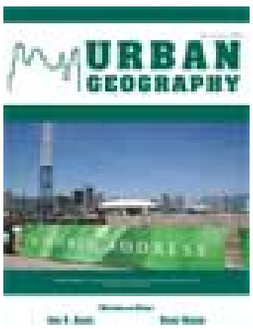

Urban Geography

ISSN: 0272-3638 (Print) 1938-2847 (Online) Journal homepage: http://www.tandfonline.com/loi/rurb20

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To cite this article: Yuqi Liu, Fulong Wu, Ye Liu & Zhigang Li (2016): Changing neighbourhood cohesion under the impact of urban redevelopment: a case study of Guangzhou, China, Urban Geography, DOI: 10.1080/02723638.2016.1152842

To link to this article: http://dx.doi.org/10.1080/02723638.2016.1152842

Published online: 22 Mar 2016.

URBAN GEOGRAPHY, 2016
http://dx.doi.org/10.1080/02723638.2016.1152842

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Changing neighbourhood cohesion under the impact of urban redevelopment: a case study of Guangzhou, China

Yuqi Liu [a], Fulong Wu [a], Ye Liu [b,c] and Zhigang Li [d]

[a]Bartlett School of Planning, University College London, London, United Kingdom; [b]Department of Geography and Resource Management, The Chinese University of Hong Kong, Shatin, N.T., Hong Kong SAR; [c]Shenzhen Research Institute, The Chinese University of Hong Kong, Shenzhen, China; [d]School of Urban Design, Wuhan University, Wuhan, China

ABSTRACT

Large-scale urban redevelopment has caused the breakdown of traditional social bonds in Chinese cities. To date, very few studies have attempted to delve into the impact of this urban redevelopment on neighbourhood cohesion. Using data collected from questionnaires conducted in 20 urban villages and 1 urban village redevelopment neighbourhood in Guangzhou, this paper examines the impact of urban village redevelopment on the restructuring of neighbourhood attachment, neighbourly interaction, and community participation—three dimensions of neighbourhood cohesion. Results of a path analysis show that, overall, neighbourhood cohesion declines after redevelopment occurs, and that the sources of neighbourhood cohesion differ between urban villages and the redevelopment neighbourhood. Our findings show that after redevelopment, neighbourhood attachment becomes more influenced by residential satisfaction but less by neighbourly contacts, and community participation becomes less subject to neighbourly interaction and neighbourhood attachment. Such changes occur as a result of the differentiation between social groups and the concurrence of environmental restructuring and demographic reconstruction during the process of urban village redevelopment.

ARTICLE HISTORY
Received 29 December 2014
Accepted 28 January 2015

KEYWORDS
Neighbourhood cohesion; urban village redevelopment; path analysis; Guangzhou; China

1. Introduction

Against the backdrop of globalization, neo-liberalisation and the retrenchment of the state, cities in Western countries have faced the threat of increasing social inequality, instability, and insecurity over the last three decades. The issue of neighbourhood cohesion has thus become a major concern for policymakers, academics, and the public, as neighbourhood cohesion is considered a foundation for social cohesion (Forrest & Kearns, 2001; Gaffikin & Morrissey, 2011; Robinson, 2005; Van Beckhoven & Van Kempen, 2006). A number of initiatives have been implemented and aimed at strengthening neighbourhood cohesion and cementing neighbourly relations in recent years, especially for neighbourhoods considered deprived, such as "New Deal for Communities" in England ("The New Deal for Communities Experience: A Final

CONTACT Yuqi Liu yuqi.liu.13@ucl.ac.uk; Fulong Wu fulong.wu@ucl.ac.uk; Ye Liu liuye@cuhk.edu.hk; Zhigang Li zhigangli@whu.edu.cn

Assessment"; Department for Communities and Local Government 2010), "From Special Needs Neighbourhood towards Power Neighbourhoods" in Netherlands ("Action Plan Power Neighbourhoods: From Special Needs Neighbourhood Towards Power Neighbourhoods"; Ministry of Housing, Spatial Planning and the Environment, 2007) and "Hoping VI" in the United States ("Hoping VI", Department of Housing and Urban Development, 1993). Similarly, cities in China have undergone dramatic transformations since the inception of economic reforms, which has undermined the traditional basis of social solidarity (Ma, 2002; Wu, Xu, & Yeh, 2006). For example, the dismantlement of the work unit system has weakened the role of the state in urban residents' social life (Huang, 2006), while the commodification of housing along with the surge of residential mobility has led to the rise of residential segregation and stratification (Heberer & Göbel, 2011; Li & Wu, 2008). Under such circumstances, traditional neighbourhoods with intense neighbourly interaction and strong cohesiveness have been gradually replaced by commodity neighbourhoods with weak neighbourly bonds and a lack of cohesion (Forrest & Yip, 2007). Large-scale urban redevelopment projects launched by municipal governments have further exacerbated the loss of neighbourhood cohesion and the weakening of neighbourhood ties (Wu and He, 2005). While the detrimental social consequences of large-scale urban redevelopment have been widely covered by the media, very few academic studies have attempted to delve into the impact of urban redevelopment on the social life of urban residents.

Prior research on the issues of neighbourhood cohesion in relation to urban redevelopment has been carried out mainly in advanced capitalist economies. As China's cities differ from their Western counterparts in terms of their historical trajectories, governance structures, and socio-cultural configurations, the impacts of neighbourhood redevelopment on cohesion are supposed to differ between China and the West. For example, unlike displaced residents in Western cities who become more socially isolated, more economically disadvantaged, and more unsatisfied with their living conditions after massive urban renewal (Gibson, 2007; Newman & Wyly, 2006), displaced residents in Shanghai usually enjoy better housing conditions and neighbourhood facilities than before the demolition, therefore being satisfied with their new living environment (He & Wu, 2007; Li & Song, 2009; Wu, 2004). Another example is what we found in our case study of *Liede*, a redeveloped urban village in Guangzhou. Our findings have shown that the strengthening of villagers' social group belonging and the improvement of living environment contribute to the increase in indigenous villagers' neighbourhood cohesion, which seldom happens in Western developing countries. The difference between Chinese cities and their Western counterparts requires a thorough investigation on the impact of urban redevelopment on neighbourhood cohesion in the Chinese context. On one hand, existing Western theories regarding neighbourhood cohesion provide a useful framework for us to study the issues of neighbourhood cohesion within the context of urban redevelopment in China. On the other hand, we can test the applicability of the existing theories gleaned from Western experiences to Chinese cities by using our case studies about urban village redevelopment in Guangzhou.

Using data collected from surveys conducted in 20 urban villages and 1 urban village redevelopment housing neighbourhood in Guangzhou in 2010–2013, this paper aims to examine the impact of urban village redevelopment on the restructuring of

neighbourhood cohesion. Drawing inspiration from Kearns and Forrest's (2000) notion of social cohesion, we decompose neighbourhood cohesion examined in this study into three dimensions: neighbourhood attachment, neighbourly interaction, and community participation. (The rationale for decomposing neighbourhood cohesion into these three dimensions will be elaborated on in Section 2). We restrict our study to neighbourhoods associated with urban village redevelopment only, partly because the most recent wave of urban renewal in China's large cities is centred on the demolition of urban villages, also because urban village redevelopment neighbourhoods differ from any other existing redevelopment neighbourhoods in China's cities, in terms of population composition, property ownership, and community governance (Li, Lin, Li, & Wu, 2014), and also because it is likely to generate problems and conflicts inside newly redeveloped urban village communities[1]. In this paper, we try to answer the following questions: what are the relationships between different dimensions of neighbourhood cohesion; what are the influences of redevelopment on the neighbourhood cohesion in urban village; to what extent do the mechanisms of neighbourhood cohesion vary among different social groups. This paper contributes to the literature on neighbourhood cohesion in China by first investigating the impact of redevelopment, in particular urban village redevelopment on the restructuring of neighbourhood cohesion and by applying path analysis techniques to the analysis of neighbourhood cohesion. (The rationale for using path analysis in this research will be elaborated on in Section 4.2.)

The remainder of this paper is organized as follows. The next section provides a brief review of the literature on neighbourhood cohesion and its relationship to urban redevelopment. Section 3 systematically discusses the possible impact of urban village redevelopment in particular on neighbourhood cohesion in the Chinese context. This is followed by a clarification of the data and methods used in the empirical analysis. After that, we provide a descriptive account of the extent of neighbourhood attachment, neighbourly interaction and community participation in neighbourhoods before and after urban village redevelopment and examine factors that lead to their change through path analysis. The paper concludes with a summary of key findings.

2. Literature review: social cohesion at the neighbourhood level

Neighbourhood cohesion has traditionally been discussed under the rubric of social cohesion (Forrest & Kearns, 2001; Friedkin, 2004; Kearns & Forrest, 2000; Van Kempen & Bolt, 2009). The research on social cohesion originated from academic and social concerns into relieving the social tension caused by economic transformation and class divisions inherent in capitalist society. For example, Tonnies (1887/1957) indicated that undeveloped societies should utilize individual's collective sense of loyalty to promote cohesion, while the advanced societies should strengthen external social control to prevent potential racial and class based conflicts. Durkheim (1893/1997) proposed two types of social solidarity: mechanical and organic solidarity. While the notion of mechanical solidarity refers to social cohesion coming from the homogeneity of members, the notion of organic solidarity refers to social cohesion based on the interdependence among individuals.

So far there exists no consensus among social scientists on the definition and the constitute dimensions of social cohesion. For example, Friedkin (2004) attempted to

reconcile the various definitions by highlighting the multi-scalarity of social cohesion at both individual and group levels. He argued that theories of social cohesion should account not only for an individual's group membership attitudes and behaviours but also how such membership attitudes and behaviours are shaped through interaction between group members. Whereas sociologists and social psychologists tend to focus more on group cohesiveness and the social cohesion of particular types of groups (Friedkin, 2004), students of urban studies tend to place the discussion of social cohesion within a multi-scale framework (i.e. national, city, neighbourhood) (Forrest & Kearns, 2001; Kearns & Forrest, 2000). In their influential work, Kearns and Forrest (2000) assert that "a cohesive society 'hangs together'; all the component parts somehow fit in and contribute to society's collective project and well-being; and conflicts between societal goals and groups, and disruptive behaviours, are largely absent or minimal". Based on the above definition, they broke down the concept of social cohesion further into five different dimensions: territorial belonging and identity, social networks and social capital, common values and a civil culture, social order and social control, and social solidarity and reductions in wealth disparities (Kearns & Forrest, 2000). This conceptual framework has been adopted by some scholars in their empirical studies about neighbourhood cohesion in the United Kingdom and Netherlands (Dekker & Bolt, 2005; Forrest & Kearns, 2001; Van Beckhoven & Van Kempen, 2006). In this study, we use Kearns and Forrest's (2000) definition of social cohesion, focusing on three particular dimensions relevant to neighbourhood matters: territorial belonging, social networks, and a civil culture.

Accordingly, this study operationalized neighbourhood cohesion into three indicators: neighbourhood attachment, neighbourly interaction, and community participation. *Neighbourhood attachment* refers to the affective bonds cultivated between residents and their neighbourhood (Hidalgo & Hernández, 2001; Relph, 1976; Tuan, 1977, Williams et al., 2010). These bonds are nourished by social connections (e.g. neighbourly interactions, belongingness to a place) and functional dependency (e.g. people's usage of neighbourhood facilities) (Hidalgo & Hernández, 2001; Scannell & Gifford, 2010). *Neighbourly interaction* is defined as the dynamic interaction happening among residents living in the same neighbourhood (Dekker, 2007; Forrest & Kearns, 2001). It can be subdivided into informal (e.g. daily greeting, chatting, and home visiting) and formal interactions (e.g. the membership of social groups or neighbourhood organizations) (Brown, Perkins, & Brown, 2003; Woolever, 1992). *Community participation* refers to residents' participation in the decision-making process or other public activities, which have a positive effect on the well-being of their neighbourhood (Hays & Kogl, 2007; Taylor, 2007).

Neighbourhood attachment, neighbourly interaction, and community participation are highly interrelated realms (Friedkin, 2004; Kearns & Forrest, 2000; Van Beckhoven & Van Kempen, 2006; Van Kempen & Bolt, 2009). First, residents who have frequent interactions with neighbours tend to show a strong attachment to their neighbourhoods, as they may develop a sense of security, comfort, and social order through daily interactions with neighbours (Brown et al., 2003; Dekker, 2007; Forrest & Kearns, 2001; Raymond, Brown, & Weber, 2010). Second, a neighbourhood with a densely knit neighbourhood social network is conducive to increased community participation. This is because frequent interactions among neighbours may help an individual to

accumulate social resources and acquaint himself/herself with the surroundings, therefore enabling them to participate in community affairs (Fu & Lin, 2014; Zhu, 2015). Third, residents tend to participate actively in community affairs when they feel attached to the surrounding environment and have many friends living in the same neighbourhood, as this creates a sense of obligation to the improvement of the well-being and conditions of the community where they reside (Dekker, 2007; Dekker & Bolt, 2005; Zhu et al., 2012).

Urban redevelopment generally leads to the reconstruction of the built environment and the relocation of original residents, which leads to substantial weakening of existing neighbourhood attachment and neighbourly relationships (Fried, 2000; Manzo, Kleit, & Couch, 2008; Kleinhans & Kearns, 2013; Turcu, 2012). For example, a survey carried out in Portland indicated that those forced to relocate due to urban regeneration projects had little attachment to their new neighbourhoods and suffered from the loss of their original social ties (Gibson, 2007). Another survey conducted in New York showed that those who moved back to their previous neighbourhoods after redevelopment suffered from a sense of disorientation and isolation (Newman & Wyly, 2006). Moreover, the detrimental effect of urban redevelopment appears to vary among different social groups in low-income neighbourhoods; after the large-scale redevelopment, resettled residents are more likely than newly arrived residents to be subject to social disturbance (Clampet-Lundquist, 2010; Curley, 2006; Goetz, 2013). While resettled residents tend to have little contact with new residents as they still rely on former neighbourly relations for social support, new residents rarely seek social support through either current or former neighbourly relationships (Clampet-Lundquist, 2010; Curley, 2006).

3. The effect of urban village redevelopment on neighbourhood cohesion in China

Building a cohesive neighbourhood is not an exotic idea in China. The ideology of Confucianism emphasizes the necessity of a cohesive environment and the importance of mutual trust, neighbourly support, and virtuous mores in community development (Legge, 2009) [2]. Traditional rural villages in China have as a feature strong and well consolidated neighbourhood cohesion (Fei, 1946). In these rural communities, a long-established self-supporting rural economy (*zi ji zi zu*) along with a system of self-governance generated a "society of acquaintance (*shu ren she hui*)" (Fei, 1946). In particular, traditional Chinese social networks, which are characterized by "the pattern of different order" (*cha xu ge ju*), are based on the closeness of relationships—consanguinity, geo-proximity, and economic relation between individuals (Fei, 1946). As villagers live, work, and socialize in an enclosed place for their whole life, they form a naturally created community with strong neighbourhood attachments and frequent neighbourly interactions (Yang, 1945). The number of the aforementioned rural communities throughout China has diminished rapidly within the context of rapid urbanization in recent decades. In large cities, the rapid expansion of urban built-up areas has generated a considerable number of urban villages (*chengzhongcun*), which evolved from the rural villages at the former periphery of the city, now surrounded by newly built urban areas.

The formation of urban villages has brought about fundamental changes in residential environment and social space in these villages (Li & Zhang, 2011; Wang & Murie, 2011; Zhang, 2011; Zhang, Zhao, & Tian, 2003). Two social groups have emerged becoming the primary residents during this process: the first group is indigenous villagers, who were peasants prior to farmland requisition and who nowadays earn a living by renting out their self-built houses; the second group is tenants who are mainly consisted of migrant workers from the countryside, who rent rooms in these urban villages to take advantage of the latter's low rents and easy accessibility. Although these two social groups have left agricultural work and currently reside in the cities, they still keep their traditional earth-bound social and cultural characteristics, such as close-knit social networks with their fellow villagers (Li, 2004; Liu, Li, Liu, & Chen, 2015). As for indigenous villagers, they still have a strong attachment to where they live and actively participate in village affairs as shareholders of the village's collective economy, and their traditional place-based and kinship-based social networks remain relatively intact and powerful (Li, 2004). In contrast, migrant worker tenants in urban villages, that is, external villagers have less attachment to the neighbourhood and rarely participate in village affairs, as they generally regard the neighbourhood as a temporary place of stay (Li & Wu, 2013; Wu, 2012). Their social relations in the neighbourhoods are constrained to relatives and companions from their native lands, and their interactions with indigenous villagers and other tenants tend to be infrequent and superficial (Lin, De Meulder, & Wang, 2011; Liu, Li, & Breitung, 2012; Wang, Zhang, & Wu, 2015; Wu & Logan, 2015).

In order to capitalize land and create a "governable space" in these informal habitats, municipal governments in Chinese large cities have launched large-scale urban village redevelopment projects over the past few years (Wu, Zhang, & Webster, 2013). In the cities of southern China such as Guangzhou and Shenzhen, indigenous villagers are given the choice of either monetary or in-kind compensation for the demolition of their self-built houses, and most villagers prefer the latter mode of compensation (Hao, Sliuzas, & Geertman, 2011; Lin, De Meulder, & Wang, 2012; Tian, 2008; Wu et al., 2013). After the demolition, a number of high-rise residential buildings are constructed at the same site, and the apartment units of these buildings are allocated to indigenous villagers according to the law-recognized floor area of their demolished village houses (Lin, 2015). This form of urban village redevelopment has brought about a fundamental change to the neighbourhood: on one hand, the neighbourhoods after redevelopment are not different from commodity housing neighbourhoods in terms of the built environment, public facilities, and property management; on the other, as the redevelopment leads to a substantial increase in the rental rates of the neighbourhood, poor rural migrants who previously lived in the urban villages are replaced by more well off tenants with higher spending power (Chen & Hoy, 2011; Chen, 2012b; Li et al., 2014; Wu et al., 2013).

It should be noted that, in these redeveloped neighbourhoods, substantial differences exist between indigenous villagers and newly moved-in tenants especially with regards to their status, values, norms, identities, customs, and lifestyles. While indigenous villagers still regard themselves as "peasants" and adhere to their own pre-established norms, values and customs, newly moved-in tenants share the same cultural and socio-psychological characteristics with other urbanites (Forrest & Yip, 2007; Zhu et al.,

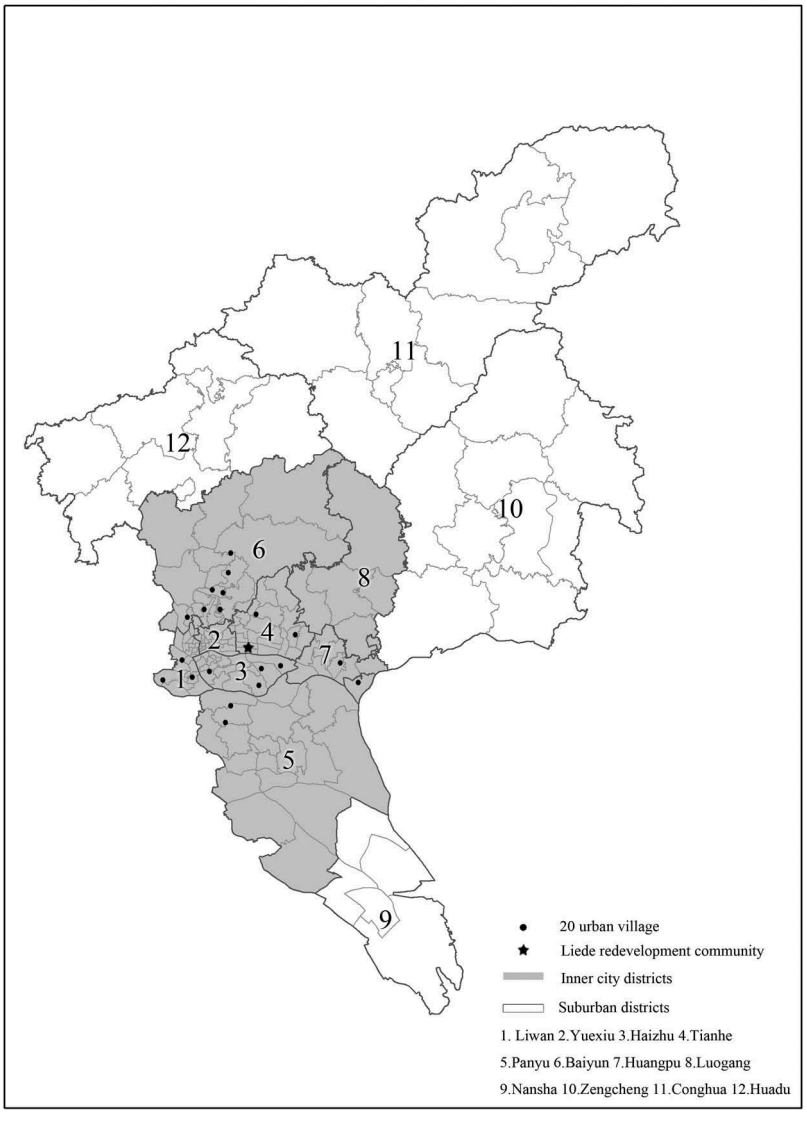

Figure 1. Location of sampled sites in Guangzhou. Source: Authors.

2012). Therefore, it is necessary to differentiate between indigenous villagers and newly moved-in tenants when analysing changes in neighbourhood cohesion.

4. Data and methods

4.1 *Data collection*

This study sought to compare pre-redeveloped urban villages and redeveloped neighbourhoods in Guangzhou (Figure 1). For the pre-redevelopment neighbourhoods, we selected a random sample of 20 out of 137 urban villages located in Guangzhou's inner-city districts and conducted a questionnaire survey in these villages between November

and December in 2010. For the post-redevelopment neighbourhoods, we carried out a questionnaire survey in *Liede* Community, the only finished urban village redevelopment housing project in Guangzhou at the time of writing this paper, between March and May in 2013[3]. These two sets of data are comparable for the following two reasons. First, although there was over a two-year interval between our two surveys, the structural and psychological factors influencing neighbourhood attachment, neighbourly interaction, and community participation in the urban villages did not change substantially. Second, the samples collected in our urban village survey are supposed to represent all urban village residents living in Guangzhou's inner-city districts, as we adopted a random sampling technique to choose 20 urban villages. Third, we used the same sampling frame, sampling technique, and questionnaire administration mode in both surveys. Specifically, in each sampled neighbourhood, only those aged 18 or above and living in the neighbourhood for more than one year were included in the sampling frame. Sampled households were selected at fixed intervals according to the door number, and only one respondent was sampled randomly within the selected household. The survey was conducted in a face-to-face manner. Therefore, it is possible to pool together these two sets of data and based on which to make a comparison between the urban villages and the *Liede* Community.

Admittedly, the ideal approach to examine the impact of redevelopment is to follow the change of one neighbourhood rather than to compare two different sets of neighbourhoods. However, this approach is not feasible at the time of collecting data. First, we were not able to collect data about *Liede* village before the redevelopment, as this village had been demolished at the time of first round of survey (i.e. the late 2010). Second, *Liede* Community was the first and the only finished village redevelopment housing project in Guangzhou at the time of second round of survey (i.e. the mid-2013). Therefore, at the time of writing this paper, we were not able to find an urban village in Guangzhou, which was available for tracking survey.

Finally, 400 questionnaires were collected through the urban village survey, and 271 questionnaires were collected through the *Liede* survey. In addition to questionnaire survey data, qualitative data were collected between March 2011 and July 2013 through participant observation and 35 in-depth interviews with village cadres and residents.

4.2 *Path analysis*

A path analysis was preferred to a simple regression analysis because the former is able to specify causal relations among a set of variables and to decompose the relations into both direct and indirect components (Kline, 2011; Lleras, 2005)[4]. The relationships among the three dimensions of neighbourhood cohesion and between neighbourhood cohesion and individual/structural factors are elaborated as follows. First, an individual's attachment to his/her neighbourhood is assumed to be influenced by his/her neighbouring activities and residential satisfaction, and his/her interaction with neighbours is assumed to be affected by his/her residential satisfaction (Kasarda & Janowitz, 1974; Tuan, 1974). Second, an individual's willingness to participate in community activities is supposed to be influenced by his/her neighbourhood attachment and neighbourly interaction (Dekker, 2007; Hays & Kogl, 2007; Marschall, 2001; Taylor,

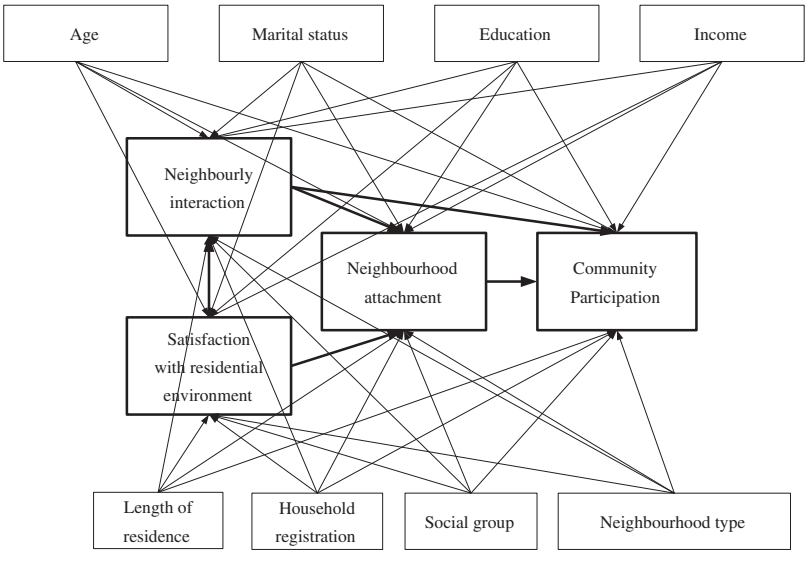

Figure 2. Conceptual model predicting neighbourhood attachment, neighbourly interaction, and community participation.

2007). Third, neighbourhood attachment, neighbourly interaction, and community participation may not only be closely related to each other, but are also determined by an individual's personal characteristics (e.g. age), previous experience (e.g. length of residence), and various structural constraints (e.g. household registration status) (Dassopoulos & Monnat, 2011; Dekker, 2007; Hays & Kogl, 2007; Taylor, 2007). Most importantly, as indicated previously in this article, each dimension of neighbourhood cohesion is hypothesized to differ between neighbourhoods (i.e. urban villages versus *Liede* Community) and between social groups (i.e. indigenous villagers versus tenants).

Figure 2 illustrates a conceptual model for the relationships among three dimensions of neighbourhood cohesion and between neighbourhood cohesion and individual/structural factors. This model includes four endogenous variables (neighbourhood attachment, neighbourly interaction, community participation, and residential satisfaction) and eight exogenous variables. We analysed the model by using SPSS AMOS 19.0 and estimated path coefficients with the maximum likelihood method.

4.3 *Endogenous and exogenous variables*

There are four endogenous variables in this research, including the three dimensions of neighbourhood cohesion, that is, neighbourhood attachment, neighbourly interaction, community participation, and residential satisfaction. In the questionnaire surveys, respondents were asked to indicate the extent to which they agreed or disagreed with a series of statements related to neighbourhood attachment, neighbourly interaction, and community participation (Dekker, 2007; Forrest & Yip, 2007; Zhu et al., 2012). With reference to neighbourhood attachment, respondents were responded to the statement "I feel attached to the neighbourhood", and for neighbourly interaction, "I

know many neighbours in the neighbourhood". To deduce the level of community participation, interviewees were responded to the statement "I often participate in community social activities". A five-point Likert scale ranging from "strongly agree" to "strongly disagree" was utilized. To gain an understanding into an individual's satisfaction with the residential environment, the respondents were asked to rate, on a five-point scale ranging from "very satisfied" to "very dissatisfied," their satisfaction with each of 12 aspects of residential environment, including the quality of housing, educational facilities, recreational facilities, cleanliness, and security and property management. An overall satisfaction index ranging from 1 to 5 was calculated as the mean of all the ratings.

We further inputted exogenous variables into the model: age, a continuous variable; marital status, a binary variable, = 1 if married, = 0 if single, divorced or widowed; education, a continuous variable, years of education; income, a continuous variable, monthly household income per capita; household registration, a binary variable, = 1 if having Guangzhou *hukou* status, = 0 otherwise; length of residence, a continuous variable, years of residing in the neighbourhood (including years before the redevelopment for the case of *Liede* Community); neighbourhood type, a binary variable, = 0 if living in the *Liede* Community, = 1 if living in 1 of the 20 sampled urban villages; and social group, a binary variable, = 0 if indigenous villagers, = 1 if tenants.

It should be noted that we classified our respondents into two social groups based on their housing tenure. In fact, in all urban villages (including *Liede* village), only indigenous villagers are entitled to the use rights of collectively owned land for housing construction (*zhai ji di*), and it is illegal to transfer the *zhai ji di* to those who are not affiliated to the village collective economy (He, Liu, Wu, & Webster, 2010; Zhang et al., 2003). Moreover, as renting out part of their houses represents a major source of livelihood for indigenous villagers, there is no impetus for them to sell their houses on the market. For these reasons, we considered the indigenous villagers and their families as homeowners, and those who rent in the neighbourhood as tenants.

5. Descriptive statistics

5.1 *Exogenous variables*

The upper panel of Table 1 summarizes the statistics of six exogenous variables. We particularly focus on how they differ between indigenous villagers and tenants and between urban villages and *Liede* Community. First, in both types of neighbourhoods, the villagers tended to be older than the tenants and were more likely than the latter to be married. Second, with regards to their socio-economic status, while the tenants had nearly the same educational attainment and income level with the villagers in the urban villages, the former group had substantially higher educational attainment (14.76 years vs. 11.81 years) and income level (7774.10 yuan vs. 4267.66 yuan) than the latter group in the *Liede* Community. Third, with respect to previous experiences, on average, villagers (35.4 years and 27.12 years) had lived in the neighbourhood for a much longer time than tenants (4.58 years and 2.54 years). Fourth, as for *hukou* status, 100% of villagers held Guangzhou *hukou* status, while only 11.2% of tenants in the urban

Table 1. Summary statistics of endogenous and exogenous variables in the path analysis.

		Urban village			*Liede* Community		
		Total	Villagers	Tenants	Total	Villagers	Tenants
Number of cases		400	87	313	271	118	153
Exogenous variables							
Age (years)	Mean	36.71	47.94	33.59	38.27	44.67	33.34
	S.D.	12.32	12.89	10.16	14.21	14.99	11.38
Marital status (percentage)	Married	72.50	96.60	65.80	63.10	78.00	51.60
	Single/divorced/widowed	27.50	3.40	34.20	36.90	22.00	48.40
Educational attainment (years of education)	Mean	9.80	9.16	9.97	13.48	11.81	14.76
	S.D.	3.45	3.48	3.42	3.58	3.74	2.87
Income (yuan/month)	Mean	2179.99	1643.29	2329.17	6247.31	4267.66	7774.10
	S.D.	3258.06	1929.85	3527.84	7118.12	5572.87	7791.49
Length of residence (years)	Mean	11.28	35.40	4.58	13.24	27.12	2.54
	S.D.	16.44	19.46	5.81	17.63	19.21	1.80
Household registration (percentage)	Guangzhou *hukou*	27.80	100.00	11.20	60.10	100.00	32.00
	Hukou of elsewhere	72.30	0.00	88.80	39.90	0.00	68.00
Endogenous variables							
Neighbourhood attachment (scale from 1to 5)	Mean	3.00	4.06	2.71	3.42	4.14	2.86
	S.D.	1.13	0.94	1.00	1.10	0.77	0.99
Neighbourly interaction (scale from 1 to 5)	Mean	3.24	3.85	3.07	2.93	3.60	2.41
	S.D.	1.06	0.83	1.05	1.19	1.16	0.92
Community participation (scale from 1 to 5)	Mean	2.32	2.82	2.19	2.01	2.41	1.71
	S.D.	0.95	1.06	0.87	0.84	0.84	0.71
Satisfaction with the residential environment (scale from 1 to 5)	Mean	2.83	3.03	2.77	3.47	3.44	3.49
	S.D.	0.63	0.57	0.64	0.50	0.51	0.49

villages and 32.0% tenants in the *Liede* Community were Guangzhou *hukou* holders. Overall, redevelopment has substantially reshaped the demographic and socio-economic profile of the urban village. While indigenous villagers in the *Liede* Community benefited from considerable increases in property values and dividends of the collective economy, the low-educated, poor, and rural-originated migrant renters living in urban villages were driven away and replaced by high-educated, better-off, and middle-class tenants.

5.2 *Endogenous variables*

The lower panel of Table 1 illustrates the summarized statistics of four endogenous variables included in the path analysis. In general, respondents in the *Liede* Community were more attached to their neighbourhood and more satisfied with their residential environment relative to their counterparts in urban villages, but they also displayed slightly lower levels of neighbourly interaction and community participation than the latter. This applies to both social groups under investigation, that is, indigenous villagers and tenants. Specifically, while indigenous villagers maintained a very strong attachment to their neighbourhood (from 4.06 to 4.14), tenants in the *Liede* Community had a stronger attachment than their counterparts in urban villages (from 2.71 to 2.86). Both social groups experienced a substantial decline in the frequency of socializing with their neighbours (by 0.25 and 0.66, respectively, for the villagers and the tenants), which indicates that redevelopment may undermine villagers' established neighbourhood-based social networks, and that the tenants in the redevelopment neighbourhood are less likely than those in urban villages to socialize with their neighbours.

Both social groups experienced a marked decline in community participation (by 0.41 and 0.48, respectively, for the villagers and the tenants). Villagers displayed a lower level of participation in the *Liede* Community, and this is probably due to the gradual retreat of collective modes of economic organization from most community affairs, the lack of a new neighbourhood organization to take over community affairs, and villager's low awareness and capability of organizing community activities on their own.

6. Modelling neighbourhood cohesion

We used three path analysis models to examine the dynamic interactions between the three dimensions of neighbourhood cohesion. In the first model, we pooled together two sets of data collected in 20 urban villages and *Liede* Community and then employed a dummy variable for the neighbourhood type to gauge the difference between these two types of neighbourhoods. In the second and third model, drawn from the assumption that urban villages and *Liede* Communities have totally different mechanisms of neighbourhood cohesion, we estimated the path analysis model separately for the two different social settings. Three indicators, the root mean square error of approximation (RMSEA), the comparative fit index (CFI), and the Tucker–Lewis coefficient (TLI), were used to test the goodness of fit of the three models (Bollen, 1989; Kline, 2011; Lleras, 2005). The RMSEA, CFI, and TLI were 0.045, 0.999, and 0.911, respectively, for the overall model, 0.037, 0.996, and 0.741, respectively, for the urban village model, and

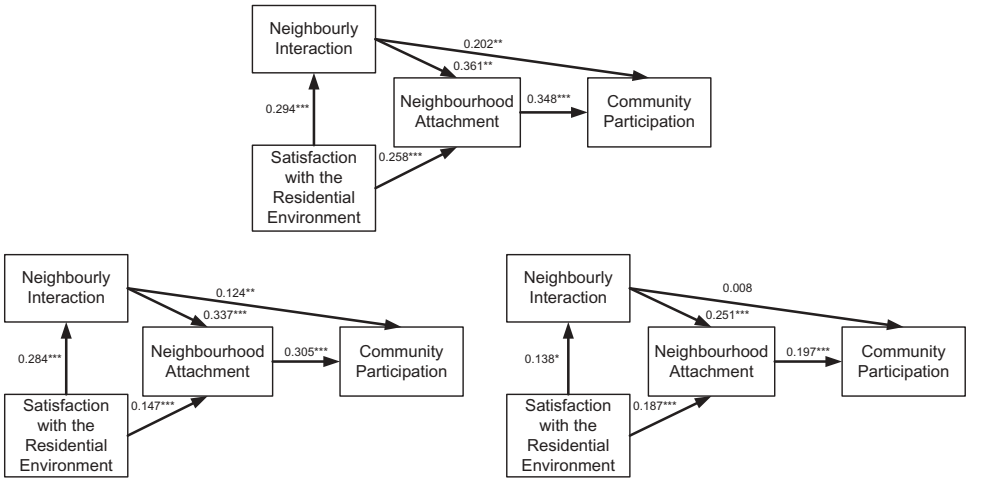

Figure 3. Diagrammatic representation of the estimates of the path coefficients for the relationships between four endogenous variables. (The number represents the standardized direct effect. Upper diagram: the overall model; lower left diagram: The urban village model; lower right diagram: the *Liede* community model. *, **, *** stand for a statistical significance at the 5%, 1%, and 0.1% level, respectively)

0.011, 1.000, and 0.998, respectively, for the *Liede* Community model, thus indicating that all three models can account for the majority of the variation in all the endogenous variables.

Figure 3 and Table 2 shed light on the statistical relationships between the four endogenous variables. In the path analysis, the total effect of the endogenous variable *A* on another endogenous variable *B* consists of the direct effect of *A* on *B* and the indirect effect of *A* on *B* through other endogenous variables (Kline, 2011; Lleras, 2005). In the overall model, neighbourly interaction appears to have a positive and significant effect on neighbourhood attachment and community participation, and neighbourhood attachment appears to positively and significantly affect community participation as well. Specifically, a one standard deviation increase in neighbourly interaction increases neighbourhood attachment by 0.361 standard deviations and community participation by 0.279 standard deviations, and a one standard deviation increase in neighbourhood attachment leads to an increase in community participation by 0.348 standard deviations. Furthermore, neighbourly interaction has a significant indirect effect on community participation (a one standard deviation increase in the former is associated with 0.111 standard deviation increase in the latter). In addition, residential satisfaction has a positive and significant effect on neighbourly interaction and neighbourhood attachment, with a standardized coefficient of 0.294 and 0.326, respectively, and exerting a positive and significant indirect effect on community participation, with a standardized coefficient of 0.130.

The urban village model and the *Liede* Community model provide a more detailed account of the relationships between endogenous variables in each type of neighbourhood (Figure 3 and Table 2). Some coefficients differ substantially between these two models. First, the direct impact of residential satisfaction on neighbourhood attachment

Table 2. Standardized effects of the endogenous variables on each other.

Variables	Effect	Neighbourhood attachment	Community participation	Neighbourly interaction	Satisfaction with the residential environment
Overall Model					
Neighbourhood attachment	Direct	–	–	0.361**	0.258**
	Indirect	–	–	–	0.096**
	Total	–	–	0.361**	0.326**
			–		
Community participation	Direct	0.348***	–	0.202**	–
	Indirect	–	–	0.111**	0.130***
	Total	0.348***	–	0.279**	0.130***
Neighbourly interaction	Direct	–	–	–	0.294**
	Indirect	–	–	–	–
	Total	–	–	–	0.294**
Urban village Model					
Neighbourhood attachment	Direct	–	–	0.337***	0.147**
	Indirect	–	–	-	0.096**
	Total	–	–	0.337***	0.243**
			–		
Community participation	Direct	0.305***	–	0.124**	–
	Indirect	–	–	0.103**	0.109***
	Total	0.305***	–	0.227**	0.109***
			–		
Neighbourly interaction	Direct	–	–	–	0.284***
	Indirect	–	–	–	–
	Total	–	–	–	0.284***
***Liede* Community Model**					
Neighbourhood attachment	Direct	–	–	0.251***	0.187***
	Indirect	–	–	–	0.035**
	Total	–	–	0.251***	0.222***
			–		
Community participation	Direct	0.197***	–	0.080	–
	Indirect	–	–	0.050***	0.055***
	Total	0.197***	–	0.129	0.055***
			–		
Neighbourly interaction	Direct	–	–	–	0.138*
	Indirect	–	–	–	–
	Total	–	–	–	0.138*

Note: *, **, *** stand for a statistical significance at the 5%, 1%, and 0.1% level, respectively;– represents that the link is not included in the path analysis.

is higher in the *Liede* Community (with a coefficient of 0.187) than in the urban villages (with a coefficient of 0.147), thus suggesting that the perception of residential environment becomes more important after the village undergoes redevelopment. Second, the impact of residential satisfaction on neighbourly interaction is much higher in urban villages (with a coefficient of 0.284) than in the *Liede* Community (with a coefficient of 0.138), which is consistent with both an increase in residential satisfaction and a decline in neighbourly contacts due to the redevelopment of the village (see Table 1). Third, neighbourly interaction becomes less important in determining neighbourhood attachment (with a decrease from 0.337 to 0.251) and community participation (with a decrease from 0.124 to 0.008) after redevelopment. This can be explained by the fact that, indigenous villagers have experienced a decline in established neighbourly relationships due to redevelopment, and also confronted with difficulties making friends with their new neighbours with different socio-economic status, norms, values, and identities. As for tenants in the redevelopment neighbourhood, they tend to value privacy and deliberately distance themselves from neighbours. Fourth, the influence

of neighbourhood attachment on community participation is weaker in the *Liede* Community (with a coefficient of 0.197) than in the urban villages (with a coefficient of 0.305), which is consistent with our previous findings that both social groups have a stronger attachment but a lower participation level in the *Liede* Community.

Table 3 shows the effect of exogenous variables on endogenous variables. The results from the overall model show, as expected, that indigenous villagers are more likely to feel attached to their neighbourhood, socialize with their neighbours and participate in community activities, relative to tenants. The social group to which an individual belongs has an indirect but not a direct effect on community participation, thus indicating that the difference between villagers and tenants in terms of their likelihood to participate is mainly attributed to the difference between these two groups with regard to their neighbourhood attachment and neighbourly interaction. As for neighbourhood type, respondents living in the *Liede* Community are less likely than their counterparts living in urban villages to be involved in the community activities and interact with neighbours, but are more likely to be satisfied with their living environment. Surprisingly, when other variables are controlled, neighbourhood type has a statistically negligible impact on neighbourhood attachment.

Both individual and structural factors exert a significant effect on the four endogenous variables in the overall model. First, a one standard deviation increase in age decreases the level of community participation by 0.002 standard deviations, which suggests that young people are more likely to participate in community activities. Second, a one standard deviation increase in the length of residence increases the levels of neighbourhood attachment, neighbourly interaction, and community participation by 0.325, 0.341, and 0.309, respectively. This, therefore, indicates that the cultivation of neighbourhood cohesion is a long-term process and requires stability in the neighbourhood. Third, Guangzhou *hukou* holders are more likely than non-Guangzhou *hukou* holders to participate in community activities (0.194 standard deviation), which confirms our postulation that community participation is constrained by the household registration system.

The results from the urban village model and the *Liede* Community model (see Table 3) indicate that indigenous villagers are more likely than tenants to feel attached to the neighbourhood in both urban villages and *Liede* Community, and that such differences between these two groups increase after village redevelopment (from a coefficient of −0.221 to a coefficient of −0.483). Indigenous villagers become increasingly attached to the neighbourhood after the redevelopment, not only because the rise in housing property values in *Liede* Community arouse the villagers' sense of ownership, but also because the villagers become more financially dependent on rental income and dividends generated locally (Chen, 2012a; Lai, Peng, Li, & Lin, 2014; Li et al., 2014) [5]. This is exemplified by an indigenous villager's statement:

> *My family has benefited a lot from the redevelopment. For example, my rental income has tripled after the redevelopment, and my wife and I receive a total of 40,000 yuan dividends each year. … Liede is my village, my home. I will never sell my properties in Liede and move out. I am just a peasant and not able to find a job in the city. I am not able to afford an apartment in Guangzhou as well. Why do I need to move out?*
>
> *(Case 15, Mr. Lin, November, 2011)*

Table 3. Standardized effects of exogenous variables on endogenous variables.

Variables	Effect	Age (year)	Marital Status (married = 1)	Education (year)	Income (yuan)	Length of Residence (year)	Household Registration (Guangzhou *hukou* = 1)	Social group (tenant = 1)	Neighbourhood Type (urban village = 1)
Overall Model									
Neighbourhood attachment	Direct					0.256**		−0.207**	
	Indirect					0.109**		−0.004*	
	Total					0.325**		−0.255**	
Community participation	Direct	−0.010*				0.218*			0.355**
	Indirect					0.132**		−0.068***	
	Total	−0.002*				0.309***	0.194*	−0.049**	0.359**
Neighbourhood interaction	Direct					0.347**		−0.022*	0.337**
	Indirect								−0.062***
	Total					0.341**		−0.024*	0.231**
Satisfaction with the residential environment	Direct								−0.375**
	Indirect								–
	Total								−0.375**
Urban villages Model									
Neighbourhood attachment	Direct					0.235**		−0.181**	
	Indirect						0.052*		
	Total					0.268**		−0.221**	
Community participation	Direct	−0.172**			0.083*				
	Indirect					0.094**		−0.082*	
	Total	−0.137*				0.175*		−0.199*	
Neighbourhood interaction	Direct								
	Indirect			−0.024*			0.050**		
	Total								
Satisfaction with the residential environment	Direct						0.175*		
	Indirect						-		
	Total						0.175*		
***Liede* Community Model**									
Neighbourhood attachment	Direct							−0.422**	
	Indirect							−0.061*	
	Total					0.179**		−0.483**	
Community participation	Direct						0.228***		
	Indirect					0.064*		−0.105***	
	Total					0.235*	0.229***		
Neighbourhood interaction	Direct			−0.189*		0.384***			
	Indirect					−0.022*	−0.027*		
	Total			−0.180*		0.362***			
Satisfaction with the residential environment	Direct						0.193*		
	Indirect						–		
	Total						0.193*		

Note: *, **, *** stand for a statistical significance at the 5%, 1%, and 0.1% level, respectively.

In contrast, newly moved-in renters have the feeling of alienation in the *Liede* neighbourhood. For example, a tenant told us:

> *I have the feeling of outsiders here. Except for a friend of mine who also lives here, I know nobody in Liede. Indigenous villagers constitute an exclusive social circle. As a tenant, I am not eligible to take part in community activities organized by them. They have never notified us (renters) … If there is a place elsewhere with such a good location and such a low rent level, I will definitely move out ….*
>
> *(Case 5, Miss Wang, March, 2011)*

The results from the models also show that tenants, relative to villagers, have significantly lower odds of participating in community activities in urban villages (with a coefficient of −0.049)(see Table 3, overall model), and that the odds of community participation for both villagers and tenants become roughly the same in the *Liede* Community. In addition, although the level of neighbourly interaction differs significantly between villagers and tenants in the overall model, it does not differ significantly in the urban village model and *Liede* Community model.

As for the coefficients associated with individual and structural factors in the urban village model and the *Liede* Community model, after village redevelopment, age and income become less important in determining community participation, while education becomes more important in determining neighbourly interaction. Moreover, length of residence has a stronger influence on neighbourly interaction and community participation in the *Liede* Community than in urban villages, but it has a weaker effect on neighbourhood attachment in the *Liede* Community than in urban villages. Additionally, household registration status is observed to have a positive and significant effect on an individual's satisfaction with their residential environment in both types of neighbourhoods, and it displays a positive and significant effect on community participation in the *Liede* Community.

Urban village redevelopment has larger influence on the levels of neighbourhood attachment, neighbourly interaction, and community participation of tenants than on those of indigenous villagers. This is primarily because, unlike indigenous villagers who move back to the neighbourhood, newly moved-in tenants in the post-redevelopment neighbourhood are different from those in the urban villages in regard to their socioeconomic status and cultural norms. Newly moved-in tenants in the post-redevelopment neighbourhood have a stronger sense of attachment than their counterparts in the urban village, not only because the former group has more secured jobs and stable residence than the latter group (Wu, 2010; Zheng, Long, Fan, & Gu, 2009), but also because the former group have higher satisfaction with their living environment (He, 2013; Zhu et al., 2012). Nevertheless, newly moved-in tenants interact with their neighbours less frequently in the post-redevelopment neighbourhood than in urban villages. This is partly because newly moved-in tenants' social networks are usually beyond the boundaries of the neighbourhood, and partly because they may deliberately avoid contact with neighbours for the sake of privacy (Forrest & Yip, 2007; Zhu et al., 2012). As for community participation, as the newly moved-in tenants are still recognized as outsiders in the redevelopment neighbourhood and denied involvement in any community activities (e.g. political elections and clan festivals), they have a low level of community engagement. For example, a tenant said,

I seldom converse with my neighbours, and I even do not know who they are…I have not participated in the community activities ever since I moved in. For one thing, our tenants are excluded from community activities. For another, I am busy with my work everyday and never take some time to see what kind of community activities that those villagers organize….

(Case 23, Mr. Kong, April, 2012)

7. Conclusion and discussion

The recent wave of large-scale urban village redevelopment in large Chinese cities has brought about not only the reconstruction of physical environment but also the collapse of long-established social fabrics within urban villages. Neighbourhood cohesion is a lens through which one can examine the extent to which residents integrate into their new neighbourhoods. Extant research on urban neighbourhoods in China has failed to systematically examine the interrelationship between different dimensions of neighbourhood cohesion (e.g. neighbourhood attachment, neighbourly interaction, and community participation) and how neighbourhood cohesion is affected by urban redevelopment. In this paper, we have examined the impact of urban village redevelopment on the restructuring of neighbourhood attachment, neighbourly interaction, and community participation—three dimensions of neighbourhood cohesion.

The results of the path analysis have shown that, on the whole, neighbourhood cohesion has declined after urban village redevelopment. Specifically, while no significant difference in the strength of neighbourhood attachment has been found between 20 urban villages and the *Liede* Community, the latter showed a significantly lower degree of neighbourly interaction and community participation than the former. This suggests that urban village redevelopment may exert a negative influence on neighbourhood cohesion, which is consistent with previous studies on the transformation of neighbourhood fabric as a result of urban renewal in Western countries (Fried, 2000; Manzo et al., 2008). The results further indicate that the sources of neighbourhood cohesion may differ between urban villages and redevelopment neighbourhoods. Specifically, after redevelopment, neighbourhood attachment becomes more influenced by residential satisfaction but less by neighbourly contacts, and community participation becomes less subject to neighbourly interaction and neighbourhood attachment. Compared with tenants, indigenous villagers feel increasingly attached to the neighbourhood but have approximately the same odds of participating community activities in post-redevelopment community with tenants.

Newman and Wyly (2006)'s and Gibson (2007)'s studies on neighbourhood redevelopment in Western countries indicate that redevelopment causes a substantial decline in neighbourhood cohesion, along with the loss of established social ties and the emergence of disorientation and isolation. However, the findings of this paper suggest that the decline in neighbourhood cohesion in redeveloped urban villages is much more complex, and that indigenous villagers and tenants follow different paths with regard to the restructuring and transformation of neighbourhood cohesion. Specifically, although villagers socialize with their neighbours and participate in community activities in a less frequent manner after redevelopment, they still keep a very strong attachment to their

neighbourhood. For one thing, the forces fundamental to the maintenance of cohesion between indigenous villagers remain potent and intact; village collective economy, surname clan associations, kinship-based bonds, and collective identity still function well after the redevelopment. In addition to that, the improvement of housing conditions and the living environment has a positive effect on the attachment of villagers. Similarly, tenants experience an increase in neighbourhood attachment but a decrease in neighbourly interaction and community participation. This is mainly due to the fact that the process of village redevelopment is often accompanied by a demographic restructuring of tenants; urbanites who have higher socio-economic status, urban lifestyles, and urban identities replace low-income and rural-origin migrant workers. Therefore, the differentiation between social groups and the correspondence between environmental restructuring and demographic reconstruction should be taken into account when describing and explaining the redevelopment-induced restructuring of neighbourhood cohesion in the Chinese case.

This study has shed a new light on the interrelationship between different dimensions of neighbourhood cohesion by utilizing the path analysis technique. A path analysis was preferred to a simple regression analysis as it is able to specify the interrelationships among a set of endogenous variables and to decompose the effect of one endogenous variable on another into direct and indirect components. For example, our findings suggest that neighbourly interaction outweighs residential environmental perception in determining the extent of neighbourhood attachment, and that neighbourhood attachment is more important than neighbourly interaction in determining the level of community participation. This captures the fact that indigenous villagers living in the urban village redevelopment neighbourhood still have strong attachments to the neighbourhood and maintain the culture of socializing with their neighbours frequently. This is due to the pre-existing powerful collective economy, as well as closed kinship- and place-based social networks, which differ from similar cases in other types of neighbourhoods in China (Hazelzet & Wissink, 2012; Li, Zhu, & Li, 2012). Another example elucidating the advantages of conducting a path analysis is that neighbourly interaction not only has a direct influence on community participation, but also has an indirect impact through the neighbourhood attachment. Thus, utilizing a path analysis allows for the overall structure of the neighbourhood cohesion to be illustrated.

It is noteworthy that the indicators we applied to measure the extent of neighbourhood cohesion are subjective indicators. These indicators are subject to respondents' varied interpretations of neighbourhood cohesion. However, subjective indicators have been widely adopted in previous studies on neighbourhood attachment and community participation. For example, Dekker (2007) and Zhu et al. (2012) measure neighbourhood attachment by responses to the question "How attached do you feel to the neighbourhood?" Therefore, while recognizing that the interpretations of our questions about neighbourhood attachment, neighbourly interaction, and community participation might be varied from one respondent to another, we still used subjective indicators in this study. Our future studies will use some objective indicators such as the frequency of neighbourly interaction and the exact rate of community participation to evaluate the extent of neighbourhood cohesion. Besides, urban villages in China's cities vary on location, governance structures, and collective economy. Since the main concern of this

paper is more on the comparison between pre-redevelopment villages and post-redevelopment neighbourhoods, we do not probe into how the impacts of redevelopment on neighbourhood cohesion vary from one village to another. In our future research, we will take into consideration the heterogeneity of urban villages when analysing the impacts of village redevelopment on neighbourhood cohesion.

Notes

1. It is reported that redeveloped urban village communities are overpopulated, lack public spaces and amenities, and are rampant with social conflicts among social groups (Guangzhou Urban Village Redevelopment Information and Technology Service Network, 2014; Life Week, 2012).
2. Quotations from *The Confucian Analects, the Great Learning & the Doctrine of the Mean*: "The Master said, 'It is virtuous manners which constitute the excellence of a neighbourhood. If a man in selecting a residence, do not fix on one where such prevail, how can he be wise?'. (P.165, IV *Li Zan*,)". "Confucius, in his village, looked simple and sincere, and as if he were not able to speak. (P.227,X *Hsiang Tang*)".
3. The *Liede* village was an 800-year-old rural neighbourhood located in the southern part of Zhujiang New Town, the new Central Business District (CBD) of Guangzhou. The *Liede* village was demolished in late 2007, and the construction of village redevelopment neighbourhood on the same site finished in early 2010. After the redevelopment, more than 6,000 new flats in the village redevelopment neighbourhood were allocated to around 3,000 households; more than half of these new flats were rented out. Most tenants in the redeveloped neighbourhood are white-collar workers working in Guangzhou's CBD. According to our interviews, most of them chose to reside in *Liede* Community because the community is near to their workplaces, and the rent level of *Liede* is relatively lower than nearby properties. According to our questionnaire survey, the occupational structure of this group is as follows: leading cares of party and government organizations and institutions (5.6%); professional and technical staff (20.4%); office workers and related staff (10.2%); commercial staff and service workers (25%), farming, forestry, animal husbandry, and fishery workers (0%), production, transportation, and related workers (0.9%); self-employed workers and freelance workers (14.8%); and laid-off workers and retirees (23.1%).
4. In path analysis, the total effects amount to the direct effect plus the indirect effect. The direct effect is the influences which are not mediated by any other variables in the model. The indirect effects are mediated by one or more intervening variables (Bollen, 1987).
5. The collective economy refers to an economic pattern that the urban village committee uses compensation funds from land acquisition to build collective properties on the retained land (*liu yong di*) and then rent out the properties to individuals or enterprises for profit (Liu, He, Wu, & Webster, 2010; Liu, Wong, & Liu, 2012; Wu, 2009). The urban village committee also establishes a shareholding company to manage the collective economy. Indigenous villagers who belong to the shareholding company receive stock dividends from the company on the yearly basis.

Disclosure statement

No potential conflict of interest was reported by the authors.

Funding

This work was supported by the United Kingdom Economic and Social Research Council (ESRC)/Department for International Development (DFID) project [grant number RES-167-25-0448]; ESRC project [grant number ES/N015185/1] "Sustainable urban and village regeneration in China: implications for the Global South"; National Natural Science Foundation of China [grant number 41271163], [grant number 41422103], and [grant number 41501151]; a major project of the Chinese National Science Foundation [grant number 41130747]; Fundamental Research Funds for the Central Universities in China [grant number 2013370003161413]; and the Chinese Government Scholarship funded by China Scholarship Council.

ORCID

Yuqi Liu http://orcid.org/0000-0002-5282-0751
Ye Liu http://orcid.org/0000-0003-2511-5413

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