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Contradictory and consistent views on designing an inclusive community-based centre for older people: a mixed-methods study of different age groups in China

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Abstract

The Chinese government encourages the promotion of community-based older people centres as a way to use space rationally, improve social inclusion and support older residents' everyday lives. This exploratory study is the first to examine in depth the contradictory and consistent attitudes and suggestions of residents of different age groups for the design of an inclusive community-based centre for older and younger people in China. An integrative mixed-methods approach was used. In the quantitative phase, 270 older adults ($\geqslant$60 years) and 250 younger adults (<60 years) from Harbin were asked to complete questionnaires (older adults' response rate = 87.0%; younger adults' response rate = 87.2%). In the qualitative phase, seven focus group discussions (four groups of older adults, three groups of younger adults) were conducted. The findings indicate that older adults have a higher acceptance level of inclusive design and prefer to share spaces to improve intergenerational interactions than younger adults. Residents of all ages are more likely to share functional spaces related to health services, living services and physical exercise. Moreover, the study reveals some design suggestions: the location of the centre should be away from the residential area and integrated into a public community building; comprehensive services should be provided to older people and be accessible to the whole family; design should be barrier-free, and the climate and nearby spaces should be considered.

Introduction

Ageing in place, which refers to older persons staying in their own homes and communities for as long as possible, is an important policy advocated by the World Health Organization to accommodate the profound effect of the growing ageing

population. China has the largest population of older people in the world. In 2017, people aged 60 and over accounted for 241 million, or 17.3 per cent of the total population (Luo, 2018). Chinese older people usually maintain traditional filial piety and prefer to grow old in their homes with their families (Zhou and Walker, 2016). As a result, more than 90 per cent of the ageing population lives at home (Ma *et al.*, 2018). However, although the proportion of seniors living at home in China keeps increasing, due to the full-time jobs of younger adults and fewer younger adults living together with their older parents, by 2020 about half of older people will live independently without family support and professional care at home (The State Council of the People's Republic of China, 2017). Instead, a community that provides social support and provides a sense of belonging plays a significant role in older people's everyday lives. Accordingly, China encourages the design of community-based older people centres that can offer older people a more user-friendly environment with care and services for older people (Hu *et al.*, 2015).

Traditionally, research on community-based environment design in China focuses on improving the quality of life from the perspective of older people, and addresses specific key topics, such as physically frail older people who live independently (Yan *et al.*, 2014; Zhou and Walker, 2016). However, this narrow focus fails to consider social integration and cross-age interactions in community-based design. From 2014 to 2018, much news in China emphasised social exclusion (Tong, 2015), referring to the opposition of some community residents to the proposal to build community-based older people centres or nursing homes. It is worth noting that although the government strongly encourages ageing in the community and designing community-based buildings and facilities, it remains unclear how community-based older people services, buildings and facilities can obtain social approval and achieve social inclusion. This study aims to explore two foci: (a) the elements that residents of different age groups consider important to foster an inclusive community-based environment; (b) and potential spatial suggestions for community-based design that contribute to promoting social inclusion and ageing in place in China.

Community-based older people centres in China

In China, 'community-based older people centre' is the general name for community-based service facilities and buildings that provide older people with a variety of services according to their physical condition and needs in their communities. Such services include medical care, physical exercise, recreational activities, catering, day care and educational activities (Ma *et al.*, 2018). Most of these centres are located within communities so that older people can maintain their social relationships, access institutional and professional care, and achieve social support in their familiar surroundings (Hu *et al.*, 2015). Meanwhile, because most of the communities in China include people of all ages and the resources of the communities are limited, community-based older people centres are encouraged to consider the preferences of residents of all ages and to enable community inclusiveness (Ma *et al.*, 2018). In this study, the expression 'community-based older people centre design' is used interchangeably to designate the buildings and immediate

surrounding areas of the centre that are friendly to older people, are accessible to all residents and can promote social interaction.

A harmonious society that China seeks to build

The concept of a 'harmonious society' was introduced by the Chinese government in 2004. It has been widely popularised among Chinese society and is highly accepted by Chinese people. The original social values of a harmonious society cover a variety of dimensions, including polity, economy, culture and environment (Chan, 2010). One of the main aims of a harmonious society is to resolve social disparities and conflicts (Chan, 2010), similar to the aims of social inclusion. In the context of community-based design and ageing in place in China, the path to a socially equitable and inclusive community-based design is fraught with conflicts among residents of different age groups and the values they embrace. In this study, the harmonious society that China seeks to build refers to the equal rights of all individuals to social safety nets and decent living standards, the elimination of stereotypes and obstacles in social participation and solidarity, a sharing social economy and the benefits of development (Du 2013).

Inclusive community-based centre design for residents of all ages

Enabling older people to age in the community is a comprehensive task. When homes and communities are central sites in the daily lives of older persons (Blokland-Potters, 2003), considering the importance of space in the design of the community-based environment, facilities and activities to prevent social exclusion plays a significant and indispensable role in supporting the physical resources, social interaction, civic activities, basic services and neighbourhood inclusion of older people (Scharf *et al.*, 2005; Phillipson, 2007). Regarding the built environment in communities, design principles, such as universal design, barrier-free design and inclusive design, improve the habitable buildings and public spaces for disabled and older adults (Imrie and Hall, 2003; Nussbaumer, 2012).

However, community-based approaches and design do not merely focus on architectural or environmental design guidelines. Emotional bonds and place attachment and neighbourhood inclusion and exclusion in the community also affect the experience of old age (Scharf *et al.*, 2003; Buffel *et al.*, 2013). Chan *et al.* (2016) propose that older people value highly social activities, facilities and environments that can promote intergenerational interactions. Kaplan (2002), Freedman (2008) and Uhlenberg (2000) emphasised that activities offering opportunities for intergenerational interaction have a positive effect on the lives of both young and older generations and reduce age stereotypes and prejudice. In addition, as resources, workforce and space in the community are limited, the design capabilities of a community-based centre to support sustainable development have become more relevant. In this context, the design of an inclusive community-based older people centre must take into account its social, environmental and economic context (Kaiser *et al.*, 1995) to reflect society and spatial proximity.

In general, the design of a community-based older people centre has two dimensions. First, it requires a barrier-free design to maintain the mobility of older

persons and increase social inclusion in the home and neighbourhood to preserve heterogeneity in the community (Gilroy, 2008; Warburton *et al.*, 2013). Second, due to limited community resources and the need for intergenerational interactions, the design of a community-based older people centre must provide an inclusive, flexible, equitable, sustainable and accessible environment and services to meet the needs and choices of all residents and enable the community to be more inclusive and harmonious (Ma *et al.*, 2018). To this end, studying community-based older people centre design must take into account the contradictory and consistent views of different age groups, paying particular attention to the preferred functional and spatial environments that facilitate or reduce intergenerational interactions. So far, no systematic analysis considers how residents of different age groups respond to community-based design for older people in Chinese urban communities and their design preferences to create social inclusion and social integration. Therefore, this study aims to examine whether residents of different ages have different reactions and attitudes to the design of an inclusive community-based older people centre, and to explore how design can help create social inclusion and social integration among different age groups.

Methods

Research design

This study adopts an integrative analysis of both quantitative and qualitative research, in which quantitative data are used to understand people's attitudes, select participants, generate questions and provide a context for the qualitative research (Way *et al.*, 1994). This exploratory study is the first to examine in depth the attitudes of residents of different age groups towards the design of an inclusive community-based older people centre in China. In the study, quantitative data were collected using survey questionnaires for residents of different age groups. In phase two, qualitative data were collected in focus group discussions with participants selected from the quantitative results. The quantitative outcomes provide information on the acceptance and effect of designing an inclusive community-based older people centre, while the qualitative analysis offers insight into the reasons behind these attitudes. This study was conducted from December 2016 to September 2017.

In Chinese society, people aged 60 and over are generally considered older people (Banister *et al.*, 2012). In this research, residents were separated into two main groups: older adults (aged 60 and over) and younger adults (under 60). In the quantitative phase, two surveys were conducted among residents of different ages to examine their attitudes towards an inclusive centre design. The questions were whether the residents were willing to share community space resources with another age group and which functional spaces they were willing to share. Following the findings of the quantitative phase, in the qualitative phase seven focus group discussions were conducted to explain why residents supported or rejected sharing community spaces with residents of different age groups, and their preferred design strategies to promote intergenerational interactions and make rational use of community resources. The aim of the qualitative phase was

to obtain feedback on the design before the large-scale study of the effect of designing an inclusive community-based older people centre.

Ethics

The ethics committees of the Hong Kong Polytechnic University and the Harbin Institute of Technology approved this study. All respondents received and signed informed consent forms and were informed that their private data would remain confidential and only be used for academic purposes.

Study areas

The 2017 population of Harbin, the capital city of China's Heilongjiang Province, was 9.55 million people, 20.7 per cent of the population aged 60 and over, of whom almost 97 per cent live in their homes and are expected to grow old in their homes and communities (Harbin Statistics Bureau, 2018).

Participants

The study participants were community residents of various ages. They were from ten urban communities built between 1990 and 2015, and included the top ten neighbourhoods of the older population in Harbin. In the quantitative phase, 520 anonymous questionnaires were distributed among 270 older adults and 250 younger adults over 15 weekends between December 2016 and July 2017, by three investigators who had the same cultural background as the respondents. The questionnaires were delivered in community activity centres, paths and squares where residents often gather together and pass by. Given the education level and vision loss among older adults, most of the questionnaires were completed through interviews and recorded by the investigators, with the exception of a few who chose to complete the questionnaires themselves. Of the questionnaires for the younger adults, 218 were answered independently and 32 were interviewed and recorded by the investigators. A total of 453 surveys (235 for older adults, 218 for younger adults) were returned (response rate = 87.1%), of which 409 were valid questionnaires (207 for older adults, 202 for young adults). Besides, as the general concept of 'older adult' or 'younger adult' is often perceived negatively, this study additionally used six categories to divide younger adults and older adults by age: the young-younger adult (18–35 years old), the middle-younger adult (36–50 years old), the old-younger adult (51–59 years old), the young-older adult (60–64 years old), the middle-older adult (65–74 years old) and the old-older adult (75 years old and over).

In total 207 older adult respondents participated, 105 females and 102 males, ranging in age from 60 to 95 years old (mean = 67; standard deviation (SD) = 6.882); 46.4 per cent of respondents reported long-standing, lifestyle-limiting chronic conditions, such as hearing impairment, visual problems, leg dyskinesia, deterioration of the memory and hypertension, and 7.7 per cent of older adult respondents were dependent and needed long-term care. Most older respondents lived with their spouses (81.2%), and only 26.6 per cent had an associate degree or higher. The demographic characteristics of the older persons are summarised in Table 1.

Table 1. Demographic characteristics of the older adult respondents (≥60 years)

Characteristics	N (%)
Age:	
60–64	76 (36.7)
65–74	96 (46.4)
≥75	35 (16.9)
Gender:	
Male	102 (49.3)
Female	105 (50.7)
Health condition:	
Healthy and independent	95 (45.9)
Chronic and independent	96 (46.4)
Dependent	16 (7.7)
Living status (multiple choice):	
With spouse	168 (81.2)
With children	48 (23.2)
Grandchildren	28 (13.5)
Others (such as parent and nurse)	16 (7.7)
Alone	13 (6.3)
Education level:	
Primary school or illiterate	36 (17.4)
Junior middle school	68 (32.9)
High school	48 (23.2)
Associate degree or above	55 (26.6)

Note: N = 207.

For younger adults under 60 years old, 97 females and 105 males participated, ranging in age from 18 to 59 years old (mean = 42; SD = 10.47). Although filial piety is an integral part of Chinese culture, only 23.3 per cent of younger adult respondents lived with older people. In terms of education level, as younger adults are more likely to get an education today, 62.4 per cent had an associate degree or higher. The demographic characteristics of the younger adults are summarised in Table 2.

In the qualitative phase, to gain an in-depth understanding of the attitudes of residents of different age groups towards the design of an inclusive community-based older people centre, seven focus group discussions were conducted between August 2017 and September 2017 in Harbin. To ensure data reliability, four groups of older residents and three groups of adult residents were interviewed, with each group consisting of four to nine participants. As the phone numbers of the participants who wished to take part in further discussions had been recorded in the

Table 2. Demographic characteristics of the younger adult respondents (<60 years)

Characteristics	N (%)
Age:	
18–35	68 (33.7)
36–50	92 (45.5)
51–59	42 (20.8)
Gender:	
Male	105 (52)
Female	97 (48)
Live with parents or not:	
Yes	47 (23.3)
No	155 (76.7)
Education level:	
Illiterate or primarily or junior middle school	35 (17.3)
High school	41 (20.3)
Associate or bachelor's degree	100 (49.5)
Master's degree or above	26 (12.9)

Note: N = 202.

quantitative phase, all participants in the group discussions were selected from the interviewees in phase one based on their characteristics and answers. A total of 93 participants (56 older adults, 37 younger adults) left their contact information. In the qualitative phase, 37 people (20 older adults, 17 younger adults) participated in the group discussions.

Table 3 gives detailed information for each group. Participants selected for the first four groups were older adults and for the last three groups were younger adults. Among them, participants in Groups 1, 2 and 5 supported or were neutral about sharing spaces with residents of another age group to improve social inclusion and intergenerational integration. Conversely, participants in Groups 3, 4, 6 and 7 rejected sharing spaces with residents of another age group and supported exclusive design. Each group had a good balance of age, gender, living conditions, health conditions and education levels, so that the composition of the groups was representative of the community residents.

Data collection and analysis

In the quantitative phase, two types of questionnaires were designed for older adults and younger adults, respectively, to understand the subjective experiences and attitudes of inclusive community-based buildings. Both types of questionnaires included the major question: 'When designing a community-based older people centre in your community to support older persons' ageing in place, would you be willing to share some functional spaces or facilities with people from another

Table 3. Composition of focus groups of participants by age and gender

Focus group	Older or younger adults	Age	Gender	Attitude of sharing
Group 1	Older	60–87	2 males and 5 females	Support and neutral
Group 2	Older	61–78	3 males and 2 females	Support and neutral
Group 3	Older	67–84	1 males and 3 females	Reject
Group 4	Older	62–71	2 males and 2 females	Reject
Group 5	Younger	24–56	4 males and 5 females	Support and neutral
Group 6	Younger	32–45	2 males and 2 females	Reject
Group 7	Younger	28–52	2 males and 2 females	Reject

age group?' The item was rated on a five-point Likert scale ranging from fully reject (1) to fully support (5). In addition, the questionnaires included questions about the design preferences for an inclusive community-based older people centre. Given the design of community services and the community environment for older Chinese people (Cao *et al.*, 2014; Zhou and Walker, 2016), the expressed acceptance and need for inclusive community-based services and spaces were addressed by the responses to the question: 'Which types of functional spaces for specific services in a community-based centre would you share with residents of another age group?' Options included living care (such as catering), health services (such as nursing and physical examination), physical exercise, social and recreational activities (such as card games, singing and dancing), learning (such as reading and course study) and civic participation. The data obtained from the quantitative phase were analysed using SPSS to identify the inclusive design preferences of different age groups and the relationships between different variables.

In the qualitative phase, to ensure consistency, all focus group discussions were conducted by the same moderator, while an assistant moderator took notes. The focus group meetings were held in a school meeting room with food and drinks provided. The focus group discussions explored key questions about why residents of different age groups expected or resisted the mixed and cross-generation use of a community-based older people centre and their design requirements and needs. As good collaboration between designers and residents is the best way to achieve social equality (Siu, 2003, 2010), during the discussions the moderator asked questions that led participants to discuss inclusive community-based design strategies. Then the moderator drew sketches to explore the participants' design requirements and suggestions. Most of the sketches concerned the location of the community-based centre and the community planning. All of the group discussions were recorded on tape and lasted between 90 and 120 minutes. The data collected from the focus groups were transcribed into text and the content analysis was done using the triangulation process, which includes coding, condensation and abstraction to verify credibility (Graneheim and Lundman, 2004). To ensure the trustworthiness of the research, two researchers analysed the transcripts to build different codes and discussed them until they agreed on the significant statements and codes. In addition, an external senior analyst validated the credibility of the data interpretation.

Results

Quantitative results

Attitudes towards inclusive design among residents of different age groups

Tables 4 and 5 compare the acceptance level of older and younger adults to share spaces in the older people centre with other age groups. Compared with younger adults (mean = 2.77, SD = 1.280), older adults (mean = 3.24, SD = 0.999) showed a higher acceptance level of the inclusive community-based design. One-way analysis of variance (ANOVA) showed a statistically significant difference between the two main age groups ($F(1, 407) = 16.779$, $p < 0.001$). Although 47.4 per cent of older adults were neutral on the subject, 22.7 per cent supported sharing spaces with younger adults, while 12.1 per cent fully supported the idea. For younger adults, 25.2 per cent fully rejected the inclusive design and 10.9 per cent were against it; in contrast, 20.8 per cent supported the inclusive design and 8.9 per cent fully supported sharing spaces in the older people centre with older adults. Furthermore, among the six detailed age categories, those aged between 36 and 50 showed greater resistance (mean = 2.41, SD = 1.215), with more than a third entirely rejecting sharing spaces with older adults. Furthermore, a statistically significant difference among the six age groups was determined by a one-way ANOVA ($F(5, 403) = 7.115$, $p < 0.001$).

Willingness to share different functional spaces

Tables 6 and 7 show the findings regarding the willingness of residents of different age groups to share functional spaces with people from other age groups. Generally, older adults showed a greater willingness to share spaces to improve intergenerational interactions than younger adults. Of all functional spaces and services, health services and living care accounted for the two highest percentages in both younger and older adults. Compared with younger adults (38.6%), a higher proportion of older adults (52.7%) were willing to learn with and from cross-generations; the frequencies were significantly different, $\chi^2(1, N = 409) = 8.124$, $p = 0.004$. Among all age groups, respondents aged 36–50 and aged 75 and over were less interested in improving social interaction and inclusion. Those aged 75 and over were more interested in health services.

A chi-square test was performed to examine the relation between the six detailed age groups and their willingness to share spaces. The willingness to share spaces for physical exercise was not equally distributed among ages, $\chi^2(5, N = 409) = 18.919$, $p < 0.005$. Willingness to share spaces for learning differed by ages as well, $\chi^2(5, N = 409) = 21.731$, $p < 0.005$. Lastly, willingness to share spaces for civic participation was significantly different, $\chi^2(5, N = 409) = 20.700$, $p < 0.005$.

Qualitative results

Why did residents support sharing spaces with another age group?

The analysis of the focus group interviews revealed several key aspects of why older and younger adults supported sharing spaces with other group residents.

First, as China seeks to build a harmonious society, all older and younger adults in Groups 1, 2 and 5 agreed that sharing with others could help build a harmonious society, improve convenience for all and make younger people respect older adults.

Table 4. Descriptive statistics of acceptance level between older and younger adults

Age	N	Minimum	Maximum	Mean	SD
Younger adult:					
18–59	202	1	5	2.77	1.280
18–35	68	1	5	3.10	1.317
36–50	92	1	5	2.41	1.215
51–59	42	1	5	3.02	1.179
Older adult:					
≥60	207	1	5	3.24	0.999
60–64	76	1	5	3.30	0.980
65–74	96	1	5	3.16	1.019
≥75	35	1	5	3.31	0.993

Note: SD: standard deviation.

Table 5. Frequency of acceptance level of sharing centre space with residents of another age group

Age	Fully reject	Reject	Neutral	Support	Fully support
	N (% within age)				
Younger adult:					
18–59	51 (25.2)	22 (10.9)	69 (34.2)	42 (20.8)	18 (8.9)
18–35	12 (17.6)	8 (11.8)	20 (29.4)	17 (25.0)	11 (16.2)
36–50	32 (34.8)	12 (13.0)	28 (30.4)	18 (19.6)	2 (2.2)
51–59	7 (16.7)	2 (4.8)	21 (50.0)	7 (16.7)	5 (11.9)
Older adult:					
≥60	11 (5.3)	26 (12.6)	98 (47.3)	47 (22.7)	25 (12.1)
60–64	4 (5.3)	7 (9.2)	36 (47.4)	20 (26.3)	9 (11.8)
65–74	6 (6.3)	14 (14.6)	46 (47.9)	19 (19.8)	11 (11.5)
≥75	1 (2.9)	5 (14.3)	16 (45.7)	8 (22.9)	5 (14.3)

Second, both older and younger adults mentioned sharing spaces as a way to improve communication with others: the older people thought they would be less lonely, and the younger people thought they would pay more attention to China's ageing society. Interestingly, a few older adults mentioned that communicating with younger people would provide the opportunity to learn new things:

> I will be very happy to share spaces, because when communicating with young people, they could teach me new things, such as how to use a smartphone and other new kinds of electronic devices. Also younger people have a more modern idea of what's going on – I would like to learn from them. (Male, aged 72)

Table 6. Frequency of willingness to share functional spaces between older and younger adults

Functional space or services	Frequency by age group (%)		p
	Adults	Older person	
N	202	207	
Living care	52.5	51.7	0.974
Health services	53.5	65.2	0.016
Physical exercise	45.0	53.1	0.102
Social and recreation	30.2	33.3	0.496
Learning	38.6	52.7	0.004**
Civic participation	14.9	25.1	0.010

Significance level: ** $p \leqslant 0.01$.

Table 7. Frequency of willingness to share functional spaces among different age groups

Functional space or services	Frequency by age group (%)						p
	18–35	36–50	51–59	60–64	65–74	⩾75	
N	68	92	42	76	96	35	
Living care	58.8	45.7	57.1	52.6	54.2	42.9	0.471
Healthy services	64.7	46.7	50.0	61.8	64.6	74.3	0.024
Physical exercise	61.8	32.6	45.2	56.6	55.2	40.0	0.002**
Social and recreation	41.2	21.7	31.0	36.8	35.4	20.0	0.056
Learning	50.0	25.0	50.0	50.0	52.1	60.0	0.001***
Civic participation	13.2	14.1	19.0	27.6	31.3	2.9	0.001***

Significance levels: ** $p \leqslant 0.01$, *** $p \leqslant 0.001$.

Third, because community spaces and resources are limited, both younger and older adults suggested sharing spaces to use community resources rationally and to sustain the economic development of the service agency. Furthermore, safety was another reason for sharing spaces, according to older persons.

Why did residents reject sharing spaces with another age group?
Similar to supportive reasons, the reasons why residents of different age groups rejected sharing spaces with another age group showed some similarities.

First, both groups believed that older and younger adults had different living habits and biological clocks, thus they did not want to be disrupted by others and *vice versa*. Second, both younger and older adults were afraid that if the centre was used by both age groups, the service would be less professional. Especially, some younger adults believed that as regards older people's life patterns and the

community's distribution of social resources, the centre should be reserved for older people only:

> There are limited spaces in the community. We younger people have a larger radius of daily life than older people, rather than the surroundings of home and community … The centre should focus on service for older people only. (Female, aged 30)

However, one reason was mentioned only by older persons: they feared younger people would be impatient with older people and would even discriminate against them. This comment was made by one male and one female participant in Group 3. The 70-year-old male participant gave a more detailed explanation:

> It is difficult for me to have a common topic with younger people. Sometimes when I communicate with my child or other younger people, we usually have bad communication. They think me a fossil and I think them perfunctory … China develops too fast. The two generations have different cultural contexts and life experiences. It is hard for them to understand me. They are usually impatient even when I care for them … For me there is no need to share spaces or have more intergenerational interactions. People of the same age communicate better.

Meanwhile, two reasons were mentioned only by younger adults. The first was emotional repression. One younger participant in Group 6 and two younger participants in Group 7 stated that intergenerational interaction forces them to reluctantly consider what their own ageing would be like – such as being wheelchair-bound or disabled, having wrinkles and age spots or having poor memory. The participants said that they did not want to be reminded that one day they too would get old and weak and eventually die. Second, some people mentioned contagion. These participants feared that as older people were more vulnerable to getting chronic illnesses and carrying viruses, they would spread diseases to other residents, which would have a negative effect on public environmental health. This reason was given by three of the four members of Group 6 and all members of Group 7:

> I do not want to share the centre with older people, especially those in wheelchairs or who have disease. They remind me that one day I may be like that. It is too depressing … Now I am 52 years old. Seeing them frequently makes me lose the motivation to work hard now … Moreover, older people are less healthy than younger people. Many of them have diseases … If we share spaces, other residents, especially children with less resistance, may have more possibility of getting sick … It will have a negative effect on other residents' health. (Female, aged 52)

The findings of the above data indicated that there were several dimensions that influenced people's acceptance level of the inclusive design and their sharing attitudes, as presented in Figure 1. Both older and younger residents were clearly concerned about safety and security, the quality of services, communication, the environment and the emotional effect of the inclusive design. Most participants

consistently expressed the view that the design and services of the community-based older people centre should be convenient, professional, resource-integrating and accessible to help seniors age in place, reduce loneliness, and promote social harmony and intergenerational interactions. However, taking living habits, health, environmental effects and emotional repression into consideration, younger and older adults hold contradictory views on whether the centre should provide inter-generational interaction services.

How to design the inclusive community-based older people centre?

Regarding the design of an inclusive community-based older people centre to enhance social inclusion, the focus group transcripts highlighted four themes to meet the physical and affective needs of residents of different age groups to improve the quality of life and convenience of all residents.

Location

Concerning conditions in China, community-based older people centres are generally built by rehabilitating vacant public buildings or residential buildings in existing communities (Hu *et al.*, 2015). According to the discussion of the sketches about the location, there are four main forms that were mentioned by participants, as shown in Figure 2. Forms 1 and 2 turn some parts of a public building, such as shop, sales office and activity room, into the centre. Form 1 is located near the city street while Form 2 is located in the centre of the community. Forms 3 and 4 transform part of a residential building, the main difference being that Form 3 is located near the city street as Form 1, while Form 4 is located near the community road rather city street.

According to the discussion among the participants, most participants in all of the groups preferred locations transformed from public buildings (Forms 1 and 2) rather than residential buildings (Forms 3 and 4), because they would have less effect on residential activities and would protect the safety and privacy of residents. Meanwhile, comparing Forms 1 and 2, all participants in Groups 6 and 7 preferred Form 1, because it was not located in the centre of the community, so that younger persons would be less easily disrupted by older persons or *vice versa*. Participants in Groups 1–5 who also preferred Form 1 mentioned that the centre would be easier to manage because servicers would not need to enter the community:

> The public building offers a better location. If the centre is located in the residential building, the surroundings will be noisy, it will disturb residents' daily lives … Also, strangers, such as servicers and applicants might come and go, it could be dangerous. (Female, aged 47)

However, some participants in Groups 1–5 had different views. They thought that Form 2 was better because of its location near the community public spaces. The centre would be more easily accessible to residents and these sites would be quieter and safer:

> If the centre provides day-care services, I will be able to sleep in the afternoon, but I am easily awakened by traffic, I do not want the site to be close to the city street. (Female, aged 78)
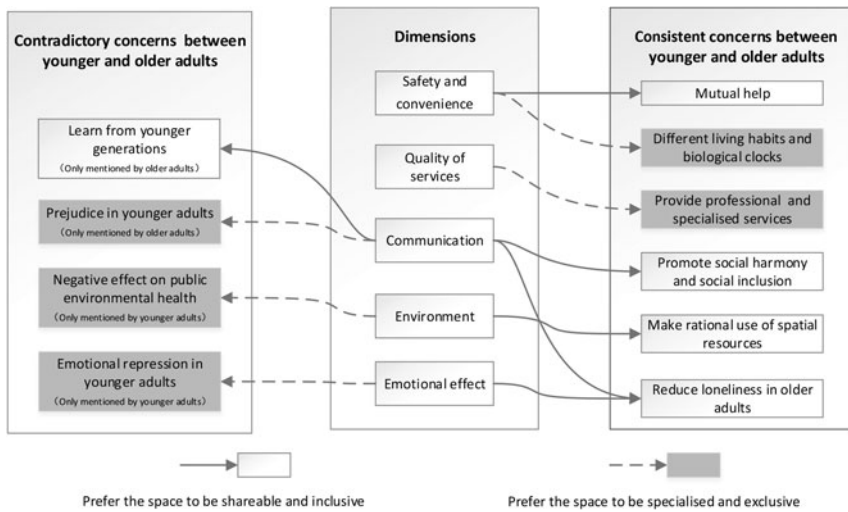
Figure 1. Dimensions that influence people's attitudes towards the inclusive design.
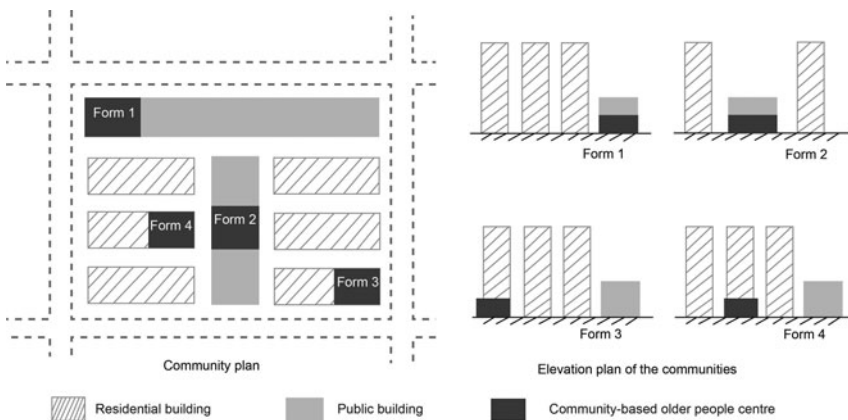

Figure 2. The four main locations of community-based older people centres.

> In the centre of the community, older people will be able to find it easily and they will not need to walk safely away from traffic … Plus, there will be enough space for outdoor activities. (Female, aged 28)

Comprehensive service and functional space planning

Similar to the quantitative results, of all services, functional spaces providing catering, medical care and physical exercise were highly demanded by both older and younger residents to improve the quality of life and social interaction. However, recreational spaces for activities such as card games, singing and dancing were not highly recommended by younger people.

Additionally, older persons mentioned some special needs, for example, the food should be nutritionally balanced and easy to swallow, and the centre should offer traditional Chinese medicine health care. Some older persons with long-standing chronic diseases or long-term care needs stated that the centre should provide discriminatory services based on health conditions. A 67-year-old female who had Parkinson's mentioned the following:

> I hope the centre will offer a door-to-door delivery service to older people who are dependent like me.

Services for the whole family were also mentioned by all age group residents. As many Chinese older persons take care of their grandchildren, four participants mentioned that it would be good to have a children's playground in the centre, so that they would be able to take care of their grandchildren and communicate with their older friends. Some younger adults stated that they encouraged the centre to be located near the kindergarten because it would be more convenient for them to pick up both their parents and children. However, they refused to accept integrating older persons and children in the same community day care centres to promote intergenerational interactions because they were afraid the teachers and nursing staff would not be able to take care of both generations carefully at the same time, as well as the added risk that older people would spread diseases to children. In addition, one female adult (aged 45) who lived with her mother hoped that the centre would provide some services and skills training in health care for the whole family:

> I do not have much knowledge of how to take care of my mom … I hope the centre will organise some classes or activities to teach me how to take care of an older person … Besides, in China, most adults face pressure and some families have generation gaps, services like psychological counselling and family conflict mediation should also be provided.

Services related to civic participation were also mentioned by a small number of participants. Two older persons said that they wanted to volunteer to help others. However, most people rejected the idea of volunteering; most younger adults said that they were too busy, and other older residents said that they preferred to be served rather than serve others.

In general, most residents believed that the services and spaces in the inclusive older people centre should be comprehensive, to help residents of different age groups to interact with one another and benefit community safety and the environment, and improve people's quality of life.

Interior design

The interior design of the centre was also discussed by all groups. The most important design principle mentioned by almost all participants was that the design should be accessible and barrier-free:

> Elevators will be essential … The corridor should be wide and have handrails … The entrance should have ramps, so that people in wheelchairs will be able to move easily. (Female, aged 66)

Another design consideration cited by almost all participants was that the rooms should be clean and have good equipment and furniture. In addition, material like wood was highly recommended by all age group participants. Furthermore, signage systems and colour usage in the interior environment were also discussed, especially by older persons. Having a sunny room and some green plants was also important for older persons. Apart from these material requirements, some older and younger people stated that they needed wi-fi in every room.

Layout of the outdoor surroundings

As for the layout of the outdoor environment, almost all participants suggested that the centre should have a barrier-free design, have more trees and provide user-friendly facilities for ageing. In addition, as the weather in Harbin is cold in winter, eight older participants insisted on using an anti-slip design for the road and playground, especially on ramps, and including two side handrails to prevent older persons from falling. Five older and two younger participants commented that there should be an indoor sun lounge for residents to do activities such as dancing during the winter. Moreover, one older participant (male, aged 71) stated that the public outdoor space should be located away from the parking lot for safety. Most older participants also suggested that the outdoor space should have enough toilets.

However, there was an argument about whether the outdoor surrounding space should be designed only for older persons or not. Although exclusive design would lead to prejudice and many participants favoured accessibility for all residents, one older participant in Group 1, three older participants in Groups 3 and 4 and five younger participants in Groups 6 and 7 stated that the outdoor space near the centre should be specialised for older persons due to prejudice and different living habits:

> Older ladies are noisy when they dance, so it will be better to have an outdoor space specialised for them … Besides, the space will be better in the corner of the community. (Male, aged 35)

In conclusion, the findings provided some design suggestions that could be used to design future community-based older people centres in China. First, the centre should be better located away from the residential area and integrated into the public building of the community. In addition, considering the prejudice of some adults, a location away from the community centre would be better. Second, the centre's services should be comprehensive. On the one hand, services should take into account the different physiological and psychological needs of the older people. On the other hand, services should be accessible to the whole family. Third, the interior design of the centre should be barrier-free and adapted to the physical, cognitive and emotional development of the older people and should also meet the requirements of the period. Finally, the design of the outdoor surroundings should consider the climate, buildings and nearby spaces.

Discussion

This study improves the understanding of what younger and older residents consider contradictory and consistent in fostering an inclusive community-based

older people centre design. The survey results show that older people are more eager to communicate with younger people and participate in meaningful intergenerational interaction; only 17.9 per cent of older adults rejected or strongly rejected an inclusive centre design where all residents could share spaces. This result indicates that older people need social interaction, perhaps because neighbourhood support is important in older persons' lives (Chan *et al.*, 2016), and social interaction makes them feel more included in society and respected by younger adults. According to the older people's responses, meaningful interaction with younger people promotes personal growth, gives them more access to new knowledge and gives them a sense of safety. As a result, even though about half of the older participants hold neutral and conservative attitudes to inclusive design and community change, about 35 per cent of them expressed positive attitudes to community change and social interaction. This supports the view of Buffel *et al.* (2013) that older people would like to take part in collective action about urban change that might contribute to their self-improvement and the community environment. Social connectedness is the internal sense of belonging (Lee, 1998), similar to Tadd and Stratton's (2005) view that older people need meaningful interaction to increase their dignity.

However, this exploratory study indicates that younger adults are less enthusiastic about interacting with older people. More than one-third of the younger participants, almost double the percentage of the older people, rejected or strongly rejected an inclusive centre design. This difference in acceptance level between younger and older people may be due to the fact that intergenerational relationships have become weaker, with the nuclear family becoming the main relational form in China (Cheung and Kwan, 2009), and that some adults perceive older people as a burden to the family and society (Bai *et al.*, 2016). Similar to filial piety modification and erosion in other Asia–Pacific regions, such as Hong Kong (Ng *et al.*, 2002) and Singapore (Ng *et al.*, 2016), the change in traditional values may be another reason leading to exclusivity from younger adults.

Regarding the willingness to share different functional spaces, health and living services were considered most appropriate by both younger and older adults. This finding is consistent with Maslow's hierarchy of needs (Lester, 2013), as services like catering and medical care reflect people's basic survival needs, to the extent that many adults are likely to use these services to make their lives easier and healthy. Meanwhile, as the design and services of these places differ less with age, older persons have a greater desire to share these places. Except for people aged 36–50, about 50 per cent of adults of other ages expressed a desire to share learning space, which may be because increasingly people in China are willing to engage in lifelong learning, and older and younger adults want to learn from each other. In contrast, younger and older adults are less likely to share other places related to belonging, recreation and self-actualisation. As a result, considering some successful innovations and inclusive models in other countries – such as the Humanitas Care Model in the Netherlands (Glass, 2014), multigenerational centres in Germany (Burchard *et al.*, 2012) and campus-affiliated communities in the United States of America (Bookman, 2008) – services such as catering, medical care and learning are most likely to be perceived as sharable. For example, restaurants in the centre could open to older people as well as neighbours, like the

Humanitas Care Model. Providing public living rooms where intergenerational communication and mutual assistance can take place would also improve social interaction. A learning room or library to contribute to lifelong learning and younger people's learning skills (Kaplan, 2002) could also be made. Traditional Chinese medical health care could also be shared. Although in some Asian countries, such as Japan, architectural design plans sometimes integrate older persons and children in the same community comprehensive day care centres to promote intergenerational interactions and make full use of services (Yuki, 2002), the findings of this study suggest that most Chinese people, especially young adults, would not accept this intergenerational pattern. Instead, they would prefer the kindergarten to be located near the older people centre.

As for the spatial design of the community-based older people centre, because people's suggestions were not all the same, some design principles can be surmised, but the design planning needs to be specific to the community situation and residents' needs. Design elements that facilitate barrier-free safety and cognition, such as handrails, ramps, anti-slip paths and signage systems, are essential. The best location for the centre is an adapted community public building, with a public indoor sun lounge or living room where intergenerational interaction and winter activities can be encouraged. If possible, the community-based design should be accessible to all, while respecting the enormous range of circumstances and personal goals that drive people to seek different lifestyles.

Conclusion

In recent years, China has promoted ageing in the community, which brings together young and older generations to meet mutual community needs and foster interdependence. In the context of inclusive design, intergenerational engagement can improve the physical and cognitive functions of older people and enhance social integration (Freedman, 2008). Based on the discussion above, the design of an inclusive community-based older people centre must focus on both the spatial environment and the critical role of social relations. Therefore, it is necessary to understand the contradictory and consistent attitudes and needs of residents of different age groups before designing older people centres in existing communities.

With the serious problem of China's ageing population, this study takes Harbin city as a case to explore related issues from the perspective of community-based inclusive design, to provide a way to allow older people to age in place while promoting intergenerational integration. The results indicated that Chinese older persons were more willing to share space to improve intergenerational interactions than younger adults. In addition, compared with functional spaces for communication, recreation and self-actualisation, residents of different age groups were more likely to share spaces related to basic survival needs. The findings also provided several design themes to promote social inclusion and facilitate ageing in the community.

Nevertheless, this study has several limitations. First, as the questionnaires were delivered in public spaces in different communities, the sample excluded residents who usually stayed at home or rarely visited these public spaces. Second, as the group discussions were conducted in Chinese, although transcripts were coded

by two researchers and the translation was revised by professionals, some participants' language and emotions were not fully reflected. Third, this study only focused on residents of ten communities of Harbin, thus people living in other Chinese cities are not represented. As Harbin is a second-tier city in south-east China in terms of its urban economic and cultural development, it is unclear whether similar results can be expected in other cities. As Chinese rural areas are less developed than urban areas, and population structures and community forms vary between rural and urban, a different research design should be developed for community-based design in rural areas. Future research should be conducted in various cities to identify possible regional variations in people's concerns.

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