Day 2 – Thursday, September 14, 2017 3:00-4:00pm Poster Session P2

Green and blue spaces and psycho-physiological adaptation in primary school children: The SOTOASOBI Project

Mari Yoshinaga and Koji Ohnishi

Background and Objective

Background:
This study used the framework of a community based participatory research approach. In this area the local government is planning to have a new adventure playground and we have taken part in the activity to encourage residents to support the plan in SOTOASOBI project

Objective:
We examined the impact of contact with green and blue settings on indicators of psycho-physiological adaptation in school children. The SOTOASOBI Project is a cross-sectional study conducted in Kinuta Area, Setagaya, Tokyo, using community based participatory research approach.

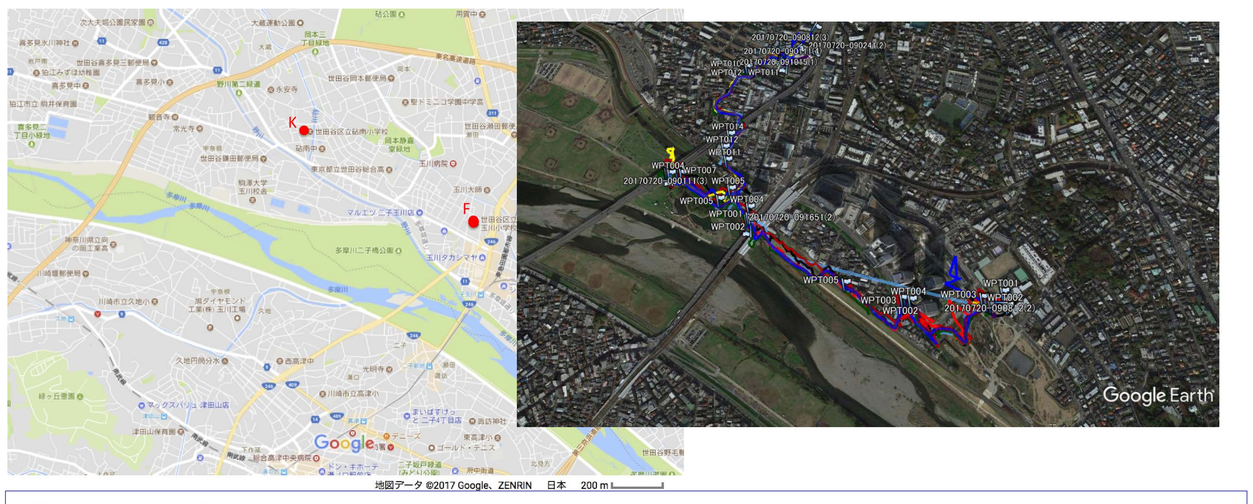

Figure 1. Research site (left) and subjects' walking tracks recorded by GPS on the day of the walking workshop-tour

Table 1. Percentages of children's gender by schools

School	Gender: Boys	Gender: Girls
F	65.8%	34.2%
K	52.2%	47.8%
Total	55.9%	44.1%

Subjects and Methods

We obtained data using self-rated questionnaire conducted among children of two elementary schools (K & F) as shown in Figure 1. The inquiry items were concerning their way and places of outdoor play, psychological mood, level of motivation, and self-efficacy in academic achievements. In addition, their parents were asked the duration that the subject children spent in green and blue spaces including the adventure playground, ordinary parks with a fringe of trees and gardens, and playground on the riverside. Parents were also asked to respond to the Strength and Difficulties Questionnaires (SDQ) and ADHD/DSM-V questionnaire.
We also conducted a workshop-tour involving walking around the play spots in their residential area to share the children's experience during playing nearby green and blue environment (Figure 2). The tracks recorded by GPS were shown in Figure 1. The description of the results from the workshop - tour are not included in this presentation.

Figure 2. Photos of walking workshop-tour

Results

Green and Blue outdoor settings appear to induce the well-adapted condition among children and the association is more significant when the time spent there was longer. The results of parents' SDQ scores are partly statistically significantly different between groups that do and do not engage in playing in Green and Blue settings, frequent active playing, and frequent outdoor playing. Additionally, ADHD/DSM-5 scores indicated the well-adapted condition among children who played in such an environment and spent much time playing.

Table 3. Comparison of SDQ scores

		Play in Green						Frequent outdoor play						Frequent active play						Play in Blue (rating by children)				
		means	SD	t	p	effect size		means	SD	t	p	effect size		means	SD	t	p	effect size		means	SD	t	p	effect size
Conduct problems	no	3.2	9.3	1.5	ns		no	2.6	6.3	-0.3	ns		no	3.4	10.8	1.4	ns		no	2.8	7.0	0.9	ns	
	yes	2.2	1.8				yes	2.7	6.0				yes	2.5	4.8				yes	2.3	1.8			
Hyperactivity/ inattention	no	3.3	2.4	1.8	ns		no	3.1	2.5	-0.6	ns		no	3.1	2.4	-0.2	ns		no	3.0	2.4	-1.0	ns	
	yes	3.0	2.4				yes	3.2	2.4				yes	3.1	2.4				yes	3.3	2.5			
emotional symptoms	no	1.8	2.1	2.1	<0.05	0.10	no	2.1	2.1	4.7	<0.001	0.20	no	2.3	2.2	3.1	<0.05	0.29	no	1.7	1.9	1.0	ns	
	yes	1.5	1.7				yes	1.3	1.6				yes	1.5	1.8				yes	1.5	1.9			
peer relationship problems	no	2.2	1.8	4.0	<0.05	0.20	no	2.2	1.9	4.6	<0.001	0.20	no	2.9	2.1	5.0	<0.001	0.46	no	2.0	1.7	3.1	<0.01	0.16
	yes	1.6	1.5				yes	1.6	1.4				yes	1.7	1.5				yes	1.5	1.5			
prosocial behavior	no	6.5	2.1	-2.5	ns	0.10	no	6.7	2.2	-1.0	ns		no	6.5	2.3	-1.6	ns		no	6.9	2.1	0.3	ns	
	yes	7.0	2.1				yes	6.9	2.1				yes	6.9	2.1				yes	6.8	2.1			

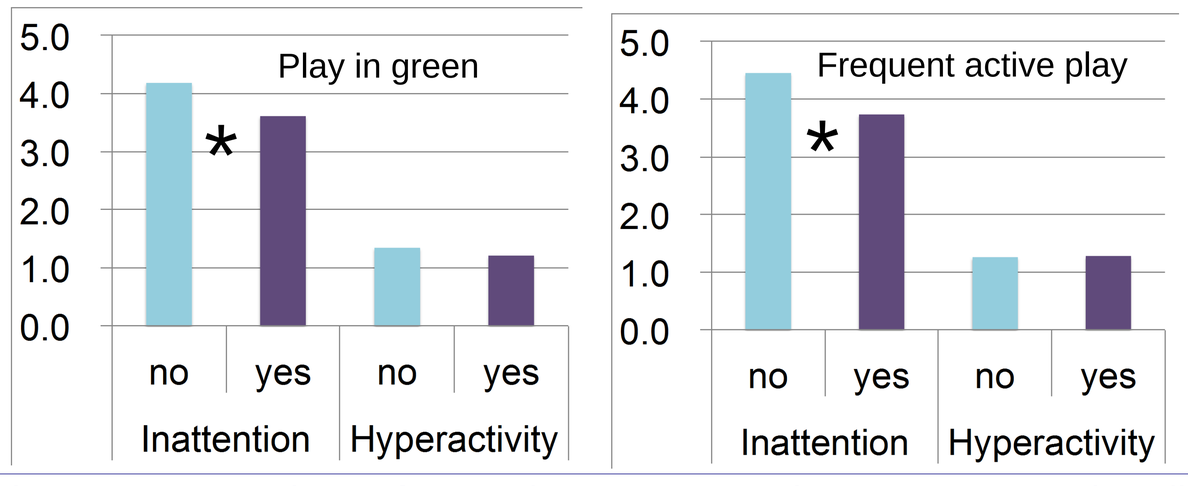

Figure 3. Comparison of ADHD/DSM-5 scores between groups that did and did not engage in "play in green" (left) and "frequent active play" (right).

Conclusion

These findings support beneficial impacts of contact with green and blue setting on psycho-physiological adaptation in school children.