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Low Cost Flats Outdoor Space as Children Social Environment

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Abstract

Urbanization in Malaysia continues to demand more low cost housings. Walk up flats are popular housing forms for their relatively lower construction and maintenance costs. Standardization and spatial efficiency requirements result in minimum dwelling spaces that spill life outdoor. For children, outdoor space becomes integral part of growing up and social experiences. Different flats configuration offer different spatial affordances for such experiences that could inform designs. The paper explores children outdoor activities and relates them to flats layouts through comparative study and found that the different flats configurations affect the different patterns of children outdoor activities.

Keywords: Low cost flats; outdoor space; social activities; children social environment

1. Introduction

Increased urbanization demands more low cost housings to cater for the urban poor. Walk up flats are inevitable types of such housing particularly in urban fringes. Relatively high density and lower costs of construction and maintenance make them more preferred to high rise flats (Long, 2007; Tan, 1979). In contrast to low cost terrace, which has direct access to ground areas with ample natural settings, flats are

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usually built on constraint land area and limited green spaces. Moreover, dwelling spaces of walk up flats are limited as they evolve through design that is based on spatial standard and economic efficiency. This inevitably renders the already limited outdoor near the homes areas and circulation spaces as vital and inevitable social spaces particularly for children. Besides schools, residential near home spaces are arenas for developing their knowledge and social skills (van Vliet, 1983). Different flats configurations would offer different functional affordances. This paper explores how these differences affect the pattern of children appropriation of the outdoor space.

2. Literature Review

2.1. Making a home in the housing outdoor space

Living in low cost flats constrains children's growing up needs and experiences. Any limited spaces available are usually appropriated to make them congruent to their needs (Kaplan, 1983). A wealth of past literature has dealt with children outdoor activities as part of their growing up process (Evans, 2006). Built environment plays major role in the types of activities and the affordances of suitable spaces for those activities. While neighborhood planning includes guidelines for provision of playground and open space, researches have repeatedly shown that open spaces are usually minimally used and contribute little to the social interaction process necessary (T. Abu-Ghazzeh, 1999). This is partly due to the inconvenient locations away from the parental surveillance. In turn, the near home spaces replace the playground and open space as the main social and play space for the children.

Children prefer natural outdoor settings for their wide potentials for motor and social play (Evans, 2006). Such natural environment also affords greater independence and mobility (Kyttä, 2004). In natural environment the type of play accessible is also more complex (Kirkby, 1989). In urban low cost flats environment, such opportunities to be in natural setting are rare. The economic needs for space optimization limit the provisions such settings near the homes (Tan, 1979). How the children tolerate the lack of such setting in urban low cost housing remains uncertain. Children play and socialize more in natural surrounding than in a more barren environment (Taylor, Wiley, Kuo, & Sullivan, 1998) common in low cost flats. This outdoor life experience is vital for children. The longer the outdoor experience the children have, the higher benefits of developmental learning they encounter (Hattie, Marsh, Neill, & Richards, 1997). How different configurations of housing afford this ability in the low cost housing outdoor is the main question of the paper.

Apparently, housing outdoor spaces are important environment for children developmental process depending upon the affordances of appropriate the spaces for play and socialization. Constraint of space particularly in low cost housing would disrupt such process. Children need to adapt to the limited spaces governed by low cost flats configurations. Thus, despite the limited options and alternative, the impacts of layout configurations should be understood so that opportunities for children's developmental processes, including social interaction, are not hindered.

2.2. Housing Physical environment and Children

Studies on impacts of physical environment on children social interactions reveal mixed evidence (van Vliet, 1983). High rise buildings were found to relate to higher incidence of children problematic behaviors (Saegert, 1982). Such housing is also associated with weaker school academic performance, even though the impacts depends upon their age groups (Oda, Taniguchi, Wen, & Higurashi, 1989). Density and housing population too relate to child behaviors. Housing area with higher proportion of multi-family housing was found to relate to higher rate of juvenile delinquency (Gillis, 1977).

Children activity spaces, particularly the outdoor near home spaces, play major role in children's life experience and development. What the spatial environment offers could influence their well being. Constrain of outdoor space was found to be among the main causes of tension and isolation for children and mothers at home (Churchman & Ginsberg, 1984). Housing areas are also important potentials for social support in bringing up children. Good neighbor relationships offer supportive social environment. Less support gained from poor neighbor relations in high rise housing contributes to disruption in children development process (Evans, 2006). Strained interpersonal relationships then would impact both child development and school performance. In low income housing, the effects of lack in social support from family members and friends are more apparent (Evans, 2006).

Housing social environment, its potentials for support and socialization, plays important role in the development of children. However, the low cost flats environmental performance in affording relationships and socialization is not fully understood. Before a further study to understand the physical impact on children development, attempt should be made to understand how the children use and adapt to the housing conditions for their socialization process. In particular, this paper explores how the different outdoor space of the flats relates to the pattern of use by children.

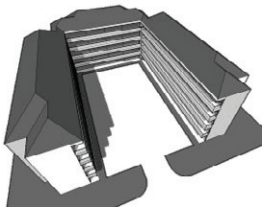
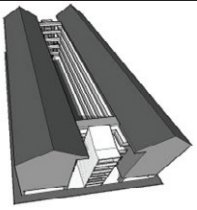
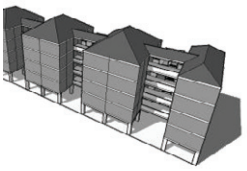
3. Methodology

The paper reports part of a larger observational research on the social life in Malaysian low cost flats. It explores the relationship between the different configurations of common low cost flats configurations and children use of the outdoor spaces. For that purpose, systematic behavioral observation was applied to three selected sites utilizing behavioral checklist. Age, ethnicity and gender of the observed participants and their behaviors are recorded and mapped by two observers around predetermined routes. Reliability test (158 predetermined events) was done with 88.5% agreement on the behavior observed and 94.9% agreement on the event activity type's categorization. 22 observations were conducted in each site covering every hour from 8 am to 6 pm on both weekends and weekdays. Each observation lasts 30-40 minutes and is distributed into 8 to 10 minutes in each block. Descriptive analysis is presented to paint the portrait of the children outdoor social life in the housing area.

3.1. Introduction to study area

In 2000, low cost housing constitutes 13.1 percent of housing development in Malaysia. Johor has the highest number of such units (134,775) followed by Selangor (131,330 units). Both are among the most urbanized states in Malaysia. After Selangor, Johor expects to build the highest number of low cost housing (91,500 units) in the Ninth Malaysia Plan (Government of Malaysia, 2005). Up to the third quarter of 2009, the state capital Johor Bahru has a sum of 85,396 low cost units constituting 50.8% of total low cost units in the state. Of these, 46% (39,276 units) are flats (NAPIC, 2009). After the third quarter, another 4,663 units of flats were expected to add to this number. Thus, flats are important forms of housing in urban area of Johor Bahru.

Table 1. Summary of study areas

	LCF1	**LCF2**	**LCF3**
Building configuration			
Circulation type	**Open corridor**	**Double internal corridor with air-well**	**Clustered around staircase**
Site area	6.01 ac. (2.43 ha.)	5.09 ac. (2.06 ha.)	5.24 ac. (2.12 ha.)
Density	80 units per acre	94 units per acre	90.8 units per acre
Number of units	480	480	476
Number of floors	5	5	5
Number of units per floor	16	20	4
Average number of unit per staircase	40	40	16
Number of staircases per block	4	2	4 to 5
Unit on ground level	Yes	No	No
Ground floor covered common court	No	Yes	Yes
Playground	No	No	Yes
Number of blocks	6	6	6
Year of occupation	1997/8	2002/4	2000
Racial components (% of units)			
Malay	86.0%	84.8%	71.4%
Chinese	2.5%	8.1%	25.0%
Indian	6.0%	2.3%	5%
Others/Unknown/empty	5.5%	4.8%	3.6%

3.2. Sampling

Johor Bahru has more than 60 sites of low cost walk up flats. They are purposively sampled to eliminate excessive variability in terms of building height (number of floors), housing age (year of occupation), heterogeneity (racial components) and population size (number of units). Table 1 shows the comparison between the three selected sites which represent three of the most common flats configurations. Low cost flats 1 (LCF1) contains six blocks of flats with open air corridor forming courts occupied by parking spaces. Low cost flats 2 (LCF2) contains same number of blocks with an air well that provide light and ventilation to two internal corridor on its side thus forming a narrow central court. This central court continued vertically down to the ground level forming part of the common covered ground court. Low cost flats 3 (LCF3) represents the most recent flats type whose units are organized around staircases. Each floor served by a staircase has minimal corridor space surrounded by four

dwelling units. All flats building in the three housings areas are five-storey high. LCF1 includes ground units while LCF2 and LCF3 are without the ground units. Without the ground units, the latter two housing areas could accommodate common covered ground court.

3.3. Variables

From a pilot study, two common categories of children activities (social and retreat activities) were identified as the most frequently observed children behaviors. Social activity category includes active group activities such as playing and talking, and less active social activities such as brief encounters and greetings. Retreat activity category consists of all solitude activities including playing alone, watching the surroundings (such as people passing by or events taking place), and relaxing (which include sitting, lying or sleeping). Other general and domestic activities were noted for events that do not fit the above categories. A spatial hierarchical analysis of the housing plans identifies the corridor, the staircases, the covered common court, the perimeter (green or paved surfaces surrounding the blocks), parking and the vehicular routes as common spaces in the three housing areas. The territorial functions (Scheflen, 1976) of these spaces conditions how people engage with their surroundings and the outdoor spaces act as the juncture and connector between the private and the public realm. Structured by the layout, circulation, and formation of communal space, these spaces provide opportunities for outdoor social life (Marcus, 2002).

4. Results and Discussions

A total of 1,217 events involving children were recorded. 4,960 residents were observed and 55.4% of them are children (N=2,750) while the rest are adults. In addition, 49% of those events involve children accompanied by adults. While more female adults (65.6%) were observed around the low cost housing areas compared to male adults, a higher proportion of male children (62.9%) were seen around the areas than female children. Overall, social activities encompass 50.9% of all events observed. This finding shows that contrary to other recent studies (Huang, 2006) the outdoor near home spaces are fertile space for social interaction and the phenomenon of social withdrawal is not readily apparent in low cost residential environment. People in urban low cost environment do not entirely disregard the vernacular values and practices of neighboring (Chua, 1991). It shows that the outdoor near home space of the low cost flats are vital children's activity place with potentials for social encounters.

Table 2. Overall activity distributions

Types of activity	LCF1		LCF2		LCF3		Total	Chi Square		
	Within housing	Between housings	Within housing	Between housings	Within housing	Between housings	%	X^2	*df*	*p*
Domestic	5.9%	2.2%	6.9%	2.2%	**8.9%**	2.7%	7.1%	1.300	2	0.52
Retreat	**31.2%**	11.7%	26.2%	8.4%	28.8%	8.7%	28.9%	3.470	2	0.18
Social	62.9%	23.7%	**66.8%**	21.4%	62.3%	18.9%	64.0%	0.737	2	0.69
	100.0%	**37.6%**	**100.0%**	**32.1%**	**100.0%**	**30.3%**	**100.0%**			

Initial analysis does not seem to show significant differences in percentage distribution of the activities among three housing areas (Table 2). Children in different types of environment seem to have the similar proportion of activities. This could be due to the similarity of the lifestyle and the socioeconomic background in low income community of a low cost housing. The results also shore up trustworthiness of the sampling in accordance to previous studies relating homogeneity and social interaction and outdoor

activities. No matter how the environment is, children's activities and behavioral needs around the housing area tend to be similar.

However this insignificance does not necessarily disprove the environmental impacts on children behavior. A more specific analysis reveals significant differences between some of the social activities observed (Table 3). In particular, some factors seem to affect the differences in amount of children's group conversation and occurrences of brief encounters between the three sites. Group conversations are significantly higher in both LCF1 and LCF3 ($p<0.05$). Prolonged conversation is significantly less in LCF2 (28.4%, $p<0.05$) than in LCF1 (34.1%) and in LCF3 (35.8%). Brief encounters among children, however, are significantly higher in LCF1 and LCF2 ($p<0.05$). More circulation spaces in LCF1 and LCF2 may explain such difference; more movement of children in the corridors increases potentials for them to bump on each other. On the other hand, data shows a very significant difference in watching activity in LCF1 compared to the other sites. Therefore, even though there is no significant difference in the overall comparison between the different housing areas, a closer look at the activity types within the categories shows that some other factors might be at work in their differences.

Table 3. Types of children social and retreat activities

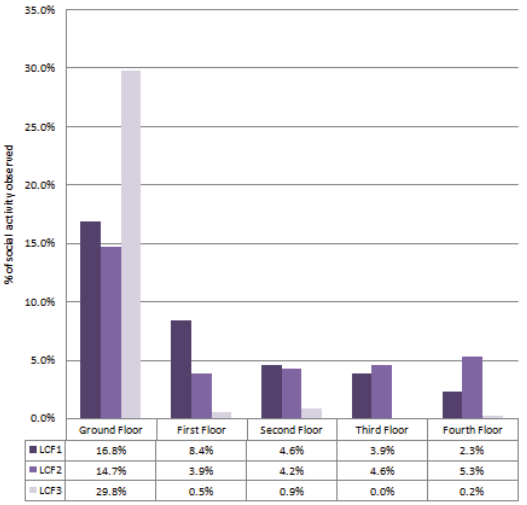
	LCF1			LCF2			LCF3			Total	Chi Square		
	% within LCF	% overall	% within activity	% within LCF	% overall	% within activity	% within LCF	% overall	% within activity		X^2	*df*	*p*
Children Social Activities													
Playing in Group	59.7%	21.7%	36.7%	60.8%	19.4%	32.9%	56.5%	17.9%	30.3%	59.0%	0.721	2	0.697
Talking/Conversing	33.6%	12.2%	34.1%	31.7%	10.2%	28.4%	42.4%	13.4%	37.5%	35.8%	6.52	2	0.038 *
Brief encounters	6.6%	2.4%	46.7%	7.5%	2.4%	46.7%	1.1%	0.3%	6.7%	5.2%	7.78	2	0.020 *
Total	100.0%	36.3%		100.0%	32.0%		100.0%	31.7%		100.0%			
Children Retreat Activities													
Playing Alone	38.3%	17.4%	34.1%	59.5%	16.6%	32.6%	63.4%	17.0%	33.3%	50.9%	0.757	2	0.685
Watching	41.7%	18.9%	59.5%	21.6%	6.0%	19.0%	25.4%	6.8%	21.4%	31.7%	22.6	2	0.000 ***
Relaxing	8.3%	3.8%	47.6%	10.8%	3.0%	38.1%	4.2%	1.1%	14.3%	7.9%	2.74	2	0.254
Other	11.7%	5.3%	56.0%	8.1%	2.3%	24.0%	7.0%	1.9%	20.0%	9.4%			
Total	100.0%	45.3%		100.0%	27.9%		100.0%	26.8%		100.0%			

4.1. Floor level

Similar to other studies, activities decreases as floor level rises (Ginsberg & Churchman, 1985). However, the rates vary by flats configurations. Comparison between the differences in the first to the fourth floor corridors of both LCF1 and LCF2 shows significant variation in social activities by the floor level in LCF 1 ($X2=24.1$, $p=0.000$), while there is no significant difference in LCF2 ($X2=1.59$, $p=0.661$). The different characteristics of ground floor between the two flats does not display any significant different in the amount of social activities observed (Fig. 1(a)). In other words, having ground floor units or providing a common court does not significantly affect the amount of children socialization. Open corridor, however, significantly affect difference in socialization between floors.

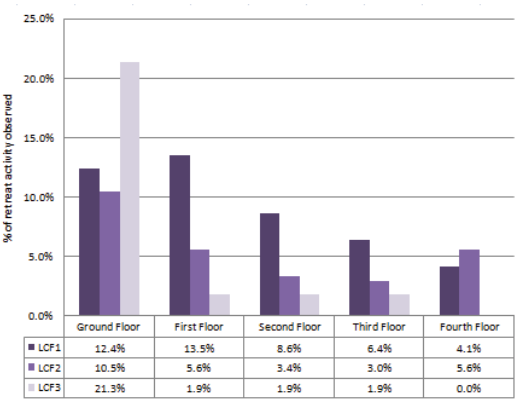
Similar differences were found in overall retreat activities between the three sites (Fig. 1(b)). In LCF1, retreat activity varies significantly by floor levels ($X2=18.5$, $p=0.001$). Physical characteristics of the corridors in LCF1 seem to work similarly on retreat activity. More retreat activities were observed in the top most floors and the first floor in LCF2 than in the floors between them. Lack of view to watch in the middle levels, coupled with the lower lighting could possibly hampers such activities. However the difference is not statistically significant ($X2=3.64$, $p=0.303$). The observed social activities in LCF3 are too minimal to be considered for the similar analytical test; lack of spaces near the homes explain the high score of activities in the ground level and the extremely low scores of both activities in the upper levels.

The common court and the perimeter playground compensate this lack of space as both social and retreat activities for children and adults were found to be high there.



	Ground Floor	First Floor	Second Floor	Third Floor	Fourth Floor
LCF1	16.8%	8.4%	4.6%	3.9%	2.3%
LCF2	14.7%	3.9%	4.2%	4.6%	5.3%
LCF3	29.8%	0.5%	0.9%	0.0%	0.2%

(a)



	Ground Floor	First Floor	Second Floor	Third Floor	Fourth Floor
LCF1	12.4%	13.5%	8.6%	6.4%	4.1%
LCF2	10.5%	5.6%	3.4%	3.0%	5.6%
LCF3	21.3%	1.9%	1.9%	1.9%	0.0%

(b)

Fig. 1(a) Floor level distributions of social ; (b) retreat activities

4.2. Spatial locations

Table 4. Chi square tests for observed activities by locations

	LCF1		LCF2		LCF3		Chi Square		
	Within LCF1	Between LCFs	Within LCF2	Between LCFs	Within LCF3	Between LCFs	X^2	*df*	*p*
Parking	17.8%	6.5%	1.4%	0.4%	7.0%	2.2%	39.7	2	0.000
Perimeter	6.5%	2.4%	4.7%	1.5%	19.7%	6.3%	33.4	2	0.000
Common Court	0.0%	0.0%	29.7%	9.4%	58.2%	18.5%	34.3	1	0.000
Staircase	2.8%	1.0%	7.5%	2.4%	9.4%	3.0%	8.3	2	0.160
Corridor	72.9%	26.8%	56.6%	17.9%	5.6%	1.8%	118.0	2	0.000
	100.0%	**36.8%**	**100.0%**	**31.5%**	**100.0%**	**31.7%**			

Generally, corridors of LCF1 and LCF2 accumulate the highest score in all events observed (44.7%). In contrast, activities in LCF3 focus on the common court and the perimeter green spaces. The minimum corridor space in LCF3 turns the ground level into active space registering 27% of all events observed. The provision of perimeter playground does add to significant difference in the vitality of the ground spaces. On the other hand, without the common court at the ground level, LCF3 only recorded 8.9% of all events observed. This also explains the high score of 26.8% of activities recorded in the corridor of LCF1. Variations of activities recorded between the spatial locations of the three LCF indicate significant statistical differences (Table 4).

4.3. Retreat activity

Children were observed to play alone significantly more in LCF1 (X2= 2.21, p=0.332). Here, 39.4% of the total observed retreat activities were recorded. In contrast, LCF2 and LCF3 recorded 30.3% of the total retreat activities. All activities in retreat category, such as playing alone, watching, and resting, score the highest in LCF1's corridors (Table 5). The open corridor, with abundant light, views to the streets and surrounding, and opportunity for surveillance seems to relate to more children being alone outside. Presence of people and events to see are factors for outdoor activities (Holland, Clark, Katz, & Peace, 2007; Jacobs, 2002; Marcus, 2002; Zhang & Lawson, 2009). Corridor of LCF1, with such characteristics, contributes significantly to the high retreat activity recorded (35.1%). This accounts to 89.2% of all retreat activities within the housing area. On the other hand, in LCF2 and LCF3, the corridor only holds 17.0% and 4.8% of the retreat activities. While both LCF2 and LCF3 contain common courts, they afford different types of retreat activities. Resting was recorded more in LCF2 while playing alone was recorded more in LCF3. Both however do not afford as much of watching behaviors as LCF1 since, unlike in LCF1, such behaviors in the two areas depend solely on available events rather than wider street views.

Corridor is important activity space. Even though outdoor activities concentrated in the covered common courts, given the choices of having both relatively bigger corridor and the provision of covered ground common court, the children still chose to be close to homes (i.e. the corridor). In LCF2, retreat activities score 56.1% in the corridor compared to only 29.8% in the covered common court (Table 6). Children need to be close to homes to access their parents while playing. While the corridors of LCF2 scores high in resting and playing alone, the reverse is true for watching. The inward orientation of LCF2 affects the low score of watching even compared to LCF3. Even though the corridor is minimal in LCF3, its external orientation affords street view which possibly explains the low scores obtained in all social and retreat activities on the street in LCF2. Children play less, either in group or alone, on the street in LCF2. The streets here function less as socialization place (T. M. Abu-Ghazzeh, 1998).

Table 5. Location of retreat activity

	LCF1		LCF2		LCF3		Total %
	Within LCF1	Between LCFs	Within LCF2	Between LCFs	Within LCF3	Between LCFs	
Parking	5.4%	2.1%	0.0%	0.0%	7.0%	2.1%	**4.3%**
Perimeter	1.4%	0.5%	7.0%	2.1%	14.0%	4.3%	**6.9%**
Common Court	0.0%	0.0%	29.8%	9.0%	57.9%	17.6%	**26.6%**
Staircase	4.1%	1.6%	7.0%	2.1%	5.3%	1.6%	**5.3%**
Corridor	89.2%	35.1%	56.1%	17.0%	15.8%	4.8%	**56.9%**
	100.0%	**39.4%**	**100.0%**	**30.3%**	**100.0%**	**30.3%**	**100.0%**

4.4. Social activity

Generally, LCF1 displays the highest number of social activity (Table 6). Even without social amenity like the playground or covered common court, children social events were observed more here than in the other LCFs. These activities happen mostly in the corridor and parking area which have the advantage of being under surveillance by the residents. The U-shaped configuration allows parents to view their kids just by stepping out into the corridor. The findings also show that even without the provision of playground, social activities in LCF1 and LCF2 remains high; children play near their homes more. They

explore alternative spaces to fulfill their activity needs. The provision of playground does not necessarily increase the amount of children's activities though important for certain play types.

Even though the common court turns out to be children's favourite social place in LCF3 (60.8%), the figure only accounts for 18.8% of all social activities observed (Table 6). The corridors remain popular place in LCF1 (23.5%) and LCF2 (19.0%). Even the combined green perimeter and playground in LCF3, do not hold as much social activities. Nonetheless, the playground compensate for the lack of corridor space LCF3 (25.7%). Spaces close to homes are still important social arena for children as 43% of all social activity was observed to happen in the corridor. Corridors in LCF1 and LCF2 display 65.6% and 57.1% of social activities within respective areas; the lack of playground is thus compensated. The limited corridor space in LCF3 explains the low score of social activity there.

Table 6. Location of social activity

	LCF1		LCF2		LCF3		Total %
	Within LCF1	Between LCFs	Within LCF2	Between LCFs	Within LCF3	Between LCFs	
Parking	25.2%	9.0%	1.4%	0.5%	5.4%	1.7%	**11.2%**
Perimeter	7.3%	2.6%	4.3%	1.4%	22.3%	6.9%	**10.9%**
Common Court	0.0%	0.0%	30.0%	10.0%	60.8%	18.8%	**28.7%**
Staircase	2.0%	0.7%	7.1%	2.4%	10.0%	3.1%	**6.2%**
Corridor	65.6%	23.5%	57.1%	19.0%	1.5%	0.5%	**43.0%**
	100.0%	**35.9%**	**100.0%**	**33.3%**	**100.0%**	**30.9%**	**100.0%**

5. Conclusion

The outdoor near home space of low cost flats function as important activity arena for children. These spaces right in front of the unit door, usually minimized for economic purposes, are actually important ecological environments for children. Thus, the choice of configurations not only implicates the development cost, but also the pattern of children behaviors and their life experiences. Different physical configurations offer different functional affordances leading to diverse pattern of uses in the outdoor near home spaces. While the three housing areas do not show any significant different in terms of the overall types and amount of activities, a closer analyses at the environmental characteristics and those activities show significant variations pointing to the differences in physical environment impacts.

The provision of playground does not necessarily increase children's outdoor activities. Neither lack of such space decreases the activities. It may, however, satisfy their needs for play and socialization, which is a point for further research. Children's exploratory nature drives them to search for spatial alternatives. Marginal outdoor and circulation spaces in low cost housing provided by designers are meaningful places for children. Their responses to the dull environments are rational adaptations rather than misguided behavior (1976). Consequently, the factor of children social exploration and developmental progress might be closer to homes than we expected. In cases of limited resource in low cost flats projects, configuration of building does provide the differences.

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