

Table 16 The comparison between findings in this study and findings in earlier studies

Research questions	Methods							
	Qualitative					Quantitative		
	Literature reviews					Survey (Questionnaire)	Analysis of the data	
	Authors and Dates	Content	Landscape elements/ characteristics (Independent variables)	Categories	Environmental attributes		Descriptive analysis	Inferential analysis
1. Which of environmental attributes promote social interaction among grandparents who are watching over their grandchildren?	(a) Marcus & Francis, 1997	(a) Comfort, visibility (safety), ease of access to the outdoors, opportunities for meeting and socializing with other people are increasing important aspects of outdoor spaces preferred by older people.			Visibility			
				Comfort				
				Ease of access to the outdoors				
	(b) Thompson & Travlou, 2007	(b) Access, comfort, and safety are strongly considered by older people, and these environmental attributes are relevant to participants in outdoor activity.			Opportunities of meeting			
(c) Yao Zhong (2008)	(c) There are four environmental attributes related to social interaction in Chinese residential communities: accessibility, visibility, comfort, and opportunities for meeting.							
2. What are specific characteristic of landscape elements/characteristics contributing to environmental attributes which can promote social interaction among grandparents with their grandchildren?	(a)Każmierczak, 2013; Marcus, Sarkissian, Wilson, & Perlgut, 1986	(a)The opportunity for children to play at play areas in open public spaces increased, more social interactions were observed among children and their supervisors.	Playground	Facilities	Opportunities of meeting	Which of the following facility an open place with is considered a good space: recreational facilities for the elderly, playground, and play area with natural materials?	From the grandparents' perspective, 37% of the participants preferred to “places that have recreational facilities for grandparent” 37% of the participants preferred to “places with children’s facilities visible” From the grandchildren’s perspective, the participants preferred “places that have the recreational facilities for the grandparents”	
	(b)Guido Stut, 2013	(b)Playgrounds, as a formal play area, played an important role in promoting more active outdoor behaviors compared to play behaviors in informal public areas.						
	Hart, 1982; Heft, 1988; Matthews, 1992; Moore, 1990; Moore & Wong, 1997; Naylor, 1985; Rivkin, 1995; Titman, 1994	Natural materials and environment played an important role in children’s growth and development.						
	Takemi Sugiyama, 2006; Kazmierczak, 2013	Good facilities were found to be associated with older people’s walking or outdoor activity time.	Play area with natural materials					
			Recreational facilities for the elderly					
(a)T. Wang, 2009	(a)Neighborhood open spaces included passive spaces and active spaces for older people. These spaces should be designed alone but keep visual access of children’s play areas.	Passive and active spaces with playgrounds	Styles of space with playgrounds		Which of the following styles of space are preferred by grandparents: a passive space next to a playground, a passive space separated from a	The participants preferred to “an active space next to a playground”		

	(b)Marcus & Francis, 1997	(b)Places area for more passive exercise or just sitting in the sun close to the building could encourage use open spaces by the less able.				playground, an active space next to the playground?		
	Marcus & Francis, 1997	In order to support a close, intimate relationship with a few friends, a small intimate space should be provided to them.		Size of the spaces		Which of the following spaces do grandparents feel the most comfortable in with their grandchildren: 1-3, 3-5, 5-10, and >10 people?	The participants preferred “spaces that can accommodate 3-5 people”	
	Yao Zhong, 2008 Marcus & Francis, 1997	Socializing areas near indoor activity sites, such as building entries, elevators were important to be provided for older people.		Socializing areas near indoor activity sites		Is it important to have socializing areas near indoor activity sites for grandparents when they are watching their grandchildren playing?	78% of the participants thought it is very important.	
	Marcus & Francis, 1997	Compared to visual, auditory, and tactile stimulation, tactile clues were particularly important.	Aesthetics, audible, and tactile landscape elements		Potential sensory elements	See question 3: comparing relative importance of landscape elements/characteristics which are related to access attribute.		
	Kuo et al., 1998 Sugiyama & Thompson Alves et al., 2008	Plants, water features, and sculptures in outdoor spaces added visual interest to harsh urban environments. They could attract people to stay in their places and stimulate conversation.	Plants, water features and sculpture					
	Marcus & Francis, 1997	Opportunities for meeting and talking with others and feeling part of the activity were very important to many older people. Older people whose ages were approximately 50-70 years old liked active activities; older people whose ages were approximately 70-80 years old liked passive activities; older people whose ages were approximately 80 years old and over preferred passive activities Providing views of activity areas could promote older people’s participation.	Social activity	Visual interest	Comfort	Which of the following landscape elements attract grandparents and also allow grandparents to supervise their grandchildren: a space with more active space and a space with less active space?	The participants preferred to “a space with less activity space”	
	Michael, Green, & Farquhar, 2006	The accessibility to a destination played an important role in older people’s preference to visit a place. These accessible utilitarian destinations included local shops, recreational amenities, and other services that provided older adults with places to walk, meet others, and stay active without a car.		Access to local service	Access	Which of the following accessible places do grandparents want to visit in their residential communities: supermarket, restaurant, pharmacy, stores, post offices, and recreational amenities?	“places that have access to recreational amenities ” > “places that have access to a supermarket ” > “places that have access to stores”> “places that have access to post offices”	The grandparents’ age groups did make a significant difference in “places that have access to recreational amenities”, “places that have access to a supermarket” and “places that have access to post offices”.

	<p>(a) Turel, Yigit & Altug, 2007</p> <p>(b) Susana Alves, 2008</p>	<p>(a) Walking distance within 5-10 minutes to neighborhood park was important to encourage older people to use open spaces.</p> <p>(b) Distance to the park had a bearing on older people's living situation. Those who live alone more preferred to existed distance to open spaces, but those living with someone else tended to availability of facilities and a car park.</p>		Distance		<p>What is the maximum time grandparents are willing to walk with their grandchildren?</p>	<p>70% of the participants preferred "spaces that are close to their home and under 10 minutes away"</p> <p>28% of the participants preferred "spaces that are close to their home and between 10-30 minutes away"</p>	<p>(a) age groups did make a significant difference in travel time.</p> <p>The older the participants are, they more preferred "spaces that are close to their home and between 10-30 minutes away".</p> <p>(b) living situation did make a significant difference in travel time.</p> <p>Those who live alone preferred "spaces that are close to their home and between 10-30 minutes away"; Those who live with someone else preferred "spaces that are close to their home and under 10 minutes away".</p>
	<p>(a) Regnier, Hamilton, & Yatabe, 1995</p> <p>(b) Terry Harting, 2007</p> <p>(c) Koncelik, 1976; DeLong, 1970; Marcus & Francis, 1997; Pastalan, 1971</p>	<p>(a) Sense of orientation, opportunities for sensory stimulation, and control and mastery over the environment, as three most significant design factors, influenced outdoor use by older people.</p> <p>(b) Design elements used for American residential gardens commonly incorporated a simple looped pathway for older adults who had impaired way-finding abilities.</p> <p>(c) Falling memory and more difficult to find the way in an unfamiliar environment were a typical problem for older people with age, so a walkway loops could help older people orient themselves when interacting with others and finding their way around the outdoor.</p>		A looped pathway		<p>What types of place do grandparents prefer when they consider accessibility of residential community spaces: a looped pathway, non-slip pavement, seats along walkway, seats with weatherproof covers along walkway, and access to local services?</p>	<p>"places that have non-slip pavement"> "seats that are alongside the paths which connect to the residential open spaces"> "places that have access to local services"> "places with weatherproof covers alongside walkway"> "places that have a looped pathway"</p>	<p>(a) grandparents' age groups did make a significant difference in "places that have access to local services"</p> <p>(b) grandchildren's age groups did make a significant difference in "places that have access to local services" and "places that have non-slip pavement".</p>
	<p>(a) Rodiek & Fried, 2005 Marcus & Francis, 1997</p> <p>(b) T. Blackman et al., 2003 Dong, Guo, & Jiang, 2014</p>	<p>(a) fatal slips and falls were a major concern for older people. This concern about fear of falling inhibited older people's decision to go outdoors.</p> <p>(b) Non-slippery pavement was proved to be very important for older people in outdoor environments.</p>		Non-slip pavement				

	(c) Marcus & Francis, 1997 (d) Marcus & Francis, 1997	(c) Non-slip material such as wood for paving was the best for the elderly. (d) Surfacing materials that were smooth, yet not slippery was better for older people.						
	(a) Brawley, 1997; Heath & Gifford, 2001; McBride, 1999; Pynoos et al., 1991 (b) Z. Wang & Lee, 2010	Sidewalk and road-side benches or seating was important for walking among older people.		Seats along walkway				
	(a) Brawley, 1997 Heath & Gifford, 2001 McBride, 1999 Pynoos et al., 1991 (b) Dong et al., 2014 (c) Marcus & Francis, 1997	(a) Frequent benches under shade along outdoor walkways were more popular among older people as they might unexpectedly need to stop and rest while walking. (b) Seats with covers protected older people against the bad weather. (c) A canopy or cover should be offered protection from the weather for older people, such as rain and snow.		Seats with weatherproof covers along walkway				
	Yao Zhongs, 2008	Socializing areas near indoor activity sites were the most popular areas for residents' communication.		Socializing areas near indoor activity sites	Opportunities of meeting	Is it important to have a play area next to the building for grandparents to sit when they are watching their grandchildren playing?	78% of the participants thought it is very important.	
	Franck & Paxson, 1989, Francis, 2003	Fear of crime and violence, especially against women, could cause seemingly good spaces to go unused and often led to people avoiding spaces—even well-designed and attractive ones.			Visibility	What visibility of the activity area do grandparents prefer?	41% of the participants preferred “activity areas that have good visibility”. 35% of the participants preferred “activity areas that are hardly visible”.	Males preferred “activity areas that have good visibility”. Female preferred “activity areas that are hardly visible”.
3. Which landscape elements/characteristics are relative more important in encouraging social interaction among grandparents?					Comparing relative importance of landscape elements/characteristics which are related to potential sensory elements?	Which of the following landscape elements attract grandparents to stay in an open space: a plaza with a water fountain, a space with a peaceful water pool, a space with plants, a space with tactile landscape elements, such as landscape walls, and a space with remarkable sculptures.	The participants preferred “a place with plants” and “a space with a peaceful water pool”.	

					Comparing relative importance of accessible landscape elements/characteristics	Which of the following landscape elements attract grandparents to stay in an open space: spaces that have access to local services, spaces that have non-slip pavement, spaces that have looped pathway, spaces that have seats with weatherproof covers along walkways, spaces that have seats along walkway.	“places that have non-slip pavement” > “seats that are alongside the paths”> “places that have access to local services”> “places that have seats with covers alongside walkways”> “places that have a looped pathway”	The grandparents’ age groups did make a significant difference in “places that have access to local services”. The grandchildren’ age groups did make a significant difference in “places that have non-slip pavement” and “places that have access to local services”
	Michael, Green, & Farquhar, 2006 Humpel et al., 2002	Local shops, recreational amenities, and other services where they provided older people with places to walk and meet others. Accessibility of facilities had significant associations with outdoor physical activity			Comparing relative importance of different local services	Which of the following local services attract grandparents to stay in an open space: places that have access to a supermarket, restaurants, a pharmacy, stores, post offices, and recreational facilities.	“places that have access to recreational amenities”>“places that have access to a supermarket”>“places that have access to stores”>“places that have access to a pharmacy” > “places that have access to restaurants”>“places that have access to post offices”	(a) grandparents’ age groups did make a significant difference in “places that have access to local services” (b) grandchildren’s age groups did make a significant difference in “places that have access to local services” and “places that have non-slip pavement”.