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Residents' sense of belonging in (gated) communities in urban China

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Communities or neighborhoods are specific places in the research field of place identity that links between environment and psychology to address the sense of belonging as one of crucial human needs. This article explores the community identity in Chinese urban communities to investigate differences between sense of communities, and community satisfaction. Since 1980s, gated communities (*Xiaoqu*) are the dominant form of residential development in urban China and sometimes have the same boundary as the community (*Shequ*). Thus, this article sheds light on different understanding of gated communities in and outside of China. It is approached via deductive research to assess four specific hypotheses based on the concepts of communities, neighborhoods and gated communities. Four gated communities from Suzhou Industrial Park in China are used as study sites, where primary data was collected and then analyzed via multiple linear regression model and logistic regression model. Interestingly, the finding shows that having an active homeowners' committee, which is considered as a socio-political force, is negatively associated with a sense of community. In addition, representation is positively associated with community identity in general. The findings imply that property management fees play an important role in residents' community identity. In addition, the finding also supports that sense of community is a social rather than a physical construction.

Keywords: Social cohesion, gated communities, community identity, sense of communities, Suzhou Industrial Park

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Introduction

“A small convenient store over there has been operating for 15 years, a good guy taking care of his parents pays the rent on time. One day the property management company asked the shop owner to leave. Hundreds of homeowners protested in front, so the store could stay.” (Appendix 3: survey memos)

Scientifically, a sense of belonging is one of the crucial human needs and can be defined as “the experience of personal involvement in a system or environment so that persons feel themselves to be an integral part of that system or environment” (Hagerty et al. 1992, p. 172; Liang 2022). Although it is debated whether the social construction or the physical settings is more important for the sense of belonging (STEDMAN 2003; Kyle and Chick 2007; La Grange and Ming 2001), it is well accepted that the place plays an eminent role that has been coined as the place identity encompassing dwelling, terms such as sense of place, place attachment, place dependence are used in order to specify how emotions are interpreted (Kyle and Chick 2007). Several previous studies deal with sense of communities emphasize personal feelings and attitudes (Chavis and Wandersman 1990; Prezza et al. 2001; Perkins and Long 2002; Long and Perkins 2003; Pretty et al. 2003; Williams et al. 2010; Xu et al. 2010; McMillan 2011; Da et al. 2022; Nowell and Boyd 2011; Francis et al. 2012; Talò et al. 2014; Mahmoudi Farahani 2016; Jabareen and Zilberman 2017; Zhang and Zhang 2017; Ross et al. 2019) and others contribute to conceptualizing community sentiment, attachment and community satisfaction (Riger and Lavrakas 1981; Hummon 1992; Woldoff 2002; Brown et al. 2003; Clark et al. 2017; Lu et al. 2018; Li et al. 2019; Zhu 2020; Brown 1993; Lu et al. 2019). For instance, Hummon, D. (1992) differentiated community satisfaction emphasizing evaluating physical elements of community, community attachment, which measures emotional investment in communities, and community identity that focuses on the extent of locality at an individual level.

In this article, community identity is studied to explore differences between residents' sense of communities and community satisfaction. In addition, the community concept is examined to address different cultural understanding of communities. In particular, the residents' sense of communities and community satisfaction is examined in Chinese urban communities. Urban communities in China may be rather different from other countries as 80 percent of them are gated communities due to the rapid urbanization started in the end of 1970s (Wang and Pojani 2020). Many homeowners' also renting out their property, which more and more tenants are willing to rent rather than buy apartments due to increasing housing prices in major cities (Yang and Zhang 2023). Besides the difference of gated communities in scales, gated communities in urban China commonly also include shops, convenient stores, real estate agencies and sometimes homeowners stand up for commercial tenants by protesting the property management company as highlighted by the opening quotation.

This article tests four hypotheses. Hypothesis 1 tests the correlation between having an active homeowners' committee and residents' sense of communities. Hypothesis 2 explores the dependent relationship between whether having an active homeowners' committee or not and the satisfaction of neighborhoods. Hypothesis 3 tests the dependency of correlation between the residential representation in gated communities and the sense of communities. Hypothesis 4 tests whether the level of residential representation is correlated with the satisfaction of neighborhoods. In 2022, on-site survey questionnaires in Suzhou Industrial Park (SIP) in Suzhou were conducted to test the hypotheses and the data was analyzed with the multiple linear regression model and the logistic regression model. For regression analysis previously known predictors: age, income and having children or not are taken into account. In section 2, concepts of communities, neighborhoods and gated communities are reviewed. Section 3

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introduces four gated communities as the study sites in SIP. Section 4 specifies data collection, variables and analytical methods, and section 5 demonstrates the results in the order of hypotheses, which are then discussed in section 6.

Theoretical background

(Gated) communities

The concept of community was introduced by identifying the extent of agreement among groups as "community consists of persons in social interaction within a geographical area and having one or more additional common ties" (Hillery, Jr., George A 1955, p. 111). In this early community definition, it was pointed out that the concept of community is mainly applicable to rural area, which implies that there is no community in urban area because of large numbers of the social units and their heterogeneity. However, later it was specifically demonstrated that there is a social significance of urban residential groups that are universal due to the community formed via independent personal decision on residences, which was termed as a natural community (Suttles 1972). Furthermore, it was suggested that neighbourhoods are not the same as communities but still contribute to community networks (Suttles 1972; Wellman and Leighton 1979).

Gated community are rather special places within urban areas. Low (2001) explained that the fear of increased crime and safety issues in open communities motivates residents to move into gated communities in the United State. For South Africa, Landman (2004) differentiates between security villages and enclosed neighborhoods, which are the result of residents fencing up their existing communities to protect themselves from crime. In addition, gated communities can be considered as a type of neighborhood organizing that are organized by upper class to tackle neighborhood problems that mainly focusing on insufficient neighborhood services (Fisher 1985). Within gated communities, neighborhood maintenance is the main action that is usually addressed via elected representatives (Fisher 1985). Table 1 shows the comparison of neighborhood maintenance and two other types of neighborhoods organizing that shows gated communities are exclusively for wealthy people. Proponents addresses equity distribution of public space shed lights on societal consequence of gated communities such as social segregation between rich and poor that affects citizen participation (Mantey 2017; Kostenwein 2021; Landman 2004; Webster 2002; Caldeira 1996; Roitman and Recio 2020). For instance, Landman (2004) claims that enclosed neighborhoods are privatized public spaces because they are segregating residents in various ways. In addition, some emphasize the efficiency of gated communities as a way of delivering public goods. For instance, Webster (2001) applied the club realm theory that emphasizes efficiency of public goods delivery that gated communities or proprietary communities could avoid free-riders' problems. Webster (2002) argues that gated communities are spatial organizations of club realms, where some forms of property rights are protected by property management companies through property management fees over neighborhood attributes and services. Overall, arguments of efficiency and equity are supplementary, and efficiency is the reason for public sectors to support gated communities that returns as public revenue. However, the restricted access to gated communities questions the equal distribution of public space.

Dimensions	Social work	Political activism	Neighborhood maintenance
Concept of neighborhoods	Connectedness	Political power base	Status

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Targeted neighborhood attributes	Tax/Public services	The extent of local network mobility and residential exertion of influence on government affairs	Built environment and infrastructures
Motivations	Socially disorganized and conflicted	Powerlessness/excluded from government policies	Insufficient service that threatens property values
Organized group	Working & lower class	Working & lower class	Upper or middle class
Role of organizer	Professional social workers	Political mobilizer and educator	Elected spokesman
Goals	Improving social relations	Political empowerment	Improve property values

Table 1: A comparison of three neighborhood organizing modes. Source: own elaboration based on (Fisher 1985; Kearns and Parkinson 2001; Galster 2001)

(Gated) communities in China: property rights and “homeowners’ committee”

In China, residents’ committee have been created during the planned economy between 1949 and 1990s to organize the residential area called *Shequ* (Wang and Zhu 2007). Tomba (2014) states that neighbourhoods (residential area) in China is not the same as the neighbourhoods in English, that could mean *Shequ* or *Xiaoqu* (gated communities). *Shequ* (organized by residents’ committee) was created in 1950s for mobilizing government-led campaign, although *Danwei* (state-owned work unit) was more important for residential area since it provided housing (Tomba 2014). According to the Organizational Law of City Residents’ committee, anyone not only homeowners but also tenants regarding to the homeownership, who is over 18 years old that lives in the area can have a right to elect and to be elected as a representative (The National People’s Congress of P.R.C. 1990). Since the economic reform in 1980s, *Shequ* remained that is equivalent to the meaning of community in English, but it tends to have only minor relevance in large cities (Tomba 2014) because many wealthier urbanites rather prefers to live in *gated communities*, that are a dominant form of residential areas in urban China (Tomba 2014; Wu 2005).

According to the Ordinance of Property Management (The State of Council of P.R.C. June 2003), homeowners select and appoint a property management enterprise in accordance with the property service contract. The contract includes repairing, maintaining and managing the housing, supporting facilities and equipment, and safeguarding environmental sanitation and related order activities in the property management area. In addition, within the zoning of property management areas (*Xiaoqu*), which are defined by the common facilities and equipment, the scale of buildings and community buildings, a homeowners’ committee should be established and homeowners’ assembly should be held (The State of Council of P.R.C. June 2003; Fan 1997). Nowadays most residential areas in Chinese cities are gated communities, which was accelerated during the COVID-19 pandemic (Liu et al. 2021; Li et al. 2021). For instance, Li et al. (2021) argue that gated communities received better images from homebuyers and residents, leading to rising housing prices in gated communities during to the COVID-19 pandemic, despite lack of evidence on the effect of gated communities on COVID-19 control. Even more, relocation communities are gated via government-led property

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management companies, although there might be a huge gap between property management fees for relocated and commercial homeowners (Jin 2022).

All homeowners with entitled property rights are members of the homeowners' assemblies (*Yezhudahui*), which elect the homeowners' committees (*Yezhuweiyuanhui*) consisting of five to eleven homeowners (The State of Council of P.R.C. December 2009, June 2003). One of the main responsibility of the homeowners' assembly is to draft homeowners' conventions or management regulations, which make agreements on the use, maintenance and management of the property, the common interests of the homeowners, the obligations to be fulfilled by the homeowners, and the responsibilities to be held by the homeowners for violation of the convention in accordance with law (The State of Council of P.R.C. June 2003, December 2009). Another responsibility is to select and monitor property management companies (The State of Council of P.R.C. December 2009). According to the Ordinance of the Property Management Fee, property management companies can charge for maintenance of housing, facilities, cleaning and order (National Development and Reform Commission; Ministry of Housing and Urban-Rural Development of P.R.C. 1/1/2004). Furthermore, the homeowners' committee has two ways of recruiting property management companies: the lump sum system, where property management companies take the risks of revenue and budget, and the remuneration system, where homeowners take these risks (National Development and Reform Commission; Ministry of Housing and Urban-Rural Development of P.R.C. 1/1/2004). Most communities in Shanghai adopt the lump sum system due to the reduced workload of homeowners and the remuneration system requires also stronger responsibility of the homeowners (Xuhui District Justice Department of Shanghai 2020). Since property management companies play significant roles on gated communities, they also are organized on a voluntary basis at national level and local level (China property management Institute 2022; Suzhou Property management Association n.d.).

The research focus of gated communities in terms of efficiency emphasizes the property rights of homeowners. For instance, Yip (2020) demonstrated recent development in the social force led by homeowners to form cross-neighborhood networks in mega-cities in China as social movements to protect property rights from property developers and property management companies. Thus, networks formed across different neighborhoods show the strength of empowered homeowners. However, Cai et al. (2021; Perry 2008) examine the determinants of residents' consciousness of property rights to address the efficacy of homeowners' association and find out socio-economic characteristics of residents are the reason for low efficacy of homeowners' association.

In the equity discussion within Chinese context, the homeowners' committee in gated communities may be crucial in order to result in positive equity distribution of public goods. On the one hand, the discussion of equity distribution can resemble that in other countries, which features negative social consequence on people who are outside of gated communities. Furthermore, Wu (2005) states that the gated community homogenize people with similar social status in a place. On the other hand, Yip and Forrest (2002; Pow 2007; He 2015; Read 2003) state that the homeowners' committee in large gated communities with often several thousands of people might represent a democratic process, which bypasses the hegemonic control of state governments by the Chinese Communist Party (CCP). Although the level of CPP control on the transition of the housing system from previous work-unit based housing to gated communities remains opaque, it is clear that the former was based on hierarchical social relations and the latter promotes community building (Wu 2005). The homeowners' committees and homeowners' assemblies play essential roles in this democratizing process, but it is also common in many gated communities, that property management companies take

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over as main acting organizations (Lin 1998; Wang and Clarke 2021). Overall, the distinction between communities and gated communities is blurred and the social consequence of gated communities in China is based on the extent of awareness of property rights.

Hypotheses

The hypothesis is based on two elements of (gated) communities in China. Firstly, the existence of homeowners' assembly and homeowners' committees as a sign of strong property right awareness. Secondly, homeowners in gated communities have the responsibility for neighborhood maintenance that protects their property rights. The hypotheses test these two elements indicated by residential representation in property decision making and having active homeowners' committee or not. Then, it examines whether they are correlated to community identities. Community identity in this article mainly focuses on residents' sense of communities and community satisfaction. Four hypotheses are proposed as below:

- 1 Having an active homeowners' committee or not and the sense of communities are dependent.
- 2 Having an active homeowners' committee or not and neighborhood satisfaction are dependent.
- 3 The residential representation and the sense of communities are dependent.
- 4 The residential representation and neighborhood satisfaction in gated communities is dependent.

Study sites

The population of the gated communities in this study considers homeowners as well as tenants since the sense of belonging is vital for all residents. In total, four communities are selected as study sites that can be considered as representative gated communities in the center of well-invested SIP. SIP was developed on farmland in 1994 as a collaboration between the Chinese and Singaporean governments (The State of Council of P.R.C.). It is a typical area where most commercial residential developments are newly built after economic reform in the 1990s. In almost 30 years, there have been significant changes in terms of the living environment from villages to modern high-rise buildings (Figure 1). The area of the *Jinji Lake Street Office* in the center of SIP is no different from other administrative districts in terms of residential land use, although it is called an industrial park (Wu 2001; Suzhou Industrial Park Administrative Committee 2021). The selected gated communities are among the earliest residential developments built in SIP.

The four gated communities are called *Dushigarden* (DSG), *Xinjiahuayuan* (XJG), *Fengqingshui'an* (FQSA) and *Weilaibojue* (WLBJ) and were built between 2001 and 2008 in the central area of SIP (Figure 2). XJG is adjacent to DSG on the west side of Jinji Lake. Figure 1 shows the spatial boundaries of the four sites. The property management area of DSG is drawn according to surrounding street names in the regulation of homeowners' assembly (Dushi garden homeowners' committee 2019). Unfortunately, it was not possible to obtain regulations of homeowners' assembly at the other three sites and the shown spatial boundary are taken from *Baidu* Map when their Chinese names were searched. In addition, Figure 1 shows whether the gated communities have an active homeowners' committee or not. At the time of the surveys, DSG had their homeowners' committee for the sixth term of office (a term is four years) (Dushi garden homeowners' committee 2021) and the homeowners' committee of XJG exists for the fifth term of office (Xinjia garden homeowners'

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committee 2021). However, FQSA does not have a homeowners' committee at the time of the survey anymore (See Appendix 3). During the survey residents stated that WLJB does not have a consistent homeowners' committee, although it is not written in memos. The information on homeowners' committees of gated communities is difficult to obtain and needs to rely on informal sources. Furthermore, Figure 1 also shows the spatial boundaries of *Shequ*, which has the same spatial boundary as *Xiaoqu*. The size of FQSA is more than 150000 m² (Suzhou Industrial Park Administrative Committee 2022b), which is about 20 times larger than a regular football field.



Figure 1: Spatial boundaries and the surroundings of study sites. *Source:* spatial boundaries are generated with Google Earth Pro and Baidu map and the photos taken by the author

In 2022, there are about 2286 residents in FQSA and 6800 residents in DSG (Suzhou Industrial Park Administrative Committee 2022a, 2022b). DSG is managed by *Wanyuan* property management companies and currently under Vanke property management company. The property management of XJG descended from *Jianwu* to *Shimao* property management company. XJG and DSG both adopt lump sum systems (Dushi garden homeowners' committee 2018; Xinjia garden homeowners' committee 2022). According to residents, initially

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WLBJ was managed by a property management firm belonging to the same property developer at a service fee of 2.95 RMB/m² (see Appendix 3). Afterwards, it merged with Vanke property management company with a slight increase in service fees. FQSA has been managed by *Chixia* property management enterprises for 15 years. According to residents, the service fee is low in the area (see Appendix 3).

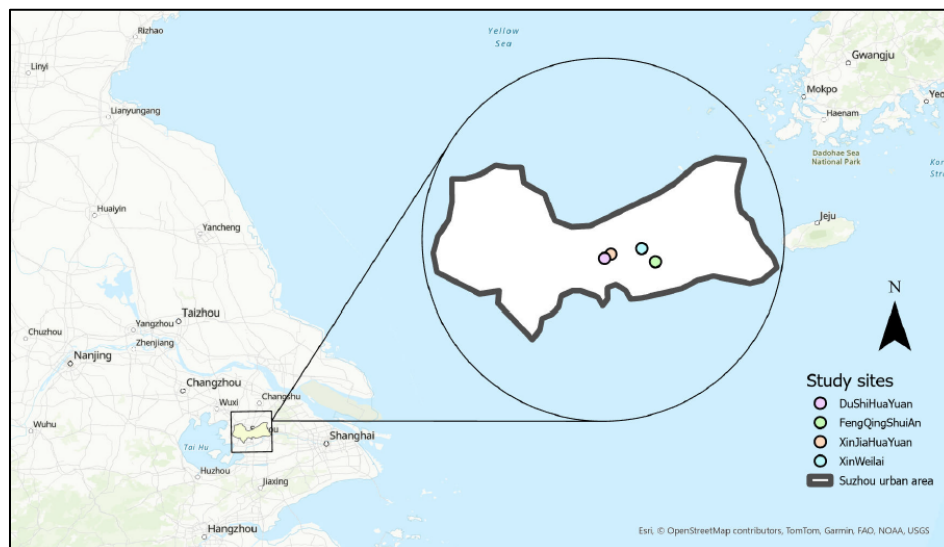


Figure 2: the locations of four study sites

Methods

Data collection instruments

To test the proposed hypotheses, on-site surveys were conducted within the four study sites (Appendix 1). I randomly approached people in public space within the two types of gated communities and 342 surveys were collected (Hirschauer et al. 2022). Data was collected from May to October 2022. I only had entrance access to FQSA, thus the number of collected sample is larger than other neighborhoods (Appendix 2). Most times I could enter the gate in other neighborhoods without being a resident, but sometimes I was stopped by high level property management staffs during conducting the survey. In XJG, I could not continue the survey after collecting twenty questionnaires due to intervention from the property manager (Appendix 3). The survey includes 15 questions ranging from questions on demographic features of residents (1-4,6,7), social characteristics of residents (5, 8,9) and satisfaction of neighborhood physical environments (10-15) that including both quantitative and qualitative variables by using three measurement scales, namely nominal, ordinal and ratio scales (Table 2). The survey question “Please evaluate the extent to which your opinion is reflected in property management decisions,” intends to evaluate both decision making process in property management in communities have active homeowners’ committees and communities without active homeowners’ committee. In addition, the survey questions on evaluations of neighborhood environment are adopted from evaluations of property management companies for charging property management fees (The Construction Department of P.R.C. November 2003; Draft standard). The survey was conducted in Chinese; the English translation is attached in Appendix 1. In addition, memos were taken during the survey, which included residents’ comments or my own perception of communities and residents’ comments.

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Independent and dependent variables

The hypotheses examine the correlation between sense of communities and neighborhood satisfaction and between representation and having an active homeowners' committee or not. Here, the sense of communities and satisfactions of neighborhood environment are the dependent variable and residential representation, and having an active homeowners' committee or not are treated as independent variables. Previous studies on community identity found that that age, having children or not, duration of residence, neighborhoods, education, self-perceived socio-economic status, and immigrant status are (Brown 1993; Williams et al. 2010; Da et al. 2022; Li et al. 2019). Furthermore, duration of residence could be a spurious variable between age and sense of communities and homeownership (Williams et al. 2010). However, gender, social relation and homeownership seem to be not related to community satisfaction and sense of communities as shown via multiple regression analysis (Li et al. 2019). Thus, age, income and having children or not are included in the analysis as control variables among survey questions for testing the hypotheses above.

Variables			
Quantitative		Qualitative	
Level of measurements			
Interval	Ratio	Nominal	Ordinal
<ul style="list-style-type: none"> • Age-group • Duration of residence • Income-group • Having children or not 		<ul style="list-style-type: none"> • Gender • Housing tenure • Having children or not 	<ul style="list-style-type: none"> • Age-group • Duration of residence • Income-group • Social relations • Representation • Sense of belonging • Satisfaction of common parts of housing, facilities, cleaning services, green maintenance, public order maintenance

Table 2: Data types and their level of measurements

Data analytical methods

Previous studies on sense of communities used principle component analysis, descriptive statistics, inferential statistics including logistic and hierarchical regression analyses (Williams et al. 2010; Da et al. 2022). R language is widely used for correlational analysis (Arkes 2019; Bolin 2023; Westfall and Arias 2020; Fein et al. 2022). The dependent variables (sense of communities and neighborhood satisfaction) are used as quantitative variables for regression analysis. The values of sense of community are coded as a numeric variable: no feeling yet (1), okay (2), rather strong (3), quite strong (4), very strong (5). Six aspects of neighborhoods are merged into a new variable, neighborhood satisfaction, which are converted into dummy variables (0 represent unsatisfied and 1 means satisfied), where 248 samples including missing data are used. Having a homeowners' committee or not is a categorical variable with two dichotomous values in hypothesis 1 and a dummy variable in hypothesis 2. The values of representation in the survey questions range from one to nine, which are re-coded into three numeric values: -1 for formally 1 to 4, 0 for formally 5, and 1 for formally 6 to 9 for hypotheses 3 and 4. The main purpose of regression analysis is for prediction, which is less applied than

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as an explanatory tool in social science (Arkes 2019; Bolin 2023). Firstly, the non-nested regression model is used to compare if socio-demographic features have significant roles in community identity, where Model 1 represents control variables in gated communities and Model 2 includes two aspects of gated communities along with the control variables for all hypotheses testing.

Findings

Hypothesis 1: having an active homeowners' committee or not and the sense of communities are dependent.

Sense of communities		
	Model 1	Model 2
	Estimated coefficient	Estimated coefficient
Intercept	2.30*** (0.23)	2.37*** (0.23)
Age	0.05 (0.04)	0.05 (0.04)
Income	-0.02 (0.03)	-0.02 (0.03)
Having children or not	0.09 (0.12)	0.05 0.12
Having active homeowners' committee or not		-0.33** 0.12
Adjusted R2	0	0.02
F-test	1.33	2.94*
ANOVA Sig. F-test		7.70**

N=331, standard error in parentheses, ***P<0.001, **P<0.01, *P<0.05

Table 3: Nested linear regression analysis of sense of communities

The null hypothesis is the coefficient of relationship between having homeowners' committee and sense of communities is zero. Table 3 shows the result of testing hypothesis 1. Models 1 and 2 are used to control previous known variables to test whether a correlation between having active homeowners' committee and sense of communities is significant. There are three independent variables in Model 1 and none of their coefficients are significant. In addition, F-test of the Model 1 shows that the Model 1 is not significant comparing to intercept model without any independent variables. The result shows that the probability of correlation value is zero is very low(P<0.01). Thus, it means that the coefficient value of having active homeowners' committee or not is a significant predictor of sense of communities. Thus, the null hypothesis can be rejected, which means that it is very likely the correlation is not random. The probability of a linear relation is nearly zero (adjusted R square=0.02), thus the model may not be a good prediction model. Nonetheless, the result of ANOVA shows that the Model 2 is significant (P<0.01), it means that the Model 2 is a better model than the intercept model after controlling previous known variables.

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Hypothesis 2: having an active homeowners' committee or not and neighborhood satisfaction are dependent.

Neighbourhood satisfaction		
Predictors	Model 1	Model 2
	Estimated coefficient	Estimated coefficient
Intercept	-2.35* (1.12)	-2.12 (1.12)
Age	-0.01 (0.18)	0.02 (0.18)
Income	-0.07 (0.14)	-0.05 (0.14)
With children (No children as reference)	0.23 (0.65)	0.06 (0.66)
Having active homeowners' committee (Not active homeowners' committee as reference)		-1.24 (0.77)
Degrees of freedom	238	237
Residual deviance	132.78	129.34
AIC	140.78	139.34
N=242, standard error in parentheses, ***P<0.001, **P<0.01, *P<0.05		

Table 4: Logistic regression analysis of neighborhood satisfaction and having active homeowners' committee or not

The null hypothesis is that the correlation between having an active homeowners' committee or not and neighborhood satisfaction is a coincidence, where it assumes that coefficient is zero. Table 4 shows the result of testing hypothesis 2 using a logistic regression model. Model 1 shows correlation between previously known variables and neighborhood satisfaction. The independent variable of having children has been added to Models as a categorical variable, where no child's value is considered as reference and the same applies to the independent variable of having an active homeowners' committee. None of coefficient values of predictors are significant in Model 1. Model 2 the probability that zero coefficient values of having an active homeowners' committee is so high that the null hypothesis cannot be rejected. It means it is possible that the correlation between them is random.

Hypothesis 3: the residential representation and the sense of communities are dependent.

Sense of communities		
	Model 1	Model 2
	Estimated coefficient	Estimated coefficient
Intercept	2.37*** (0.17)	2.28*** (0.15)
Age	0.06	0.03

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	(0.03)	(0.03)
Income	-0.07	-0.01
	(0.04)	(0.04)
Having children or not	0.1	0.02
	(0.12)	0.11
Representation		0.54***
		0.06
Adjusted R2	0	0.2
F-test	1.9	21.63***
ANOVA Sig F-test		79.57***
N=334, standard error in parentheses, ***P<0.001, **P<0.01, *P<0.05		

Table 5: nested linear regression analysis of sense of communities and representation

The null hypothesis is the coefficient of relationship between representation and sense of communities is zero. Table 5 shows the result of testing hypothesis 3. Models 1 and 2 are used to control previously known variables to test the correlation between representation and sense of communities. There are three independent variables in Model 1 and none of their coefficients are significant. The different coefficient values of predictors between Model 1 in hypothesis 1 and hypothesis 3 may be due to the different sample size. In addition, F-test of the Model 1 states that it is not significant compared to intercept models without any independent variables. The result shows that the probability of zero correlation value between representation and sense of communities is very low ($P < 0.001$). Thus, it means the coefficient value of representation is a significant predictor of sense of communities. The probability of the relation that is linear is closer to 0 (adjusted R square=0.2). In addition, comparing Model 1 and 2 shows that having the independent variable of representation is better than intercept model ($P(t \text{ value}=79.57) < 0.001$). Thus, the null hypothesis can be rejected, which means that the correlation is not random.

Hypothesis 4: the residential representation and neighborhood are dependent.

Neighbourhood satisfaction		
Predictors	Model 1	Model 2
	Estimated coefficient	Estimated coefficient
Intercept	-2.35* (1.12)	-4** (1.34)
Age	-0.01 (0.18)	0.02 (0.2)
Income	-0.07 (0.14)	-0.03 (0.16)
With children	0.23 (0.65)	0 (0.74)
Representation		3.08*** (0.75)

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Degrees of freedom	238	237
Residual deviance	132.78	93.59
AIC	140.78	103.59
N=242, standard error in parentheses, ***P<0.001, **P<0.01, *P<0.05		

Table 6: Logistic regression analysis of neighborhood satisfaction and representation

The null hypothesis is that the correlation between representation and neighborhood satisfaction is a coincidence. Table 6 shows the result of testing hypothesis 4. Model 1 shows correlation between previously known variables and neighborhood satisfaction, that none of coefficient values is significant. Model 2 shows the probability of coefficient value of representation is zero is as low as 0.001 that the null hypothesis can be rejected, which means the correlation between representation and neighborhood satisfaction is not random.

Discussion

The result of sense of communities in hypothesis 1 shows that having an active homeowners' committee is negatively correlated to sense of communities. The finding of neighborhood satisfaction in hypotheses 2 shows that having an active homeowners' committee is not a significant predictor. Thus, having an active homeowners' committee is correlated to the sense of communities, but not to neighborhood satisfaction. Hypothesis 3 shows that representation is positively associated with sense of communities. The result of hypotheses 4 indicates that residential representation is positively correlated to neighborhood satisfaction. Thus, residential representation is correlated to community identity. The adjusted R-square values for hypotheses 1 and 3 are nearly zero and 20 percent, respectively. It is important for predicting linearity and it is noteworthy that residential representation and neighborhood satisfaction might have a linear relationship in consideration of the nature of human behavioral studies (Frost n.d.). There are two limitations of this paper. Firstly, the survey question about representation was vague and the statistical analysis cannot give further insight into the nature of representation. Secondly, tenants were included in the survey, however, it is possible that they do not have much influence over property decision making directly. Overall, the finding suggests that gated communities are correlated to residents' community identity.

Setting up homeowners' committees is required in policies; thus, all gated communities should have one initially. The homeowners' committees of DSG and XJG are already in their sixth and fifth terms of office, but FQSA does not have a homeowners' committee at the time of survey (Appendix 1). In another gated community in SIP the homeowners' committee was disbanded during its fourth term of in 2021 (Homeowners' committee of Dajun phase I 2021). This explains why some communities do not have homeowners' committees (Wang and Clarke 2021). Residents may not be motivated to actively participate in the homeowners' committee if they are satisfied with the property management fees. Consequently, the policies of increasing community identity in gated communities should take property management fees into account.

Regarding to community identity discussion, the finding on sense of communities is related to having an active homeowners' committee, but not with representation may align with the argument that sense of communities is more of social construction (Kyle and Chick 2007). Furthermore, the finding on significant correlation between sense of communities and representation is supported by a previous study: Lu et al. (2019) studied residents' satisfaction

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of private governance in gated communities in Wenzhou city, in which residents show more preference and satisfaction with property management companies rather than homeowners' committee or government agencies. Probably, the satisfaction of property management companies focuses on assessing the entire gated communities, and satisfaction with property management fees emphasizes individual level satisfaction. In addition, residents in market-led gated communities, where homeowners purchased housing via private market, have higher socio-economic status than other modes of gated communities, (Lu et al. 2019). All the cases in this study are equivalent to such market-led gated communities, which is also the focus of examining sense of communities and community satisfaction. In addition, the finding may contradict a previous study in Poland: Mantey (2017) states that fencing off by gated communities shows negative impacts on sense of communities. However, it should be noted that the community in Poland probably consists of more 60 percent gated communities in the case study sites, but the community in China probably is the same boundary as a gated community. Thus, the seemingly contradictory findings can be explained by the different relations between gated communities and communities.

Conclusion

This article addresses the sense of belonging which is a crucial human psychological need that impacts on various aspects of personal performance in communities and neighborhoods. In China, gated communities sometimes have the same boundary as community leading to the hypotheses that two features of gated communities, having an active homeowners' committee and residential representation, are correlated with sense of communities and residents' satisfaction of neighborhood environment. Strikingly, an active homeowners' committee, which is meant to ensure democratic processes within the gated community decreases the sense of communities. This is rationalized by the correlation of representation and property management fees, which play a central part in residents' sense of communities and community satisfaction. Furthermore, this article sheds light on the contextual difference among gated communities between China and other countries and contributes to the study of community identity.

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Appendix 1: survey questions

1. Please select your gender								
Female				Male				
2. Please select age groups fits yours								
18≤ ≤30	31≤ ≤40	41≤ ≤50	51≤ ≤60	61≤ ≤70	71≤ ≤80	≥81		
3. Please select your duration of residence in this community from below								
≤1 year	1< ≤5 years	5< ≤10 years	10< ≤15 years	15<≤20 years	>20 years			
4. Please select income group that fits your personal income per month (after tax)								
0	1≤ ≤2400 RMB	2401≤ ≤4800RMB	4801 ≤ ≤7200RMB	7201≤ ≤9600RMB	≥9601 RMB			
5. Please evaluate your social relations within your community from below 5 choices								
Very bad	Somewhat bad	Cannot say it is either good or bad		Somewhat good	Very good			
6. Pleases select your housing tenure from below								
Renting				Owning				
7. Please select the number of children in your households								
0		1kid	2 kids		≥3 kids			
8. Please evaluate the extent to which your opinion is reflected in property management decisions (the higher score, the better evaluation) from below								
1	2	3	4	5	6	7	8	9
9. Please select the adequate extent of sense of belonging (Feeling through experience of system and environment e.g., comfortableness or community pride) in this community								
No feeling yet	Okay	Rather strong	Quite strong		Very strong			
10. Please rate the performance of the basic service management (includes property project information; acceptance inspection procedures; management statute system; property service contract; special maintenance fund system; management service system; file management; emergency response mechanism; staff training and corporate image; customer service management; community culture construction; communication and reporting mechanism) in your community								
1. Extremely bad								
2. Very bad								
3. Quite bad								
4. Rather bad								
5. Okay								
6. Rather good								
7. Quite good								
8. Very good								
9. Extremely good								
11. Please rate the performance of the management of common parts of the housing (includes signage system and maintenance information; use of common parts; exterior condition of the housing; additional outdoor facilities;								

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<p>decoration; daily inspection, and management) in your community</p> <ol style="list-style-type: none"> 1. Extremely bad 2. Very bad 3. Quite bad 4. Rather bad 5. Okay 6. Rather good 7. Quite good 8. Very good 9. Extremely good
<p>12. Please rate the performance of the operation, repair and maintenance of common facilities and equipment (includes management and operation of common facilities and equipment; outdoor common pipelines, pipes, and roads; equipment rooms; power supply system; weak power system; elevator system; water supply and drainage system; lightning protection system; fire protection system) in your community</p> <ol style="list-style-type: none"> 1. Extremely bad 2. Very bad 3. Quite bad 4. Rather bad 5. Okay 6. Rather good 7. Quite good 8. Very good 9. Extremely good
<p>13. Please rate the performance of cleaning services of your community</p> <ol style="list-style-type: none"> 1. Extremely bad 2. Very bad 3. Quite bad 4. Rather bad 5. Okay 6. Rather good 7. Quite good 8. Very good 9. Extremely good
<p>14. Please rate the performance of greening maintenance and management in your community</p> <ol style="list-style-type: none"> 1. Extremely bad 2. Very bad 3. Quite bad 4. Rather bad 5. Okay 6. Rather good 7. Quite good 8. Very good 9. Extremely good
<p>15. Please rate the performance of public order maintenance (includes order maintenance; traffic order; fire safety management) in your community</p> <ol style="list-style-type: none"> 1. Extremely bad 2. Very bad 3. Quite bad

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4. Rather bad
5. Okay
6. Rather good
7. Quite good
8. Very good
9. Extremely good

Source: adapted from DeepL translator

Appendix 2: sample size

Names of communities	Numbers of participants	Number of homeowners	Homeowners' committee
Dushi garden (DSG)	54	45	Yes
Xinjia garden (XJG)	20	16	Yes
Fengqingshui'an (FQSA)	254	216	No (likely disassembled around 2019)
Weilaibojue (WLBJ)	14	12	Irregular

Appendix 3: memos

Apri.30 th	One participant who works in urban planning fields said that FQSA is not so typical, and its homeowners committee has been disbanded in 2019 due to heavy work and too many complaints from residents. (FQSA)
May 2 nd	One participant said that property management run by big property development companies are better such as Vanke. And the property management fee is rather cheap. (FQSA)
June	Participant # 334 said that currently it is managed by Vanke property management company, but the people did not change and the manager changes too frequently. Participant #335, Vanke property management in properties that are not developed by them are different from Vanke property management that developed by them. Participant used metaphorical expression comparing the quality of Vanke property management in properties developed by them are like their real sons. In 2007, the property management fee was 2.95, currently is about three. It was not expensive. The original property management company merged with Vanke property management company. (WLBJ)

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<p>October</p>	<p>Participant #414 complained that seven hundred thousand have been collected to fix the streets, but it is unclear how the money was spent. A small convenient store over there has been operating for 15 years, a good guy taking care of his parents pays the rent on time. One day the property management company asked the shop owner to leave. Hundreds of homeowners protested in front, so the store could stay. I said I cannot solve actual community problems and I suggested probably communication would be easier if residents personally know homeowners committee members. Then the participant said that homeowners committee members are working together. The property management fees are sixty cents and participants can accept it even if it is higher. (XJG)</p>
<p>October 8th</p>	<p>Only 9 surveys are left to collect. I started at 15:50, approached about ten residents with no success in doing surveys, then guards came and asked me to leave the complex because I do not have permission from the residents' committee. I asked what he would expect the residents' committee to do, guards did not answer, but insisted that I leave. I was already in the complex, so I refused to leave. Then the guards said they would call the police. So, I left. (XJG)</p>