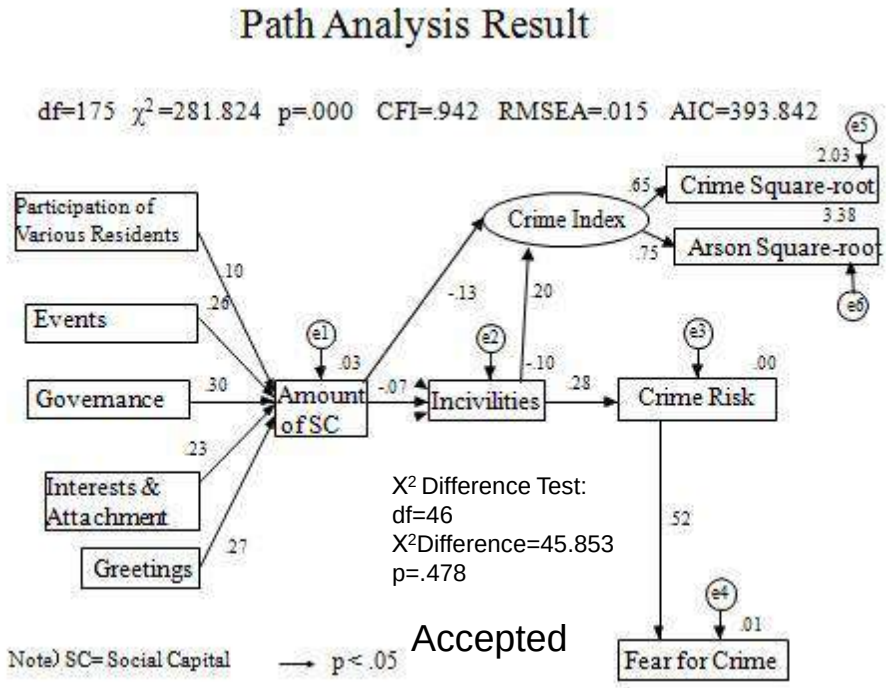

Table 1: Multi-Group Model

METHODS

A. Target

Kyoto was the ancient capital of Japan for over 1,000 years and, having escaped air raids during World War II, it has retained many of its old neighborhoods, temples, shrines, streets, and other physical characteristics. The

Old Kyoto area is called Rakunai (洛内) while other parts of Kyoto are referred to as Rakugai (洛外) . The Rakunai area is special because the chonaikai have long histories and are very autonomous and well-funded. The smallest unit of community is a kind of chonaikai called ryogawacho (両側町), which literally means neighborhood on both sides of the street. In the Rakunai area, the oldest and smallest ryogawacho consist of about 20 households across the street from each other. The chonaikai also group together in larger community associations based on elementary school districts, as is the case in most of Japan. Aging populations and a diminishing number of children has caused many elementary school districts to merge, but in Kyoto, especially in the Rakunai area, the old elementary school districts (moto gakku (元学区)) have been retained as the basis for community associations. Kyoto is also unique in that 10 percent of residents are students. With twenty-six colleges and universities in the city, Kyoto is second only to Tokyo in the number of higher education institutions (94 colleges and universities in Tokyo's 23 wards).

B. Data

There are two years (2014 and 2016) of data set of the Neighborhood Association Survey of Kyoto. About 2014 survey, of all 6,524 chonaikai in Kyoto, responses were collected from the 3,025 leaders of chonaikai (response rate = 46.4%). About 2016 survey, responses were collected from the 2,969 leaders out of 6,580 (response rate = 45.1%). These response rates are very high compared to other social surveys in Japan, which recently average around 30%.

Crime data was drawn from Kyoto Police records on eleven types of street crime (robbery, extortion, indecency assault, vandalism, motor vehicle theft, motorcycle theft, bicycle theft, snatching, vehicle load theft, vehicle parts theft, and vending machine theft) and three types of burglary theft (break-in while resident is absent, sleeping, or unaware) in 2015.

C. Measures

The both Neighborhood Association Survey of Kyoto consisted of 48 questions divided into seven measures: 1) relationship between neighborhood associations and apartment complex residents (6 items), 2) five social capital enrichment factors (participation of various residents, events, community governance, interest in and attachment to community, and greetings; 16 items), 3) amount of social capital (8 items), 4) community incivility (6 items), 5) fear of crime (4 items), 6) family friendliness (4 items) and 7) senior friendliness (4 items). In this paper, measure 2) to 7) were used.

D. Analysis

In this paper, two types of analysis were conducted. First analysis was Structural Equation Modeling (SEM) analysis using 2016 survey data and 2015 crime data. The SEM analysis includes both factor analysis and path analysis. Since that, the SEM analysis enables complex analysis which includes endogenous variables, intervening variable, and more than one dependent variables. Before conducting the analysis, the question items were quantified by using principal component analysis, factor analysis and optimal scaling.

Second analysis was Panel Model analysis using 2014 and 2016 survey data as the panel data set. The panel data is a multi-dimensional data involving measurements over time which traceable each individual in each measurement time. Panel data should contain observations of multiple phenomena obtained over multiple time periods for the same firms or individuals. One of the advantage for using panel model analysis is that allows to examine causation more accurately from secular change of both explanatory variable and dependent variable within the individual. As the panel model analysis, the fixed-effect model and the random-effect model were used to analyze this panel data. The fixed effects model is the model parameters are fixed. Since that, all individual effects are removed from model. On the other hand, the random effects model is the model assumes that all individual effects are normally distributed. This model allows the individual effects inside of the error effect but the model can estimate the parameters with the smallest variance. So, in the panel model analysis, both models are used and select the optimal model according to the results testing by the Hausman test.

For principal component analysis, factor analysis, optimal scaling and SEM analysis, SPSS ver.24 and Amos ver.24 by IBM are used. For Panel Model analysis, STATA14 is used.

RESULTS

A. Result1: Structural Equation Modeling

SEM analysis was conducted by using the five community empowerment factors, the amount of social capital, community incivility, fear for crime, family friendly community, senior friendly community and PTA (parents and teachers association) activities from 2016 survey data, and the number of street crime in 2014 from Kyoto Police. The result (Figure 3) indicated that 1) the five community empowerment factors positively related to social capital, 2) participation of various residents positively related to community incivility and greeting negatively related to community incivility), 3) social capital negatively related to the number of street crime and positively related to community livability in terms of reducing fear of crime and increasing family friendliness, senior friendliness and PTA activities, 4) community incivility positively related to the number of street crime and family friendliness of community, 5) the number of street crime negatively related to community livability in terms of reducing fear of crime and increasing family friendliness, senior friendliness and PTA activities.

These five findings suggest that while social capital has some potential not only to directly reduce street crime but also enhance community livability for many different directions. This perspective definitely fit the basic idea of primary prevention in public health. The primary prevention aims to prevent disease or injury before it happen. So, social capital can be an important factor to enhance the community fundamental capacity.

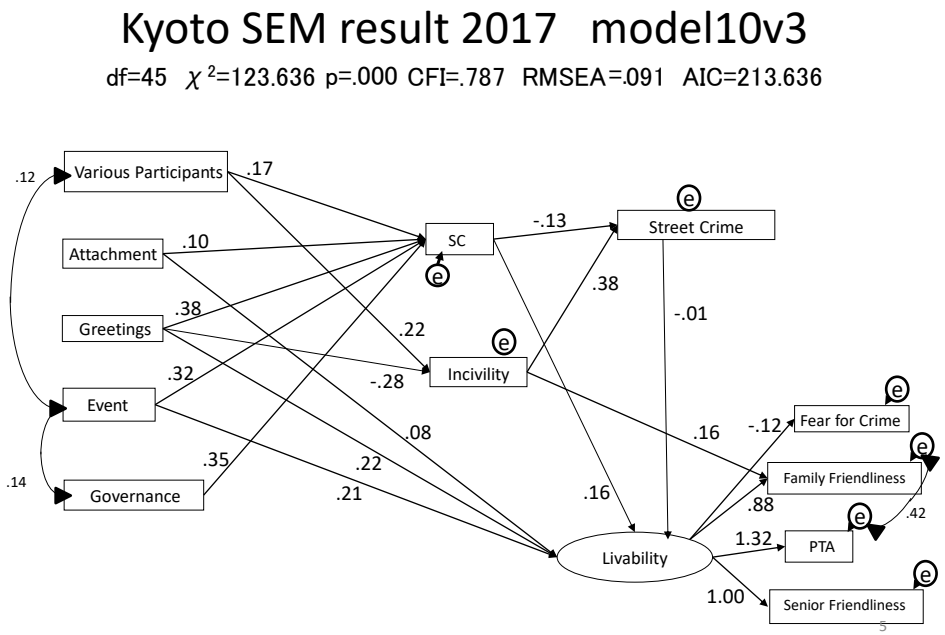

Figure 3: Result of SEM Analysis

B. Result2: Panel Model

Since these data were panel data, variables should be comparable each year. All variables (participation of various residents, events, community governance, interest in and attachment to community, greetings, social capital, community incivility, fear of crime, family friendliness, and senior friendliness) were calculated by dividing total score of items by total maximum score of items and multiplying by 100. By this procedure, all variables had maximum values of 100, so they could be compared beyond years. In this analysis, three models were considered (Table1), 1) the first model in which social capital as a dependent variable and five social capital enrichment factors as an explanatory variable, 2) the third model in which family friendliness as a dependent variable and five social capital enrichment factors, social capital and community incivility as an explanatory variable, and 3) the fourth model in which senior friendliness as a dependent variable and five social capital enrichment factors, social capital and community incivility as an explanatory variable. In the following section, each model would be described in detail.

The first model showed how community empowerment enhance social capital. About this model, the fixed effect model was selected by Hausman testing (chi-squared=36.25, p=0.000). From this result, participation of various residents and greetings had significant effect to increase social capital in community. Since the data was

2014 and 2016 panel data, the result also implied these two variables had short term effect to increase social capital. The second model showed what makes community more family friendly. About this model, the random effect model was selected by Hausman testing (chi-squared=11.01, p=0.107). From this result, events and social capital had significant effect to make community more family friendly. On the other hand, community governance had some effect to decrease family friendliness. The third model showed what makes community more senior friendly. About this model, the fixed effect model was selected by Hausman testing (chi-squared=28.86, p=0.000). From this result, greetings and social capital had significant effect to make community more senior friendly. On the other hand, community incivility had significant effect to decrease senior friendliness. In addition, the correlation analysis was conducted for checking the multicollinearity (Table2).

Table1: Result of Panel Model Analysis

VARIABLES	SC	Family	Senior
Various Participants	0.156***	-0.0130	0.00527
	(0.0600)	(0.0526)	(0.0575)
Event	0.0176	0.145***	0.0949
	(0.0646)	(0.0534)	(0.0611)
Governance	0.0725	-0.101*	-0.0297
	(0.0691)	(0.0608)	(0.0652)
Attachement	0.0965	0.0481	-0.0865
	(0.0631)	(0.0482)	(0.0598)
Greeting	0.329***	-0.0156	0.196***
	(0.0661)	(0.0568)	(0.0662)
SC		0.450***	0.261***
		(0.0576)	(0.0660)
Incivility		0.0340	-0.113**
		(0.0433)	(0.0532)
Constant	15.93***	26.05***	39.03***
	(4.783)	(4.818)	(5.054)
Observations	417	417	417
R-squared	0.366	0.214	0.254
Number of id	209	209	209

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 2: Result of Correlation Analysis

	Various Participants	Event	Governance	Attachement
Event	-0.2631	1		
Governance	-0.0645	-0.5068	1	
Attachment	-0.4232	-0.0392	-0.2261	1
Greetings	-0.0184	-0.2398	-0.1749	-0.0653

CONCLUSIONS

This paper showed how community social capital makes community more better and secure. The important point was community social capital san be enhanced by residents' energy. As Jacobs' said, the resident' have rights and duty to make their community more better and actually they are capable enough to do so.

In this paper, there was only street crime data in 2014. If it is possible to add the another year's street crime data, the panel model analysis with the objective variables. It is important to continuously conduct the survey and keep panel data to follow the change. These panel data could be a strong tool to encourage community association to keep and improve their activities.

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