

Effects of Improved Interior on Children's Behavior

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I. Introduction

The purpose of this research was to examine the psychological effects of physical characteristics of environment on human behavior. In particular, this research intended to scrutinize children's responses to improved level of pleasantness in the dining room at an orphanage. Moreover, the research explains the relationship between spatial environment and human behaviors.

II. Methodology

1. Subject and Place

This research was a field experiment. Eighty children who live in an orphanage located in Seoul, Korea, were the subjects of this research. The dining room in the orphanage employed as experimental setting, as it was one of the places where children met regularly all together and was an easily observable space.

2. Experimental Design and Time

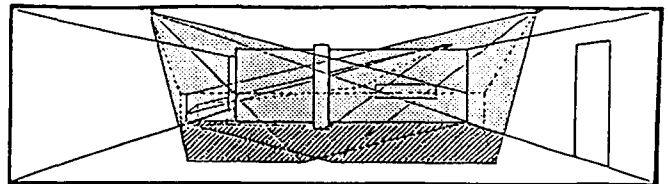
This research adopted the Time-Series design, which is one of the quasi experimental designs.

This research was designed and conducted in three phases as shown in Fig. 1. At the first stage, experiment 1 was carried out to determine the type of furniture arrangement.

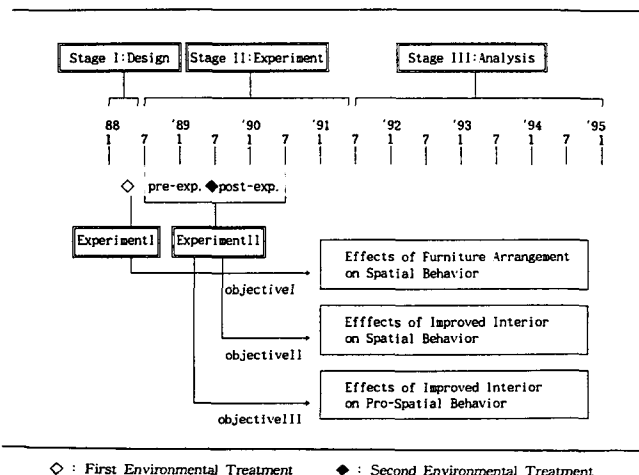
This, in turn, was one of the important environmental treatments for experiment 2. Literature related to this study was also reviewed at this stage. At the second stage, experiment 2 was carried out for each one year, before and after the experimental treatment. Respectively at the third stage, the outcome of experiment 2 was analyzed.

3. Experimental Apparatus

An unobtrusive observation method was used to observe children's spatial behavior in the dining room, For this unobtrusive observation, video recording system (3 CCTV cameras, 2 microphones, 3 CRT monitors, and 3 video recorders) were installed.



(Fig.2) Location of Cameras and the Illustration of the Visual Scope



(Fig.1) Research Process

III. Results

1. Objective 1

1) Objective

The objective of this study was to determine the effects of furniture arrangements on spatial behavior. In detail, this study intended to determine relationship between furniture arrangements (e.g. straight type, semi-private type, and private type) and spatial behavior. The latter was measured by the time spent, the rate of moving during mealtime, area usage, and the user characteristics per area.

2) Experimental Design and Time

Experiment 1 adopted the ABCA time series design. The spatial behavior was observed for each week for each type of furniture arrangements. So, the observation was on type A, which was on existing arrangement, type B, and type C, which were the new furniture arrangement types. Then, the observation again was on type A.

Experiment 1 was carried out during mealtimes, twice a day, for 4 weeks (1988. May. 5–1988. May. 30).

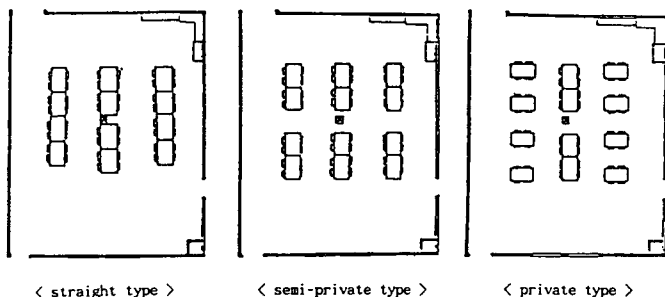
<Table 1> Experimental Design and Time of Experiment 1

Experimental Design	Treatment A	↓	Treatment B	↓	Treatment C	↓	Treatment A
	000000 000000	X	000000 000000	X	000000 000000	X	000000 000000
Furniture arrangement Type	straight type		semi-private type		private type		straight type
Time	second of May (dinner) 9th of May (Breakfast)		9th of May (dinner) 16th of May (breakfast)		16th of May (dinner) 23th of May (Breakfast)		23th of May (dinner) 30]h of May (Breakfast)

3) Experimental Treatments

The experimental treatment of Experiment 1 was the dining furniture arrangements.

The furniture arrangements were classified into 3 types: the straight type, semi-private type, and private type, as the pattern became more private.



<Fig.3> Type of Furniture Arrangement

4) Data Analysis

Data were analyzed by using the SPSS Computer Package. The statistics used were the two-way ANOVA, F-test, and Scheffe's Multiple Range Test.

5) Results and Conclusions

Quantitative analysis of the results showed that as the arrangement pattern became more private, children spent more time, the rate of moving during the mealtime increased, the whole area was used rather than the adjacent area to the kitchen, and sex and age were equally distributed across the whole area.

These results showed that furniture arrangement had effects on spatial behavior. The private type of arrangement had sociopetal, while the straight type had sociofugal effects.

2. Objective 2—The Main Experiment

1) Objective

The objective of this study was to determine the effects of pleasantly designed interior environment on spatial perception, spatial behavior, personality, and school achievement.

2) Time of the Experiment

The pre-measurement was carried out from July of

1988 until June of 1989. The environmental treatment was treated from late in June of 1989 until early in July of 1989.

The Post-measurement was carried out from July of 1989 until June of 1990. The observation of spatial behavior was recorded during the usual dinner time, free of special occasion, twice a week.

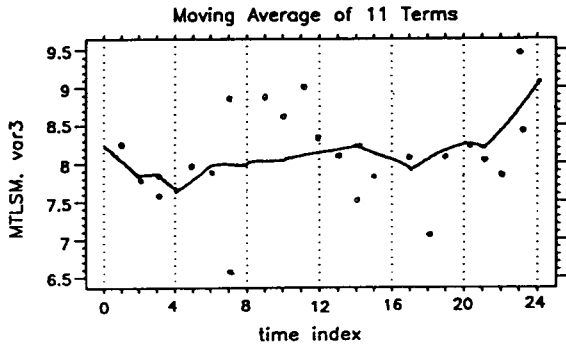
<Table 2> Experimental Design and Time of Experiment 2

school achievement measurement		o		o		o		o
personality test				o		o		o
environmental perception measurement				o		o		o
spatial using behavior measurement				o		o		o
measurement	Time	7	8	9	10	11	12	1
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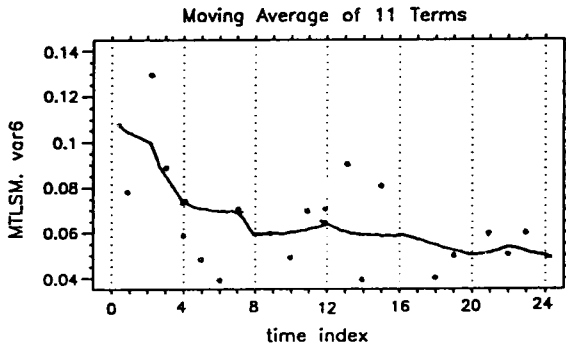
2 years.

① The Trend of Space Using Behavior

After the treatment, children spent more time in the dining room, while the rate of moving during the meal-time decreased. In particular, the girls' behavior ex-



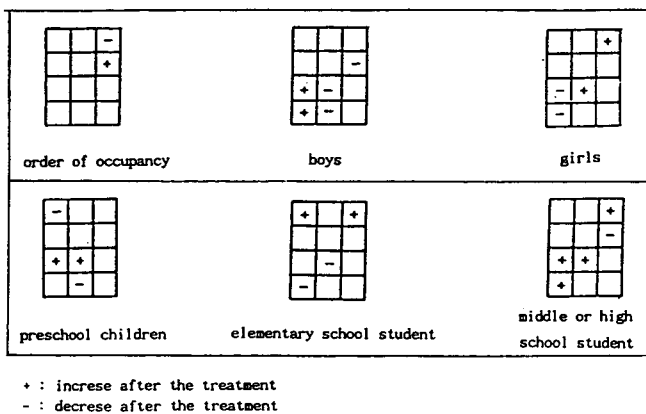
(Fig.4) 2-year Trend of Girl's Spatial Using Behavior Change: Smoo-thed Data



(Fig.6) 2-year Trend of Children's Moving Rate Change: Smoo-thed Data

② Spatial Using Behavior per Area

Before the treatment, children's sex and age characteristics per area were fixed firmly. However, after the treatment, those were relieved. This showed that the divisional tendency changed to territorial mergence. Therefore, each dining area had characteristics of mixed sex and age.



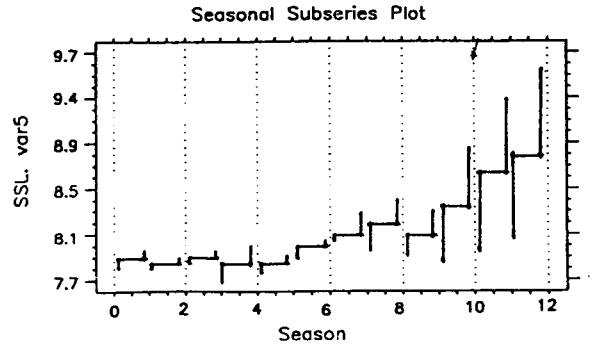
(Fig.8) Spatial Using Behavior Per Area

(3) Personality

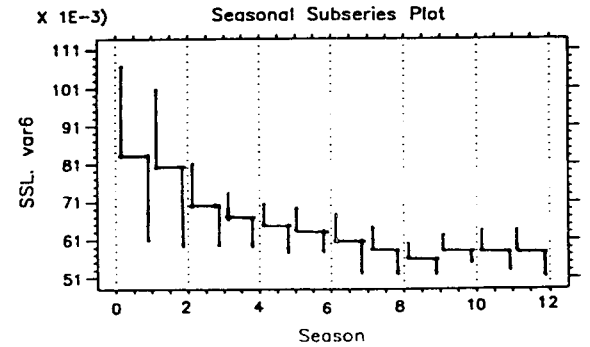
Personality changed significantly only for elementary

plained the changing trend of spatial behavior well.

The space using time of girls' was increased rapidly right after the treatment but it decreased and stabilized as time passed.



(Fig.5) Girl's Spatial Using Behavior Change Per Month



(Fig. 7) Children's Moving Rate Per Month

school children. Their poor self-controlled, resistant, simple and emotional characteristics changed to that of self-controlled, less-impulsive, and stable.

(4) Academic Achievement

There were no significant effects on academic achievement.

3. Objective 3

1) Objective

The objective of this study was to determine the effect of pleasantly designed interior on pro-spatial behavior. The definition of pro-spatial behavior is the seat arrangement behavior which can be measured by an arranged situation and observable arranging behavior.

2) Experimental Treatment and Time

It was the same as Experiment 2.

3) Data Analysis

All the selected data were reorganized into 24 monthly data. In order to control seasonal effects, the time-series data were smoothed on a yearly basis. To analyze monthly basis variation effectively, the seasonal plot in

the STATGRAPH, EDIX, Package was used.

4) Results

The pleasantly designed environment has a long term effect on the pro-spatial behavior change. While self centered pro-spatial behavior was improved continuously and even reinforced, altruistic pro-spatial behavior was improved but diminished as time passed.

There were no differences in the effects between girls and boys.

IV. Conclusions

The purpose of this research was to examine the psychological influences of physical characteristics of space on human behavior. This research was carried out with 3 objectives for 3 years.

The results of this research, proved that improved levels of pleasantness in the physical environment has positive effects on human spatial behavior.

These were the three effects.

1. The furniture arrangement type was a factor that had effects on spatial behavior. In particular, the private type of dining table arrangement, by promoting social interaction of users, had sociopetal effects.

2. The pleasantly designed interior environment was a factor that had positive effects on spatial perception and stable effects on spatial using behavior. Pleasantly designed interior environment had sociopetal effects.

3. This study showed that the positive spatial perception of pleasant environment caused positive changes in children's behavior, as they were encouraged to behave in a desirable way. They were stimulated to be considerate of others and of social norms.

From the perspective of environmental psychology, this experiment was conducted to answer the questions concerning why we need interior design and why it is important to maintain a pleasant environment. The results of this research could make contributions to consolidating the philosophical basis of interior design.