TEACH EACH OTHER HOW TO AGE?

Comparison of Dutch and Japanese housing for the elderly

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Abstract

The fast increasing aging population in the Netherlands and in Japan gives many social and economic concerns. The differences between these countries, in vitality of the elderly, changing family care traditions, institutional drivers and respectively more individual versus more group focused culture, could lead to interesting mutual lessons for our aging societies.
Sheltered housing is, next to aging in place, part of a solution to both the social as the economic issues.
For this explorative multiple case study we compare the daily life of the elderly in both countries, by researching some of their sheltered housing concepts regarding the social and the physical environment.
The four cases in the Netherlands are situated in one smaller city and two larger cities. They have been visited and analysed and will be compared to most similar cases in more and less cosmopolitan Tokyo that are visited during a six weeks on site research.

Keywords
Sheltered housing, social environment, physical environment, explorative multiple case study Japan-NL

Introduction
The composition of the population in The Netherlands is currently significantly changing. There are increases in the elderly population while the number of population, which is working, is decreasing (United Nations, Department of Economic and Social Affairs, Population Division, 2015). In some countries like Japan the average age of the inhabitants is getting even higher, the medium age in Japan is 46,5 (World Population Prospects, 2015). The forecast for 2050 and 2100 are even higher, see figure 1. Accompanied by the increasing life expectancy this results in a increase of the number and share of elderly. This change is called the aging society.
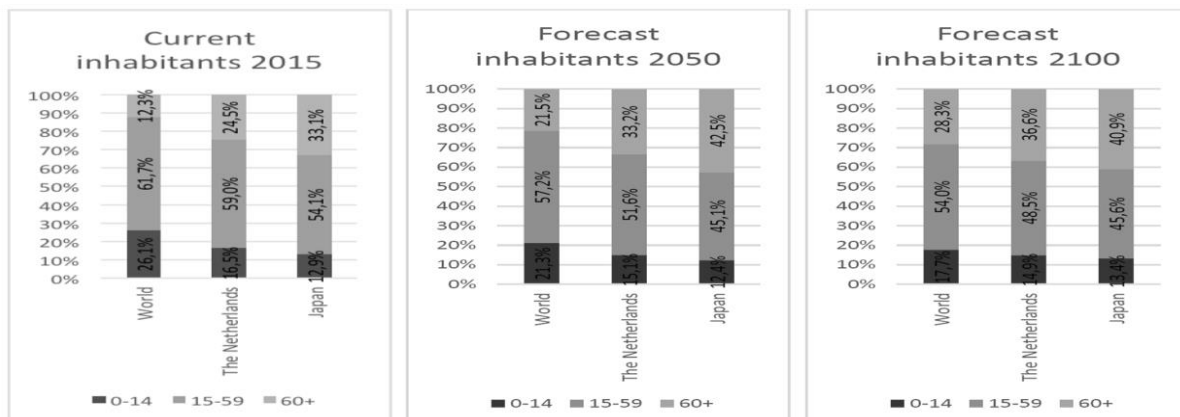

Figure 1 Forecast inhabitants 2015, 2050, 2100 (World Population Prospects, 2015)

Elderly are expected to "age in place" and become more self-sufficient, and purchase the needed care (Ministerie van Volksgezondheid, Welzijn en Sport, 2014). The question is how society can accommodate this change. Especially the housing for the elderly and thus to find lessons learned for the construction of new homes. For this research we compared cases in the Netherlands and Japan because Japan is already struggling with this problem for over a decade (Ministry of Health, Labour and Welfare, 2002; Matsuoka, 2015).

The target group are vital elderly over 55, living in sheltered housing (Ministry of Health, Labour and Welfare, 2002; Bureau HHM, 2012). The main objective is to examine the current housing concepts for this target group and their facilities and their influence on support in their daily lives and self-sufficiency. These housing concepts differ in Japan and Netherlands in their development and application (Matsuoka, 2015; Aedes-Actiz, 2017). Therefore the following main question is defined:
"What are the differences between the Netherlands and Japan in housing concepts for the vital elderly, regarding support in their daily lives and self-sufficiency?"

To answer this question the influence on the support in the daily lives and self-sufficiency of elderly is divided in one independent and two mediating variables; the culture of the country and the influence of the urbanity; the social factors being safety and security, freedom of movement, and healthcare and nurturing; the physical factors being the direct environment, the building, the facilities and the domotics, see the conceptual model in figure 1 (Schaloc & Begab, 1990; Spierings, 2014: Kerkman, Klompen & Maathuis, 2014).
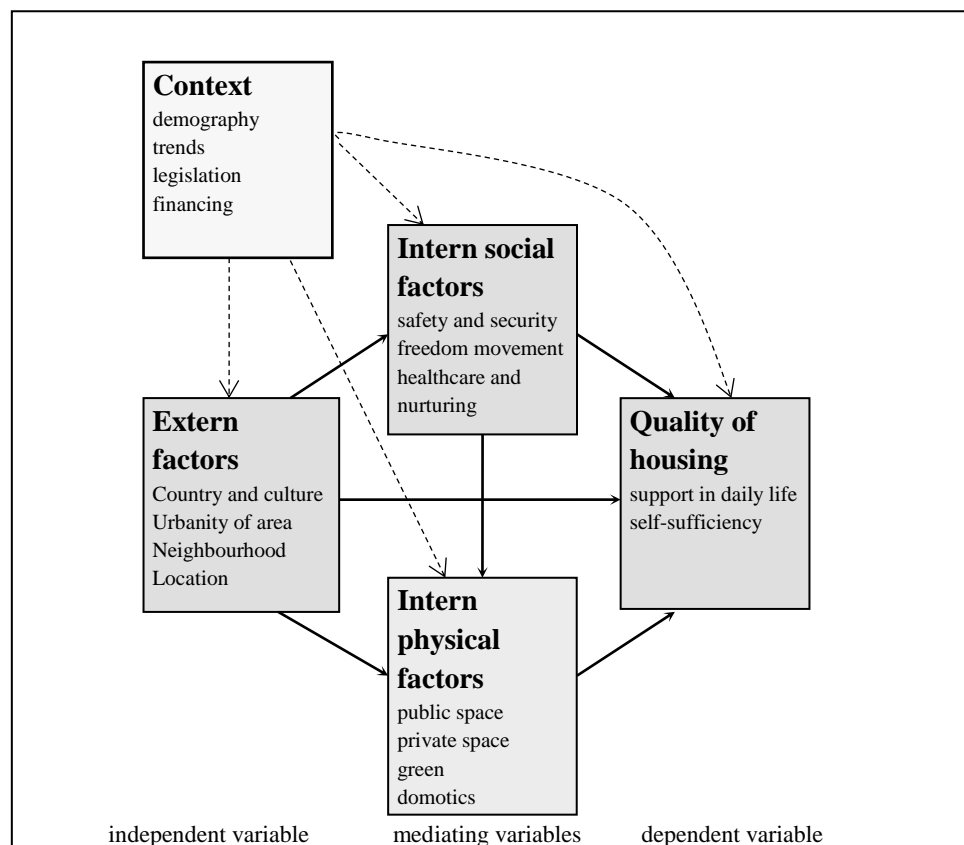

Figure 2. Conceptual model of the present study

Method

In a literature review aspects as the country and culture, trends and legislation and financing in aging and housing for the elderly in the Netherlands and Japan is examined to extract the main influences, and

the basis for the case selection (Ministry of Health, Labour and Welfare, 2002; Ministerie van Volksgezondheid, Welzijn en Sport, 2014; Matsuoka, 2015; United Nation Office on Drugs and Crime, 2015; Crime Index for Country, 2017).

After the literature review a explorative multiple case study is conducted and triangulated consisting of an environmental analysis, a building analysis and a narrative analysis, regarding the internal social factors and the internal physical factors.

The four Dutch cases studied are situated in Uden, Nijmegen, and Rotterdam and four most similar cases (Yin,1994; Gerring, 2009) in neighbourhoods in Tokyo, with a range in scale from small, via medium to large, this division is based on previous research (Spierings, 2014), see figure 3 and table 1.
Regarding the number of cases, we can split them in a Dutch and a Japanese set of respectively four and five cases. For a division in urban and non-urban sets, or scale, the number of cases are too low.
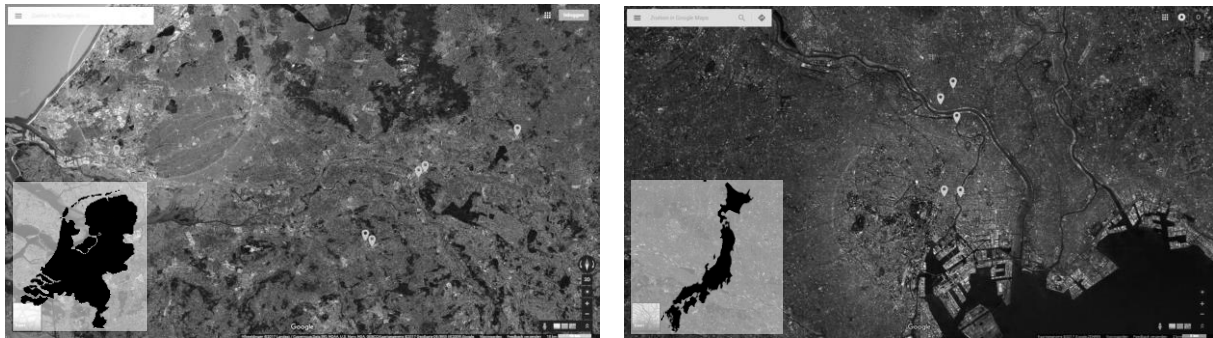

Figure 3. Research Areas with urban and non-urban areas

Table 1 cases

Case	City - Neighbourhood	Scale	Area	Country
MuzeRijk	Uden - Bitswijk	Small	Non-Urban	The Netherlands
Sint Jan	Uden - Centre	Large		
OBG	Nijmegen - Oost			
Bergweg	Rotterdam - Centre		Urban	
Ginmokusai	Tokyo - Adachi-ku	Small	Non-Urban	Japan
OtakenNoSato	Tokyo – Arakawa-ku	Medium		
Happines	Tokyo - Adachi-ku	Large		
Ichi-kai	Tokyo - Chiyoda-ku	Small	Urban	
Ryokoku	Tokyo – Sumida-ku	Medium		

Environmental analysis

The environmental analysis is partly based on the PESTLE - Macro Environmental Analysis method (Oxford Learning Lab, 2012). It consists of two parts. The first part is the analysis of the neighbourhood, the second part is the analysis of the location.

In the first part the neighbourhood of the case is checked on the presence of green, public transportation, supermarkets, shops and the presence of healthcare facilities.
In the second part the location of the case is checked on the presence of green, public transportation, supermarkets, shops and the presence of healthcare facilities with a 500-meter range of the building. 500 meter is a range used for researches on elderly (De Kam, 2012; Heren 5 Architecten, 2016). A range that elderly who have some physical problems can reach by walking with a rollator.

Building analysis

The building analysis is based on the architectural research methods of Groat & Wang (2002) after studying Dutch and Japanese building laws (Bouwbesluit, 2012; Townsend, 2013), and consists of three parts: the analysis of the building itself, the domotic analysis (Mohammadi, 2014) and the observations by the assistant researchers.

The buildings itself were analysed regarding the public and private rooms of the building and a photo analysis of multiple areas on the following criteria: Front garden; Green; Front door/entrance Safety and security Hallways & doors; Public room; Private rooms; Stairs & Elevators; bathroom

The domotic analysis consists out of photos of the domotics and technology. These domotics were described and reviewed by the assistant researchers.

Apart from the objective mapping of the cases, subjective observations were conducted by the two assistant researchers to rank every case after the visit. These observations were based on previous research (Spierings, 2014) regarding sixteen indicators.

Narrative analysis

To be able to say something about the elderly, themselves, their care takers and care managers were interviewed regarding their housing situation and the influences of the internal social and physical factors. The narrative interviews were conducted and analysed following a derivative version of the narrative need pattern methodology (Van Biene, et al, 2008; Jansen et al., 2013).

The narrative analysis is only conducted in the Dutch cases. Partly because of the language barrier and partly because the lack of permission to record the interviews in the Japanese cases and the presence of senior colleagues companioning the interviewed person.

The twenty interviews among care takers, residents and volunteers were conducted following an interview guide, based on previous research (Spierings, 2014), see table 2. The interviews were performed by two research assistants who were trained to conduct narrative interviews. The narrative starting question SQUIN - Single Question Inducing Narratives (Wengraf, 2001) as follows: *"What does your ideal living environment look like?".*
The interview guide contained supporting questions on the internal social and physical factors as main topics. To reach saturation of results in a narrative study, Robson (2002a and 2002b) defines theoretical saturation with 30 respondents. With an number of twenty respondents interviewed in the Dutch set of cases, this is not completely fulfilled.

Interpretation of these data by the research team resulted in a content analysis to answer the specific research questions and the detection and articulation of more general narrative patterns. In this way, the analysis follows a linear trail from construction of individual narratives by the respondents in the interviews to deconstruction in the analysis and reconstruction into collective narratives. The results from the Dutch set as a whole, reach saturation in practice, regarding the robust patterns.

Table 2 Respondents Narrative analysis of the four Dutch cases

Case	Care takers	Residents	Volunteer	Total
MuzeRijk	3			**3**
St. Jan	4	3		**7**
OBG		2	1	**3**
Bergweg	2	5		**7**
Total	**9**	**10**	**1**	**20**

Triangulation

To integrally assess the cases assessment criteria are triangulated (Maso & Smaling, 2004; Saunders, Lewis, & Thornhill 2015) out of the at least three, preferable more sub researches, see table 2. In this research this varies from four to six sub researches. Each case gets a rating on every internal social and physical factor from 1 stars up to 5 stars, based on an for this research designed explicit and extensive list of criteria.

Table 3 Triangulation of analysis instruments regarding mediating variables

Analysis instrument		Environment		Building			Actors*
		Neigh-bourhood	Location	Building	Domotics	Obser-vations	Narra-tives*
Internal social factors	**Safety and security**		v	v	v	V	v
	Health-care/nur-turing	v		v	v	V	v
	Freedom of Move-ment	v	v	v	v	V	v
Internal physical factors	**Public room**	v	v	v		V	v
	Private room		v	v		V	v
	Green	v		v		V	v
	Domotics			v	v	V	v

*Only the set of Dutch cases

Results

Triangulated results from the set of Dutch cases

For the Dutch cases, there is a range in triangulated scores for the cases from 1,5 to 5. The average scores for the set of Dutch cases has a range from 2 to 4.
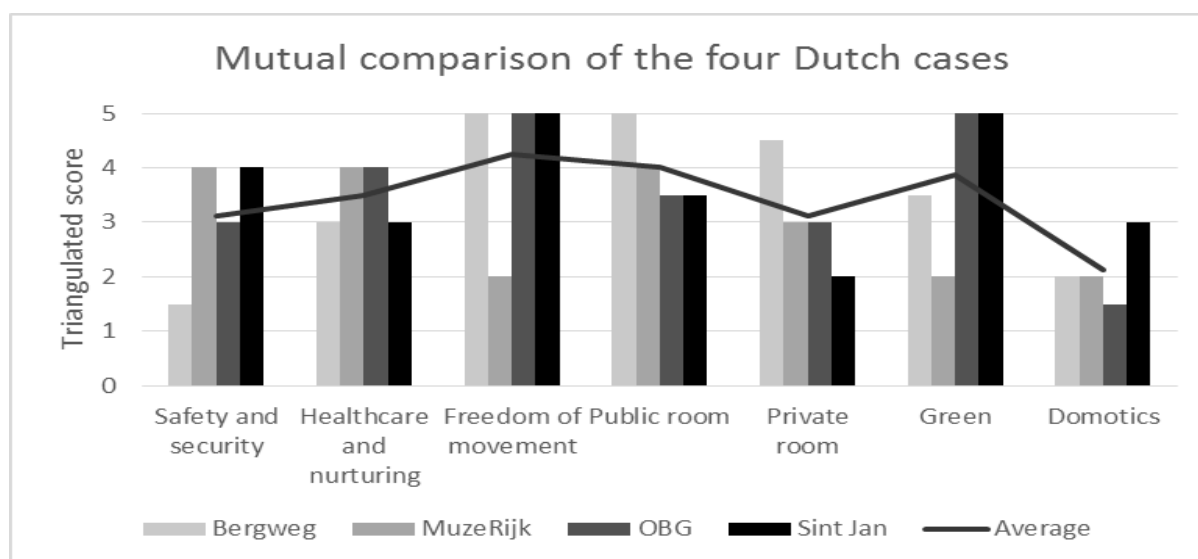

Figure 3. Mutual comparison of the four Dutch cases

The highest scores for the Dutch set regarding the internal social factors are: freedom of movement, and regarding the internal physical factors public room, and green, see figure 3. The Dutch cases score less on safety and security domotics. These results can be additively illustrated by a selection of applicable narrative results, see table 4.

Table 4 Narrative on the four outstanding factors in the set of Dutch cases

Factors		Examples of personal statements	Respondent
Internal social factors	**Safety and security**	*"Well I think it's a great idea, it is a bit different, and small-scale living is ideal for elderly you are creating more of a home for those people.".*	Caretaker, St. Jan
		"I don't hear anything about safety problems in the environment or crime that."	Resident, OBG
	Freedom of Movement	*"There is also an elevator naturally because with your walker or mobility scooter you can't go with an escalator."*	Resident, Bergweg
		"And the doorstep, that's a disappointment even in the toilet for the disabled toilet, it makes it quite hard for walkers."	MuzeRijk, volunteer
Internal physical factors	**Public room**	*"In my opinion the space is fine, we need the space, more and more people are in need of a wheelchair or walker, the more space the better."*	Caretaker, MuzeRijk
	Domotics	*"Well if you can't get out and the button for the alarm is too far away it won't work... I would need to have an experience before I would use it."*	Resident, OBG
		"Well I would have taken them out myself and store them because I think it are unsightly things."	Resident, Bergweg

Triangulated results from the Japanese cases

For the Japanese cases, there is a range in triangulated scores for the cases from 1 to 5. The average scores for the set of Japanese cases has a range from 3 to 4. For the Japanese cases the highest scores are on the internal social factors Safety and Security and the internal physical factors Green and Domotics. The Japanese cases score less on the internal social factor freedom of movement, and the internal physical factors and public rooms.
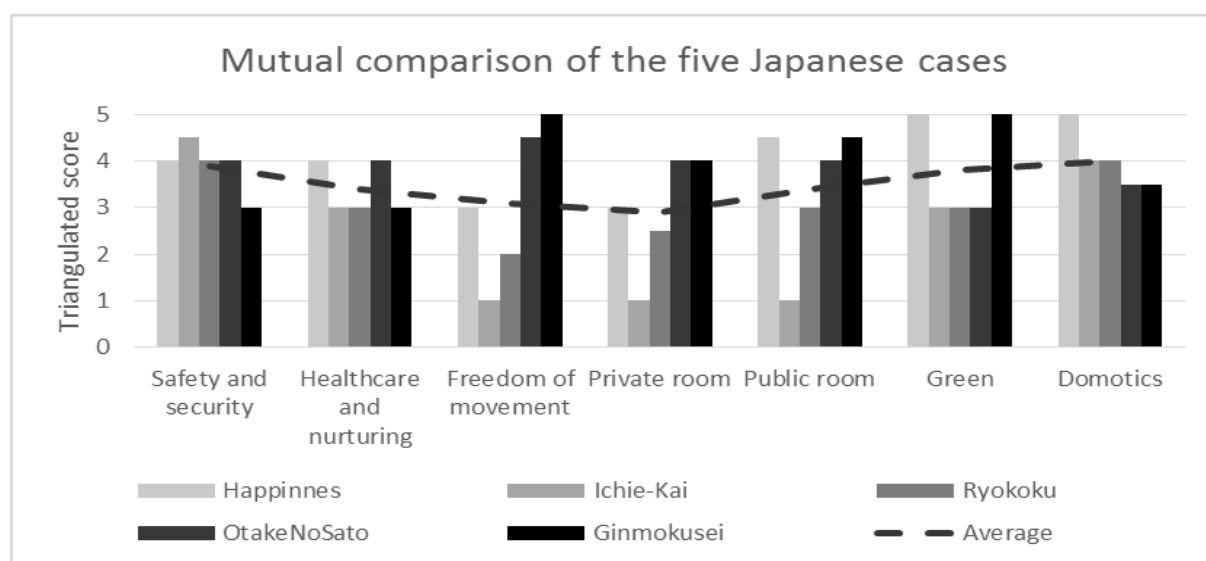

Figure 4. Mutual comparison of the five Japanese cases

Overall comparison of the Dutch and Japanese sets of cases

When we compare the overall results of the Dutch cases with the Japanese cases as a set regarding the internal social factors, we can see that the results of security and safety (Figure 5) and freedom of movement (Figure 6) stand out by a distinctive difference score.
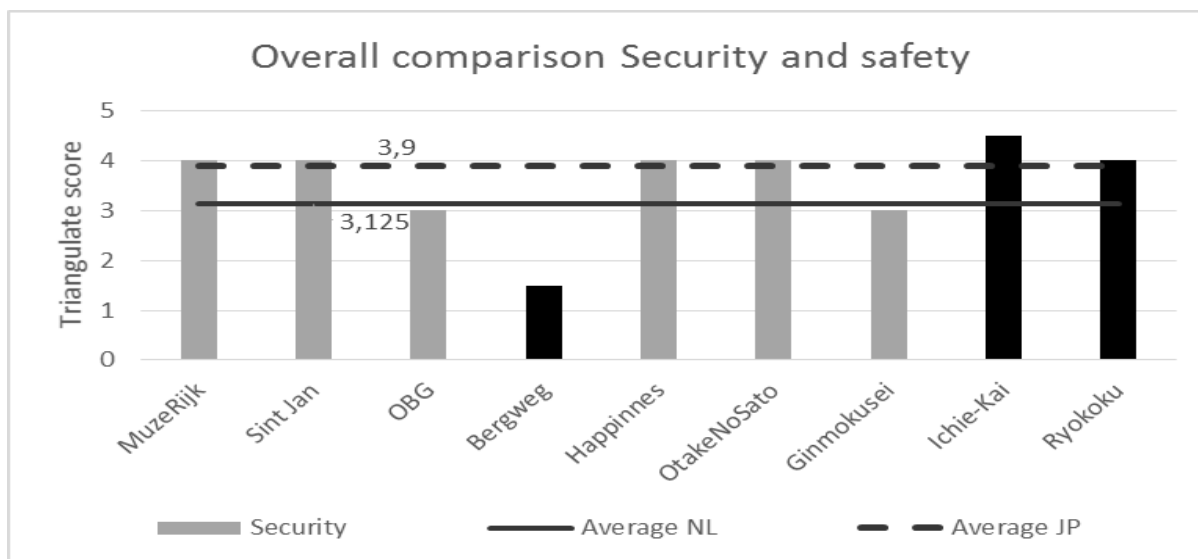

Figure 5 Overall comparison security and safety

Regarding security and safety, the average of the Dutch set is clearly lower with a score of 3,125 than the average of the Japanese set with a score of 3.9. Clearly outstanding in a negative way is the urban Dutch case Bergweg.
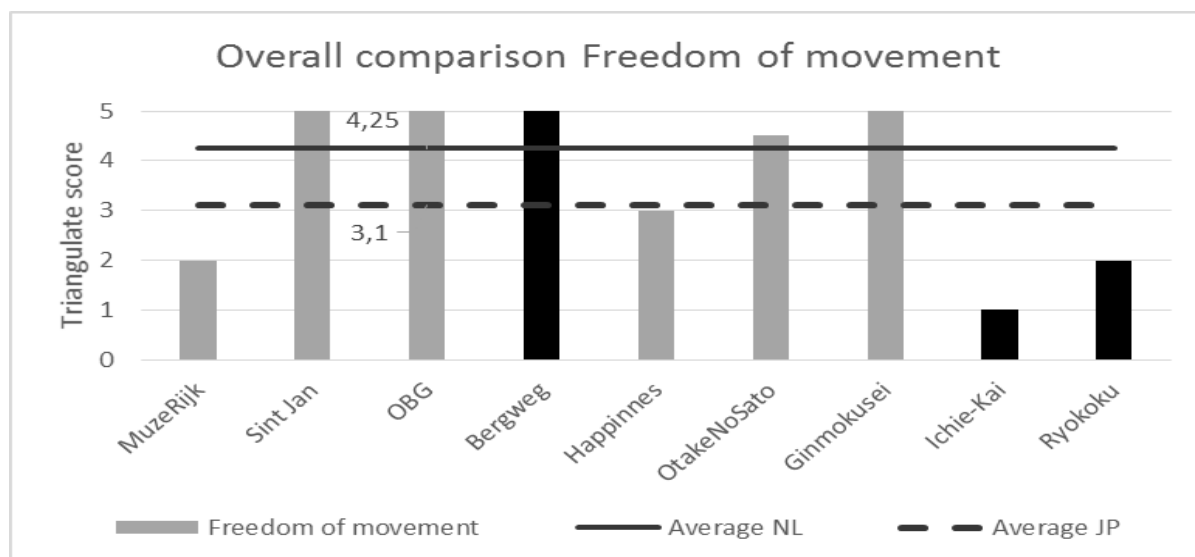

Figure 6 Overall comparison freedom of movement

Regarding freedom of movement, the average of the Japanese set is clearly lower with a score of 3,1 than the average of the Dutch set with a score of 4,25. Outstanding in negative way is the non-urban Dutch case MuzeRijk and the urban Japanese cases of Ryokoku and especially Ichie-Kai.

When we compare the overall results of the Dutch cases with the Japanese cases as a set regarding the internal physical factors, we can see that the results of public room (Figure 7) and domotics (Figure 8) stand out by a distinctive difference score.
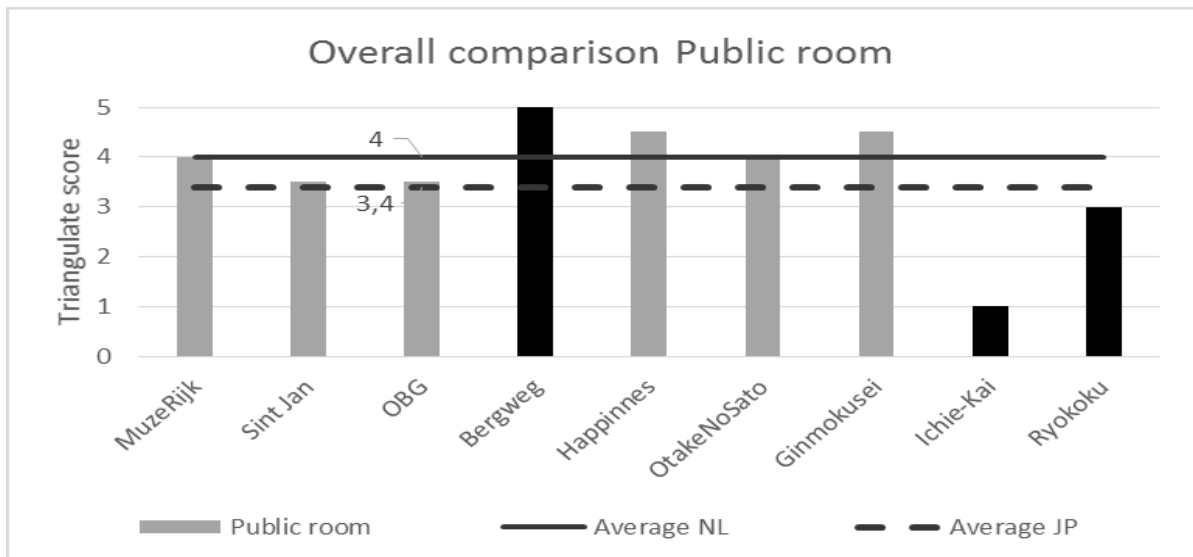

Figure 7 Overall comparison public room

Regarding the internal physical factor public room, the average of the Japanese set is clearly lower with a score of 3,4 than the average of the Dutch set with a score of 4,0. Clearly outstanding in a negative way is the urban Japanese case Ichie-Kai.
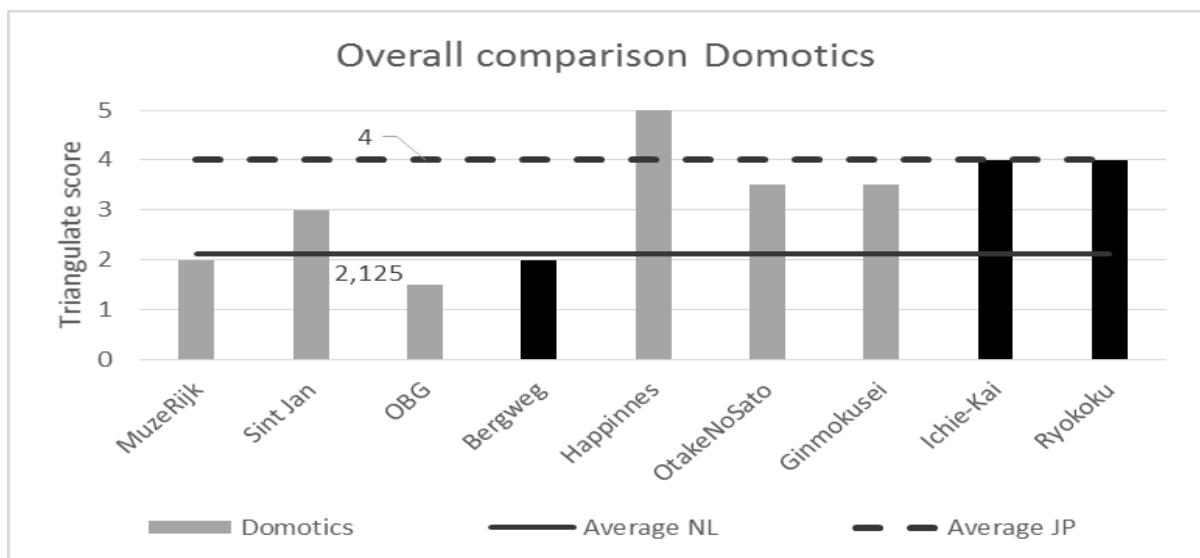

Figure 8 Overall comparison domotics

Regarding the internal physical factor domotics, the average of the Dutch set is clearly much lower with a score of 2,125 than the average of the Japanese set with a score of 4,0. This concerns all the Dutch cases with a positive exception for the non-urban Dutch case Sint Jan.
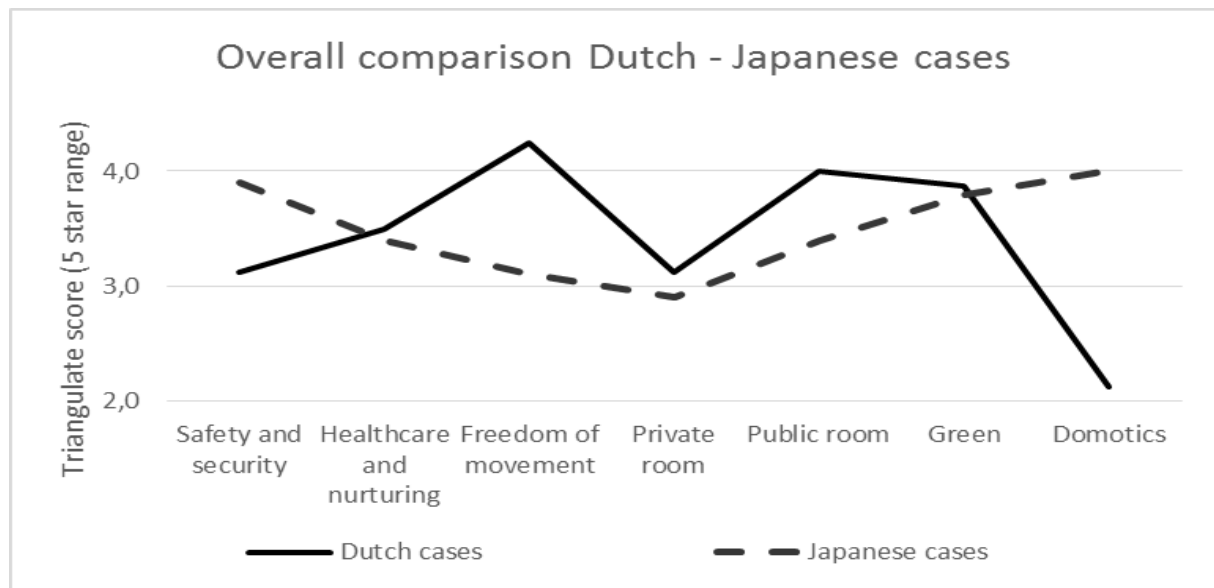
Figure 9. Overall comparison Dutch – Japanese cases

When we compare the overall scores of the Dutch and Japanese cases, we see that there are clear differences on two internal social factors of safety and security and even more on freedom of movement and two internal physical factors public room and domotics. There is a similarity in the scores of healthcare and nurturing, green, and more or less on private room.

Discussion

Regarding the influences of the countries, the research has little but sufficient cases to come to some explorative conclusion to that influence.
Regarding urbanity and non-urbanity, the research has too little cases to come to conclusion to that influence.

For the Dutch cases the highest scores are on the internal social factor freedom of movement and the internal physical factors public room and green. These three outstanding factors can all be related to the concepts of housing for the elderly in the Netherlands and the community-based care.
Regarding freedom of movement, there is a the focus on self-reliance is large, housing concepts will focus on that in particular.
Regarding public room, there is focus on the role of the community, within the building as well with the neighbourhood. A convenient and well dimensioned public room is therefore a primary condition.
Regarding the presence of green in most of the Dutch cases, we can state that the Netherlands is a country with a lot of room for flora and fauna, especially in the non-urban areas.

For the Japanese cases the highest scores are on the internal social factors safety and security and the internal physical factors green and domotics. These three outstanding factors can all be related to the concepts of housing for the elderly in Japan with focus on security, nature and the widely spread acceptance of technology.
Regarding green, there is a lot of respect for the elderly and respect for the environment, which can be related to Shintoism. This makes it obviously that there are a lot of parks and green areas, even in the dense cities.
Regarding domotics, Japan is a country that thrives on the development of technology, a lot of elderly are already used to use technology from when they are younger. Some technology like the expansive use in toilets is integrated into society and common use.

Conclusion and recommendations

Conclusion

In response to the research question, the results from the integrated, triangulated analysis show some similarity and clearly some remarkable differences.

- There is a similarity in the scores of healthcare and nurturing, green, and more or less on private room.
- Regarding the internal social factors, the Dutch cases score better in freedom of movement, the Japanese cases score better on safety and security. The latter is strongly influenced by the safety in the Japanese society as a whole.
- Regarding the internal physical factors, the Dutch cases score much better in public room, the Japanese cases score clearly much better on domotics.

Recommendations

Overall, we could say that the Dutch cases can learn from the Japanese cases regarding safety and security and domotics while the Japanese cases can learn from the Dutch cases regarding freedom of movement and the use of the public room.

- The first recommendation for similar Dutch cases would be to learn from the safety and security for the elderly housing in the Japanese cases, although this is a strongly external factor.
- The second recommendation for similar Dutch cases would be to improve on the acceptation, the implementation and usage of domotics. By simplifying the domotics, and making them more an integrated and natural part of the housing concept.
- The first recommendation for similar Japanese cases would be to learn from the Dutch cases on the freedom of movement. Create more freedom of movement by more public room, wider living area and contact with the neighbourhood.
- The second, and partly related, recommendation would be to engage the neighbourhood, create more community care. and implement more community based public room for facilities within the housing concept.

Recommendations for new research would be:
- To come to more robust results, by extension of the Japanese set of cases and extension of the Dutch set of cases or triangulation of the existing set with the 24 cases of the Wenselijke Schaal (Spierings, 2014) is needed.
- Also should the narrative analysis of the Japanese cases be added to the environmental and building analysis to complete the triangulation on that part of the comparison.

Acknowledgement

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