Article

CROSS-CULTURAL ANALYSIS OF PERCEPTIONS OF ENVIRONMENTAL CHARACTERISTICS IN THE TARGET SELECTION PROCESS FOR RESIDENTIAL BURGLARY

Kyung-Hoon Lee and Joong-Yeon Lee

Department of Architecture, Korea University, Seoul, Republic of Korea

Correspondence: Kyung-Hoon Lee, Department of Architecture, Korea University, Seoul 136-713, Republic of Korea. E-mail: kh92lee@korea.ac.kr

Abstract

What are the environmental characteristics that constitute the burglars' template used in their target selection? Are there any similarities or differences in a burglar's template for burglary across cultures? This study attempts to answer these research questions by carrying out experiments, developing a simulated model of burglars' target selection processes, in Korea and the United States. In developing the simulation model, 12 imaginary blocks and 109 dwelling units were constructed to test the hypothesis in relation to a burglar's block and dwelling unit selection. The results of the experiments showed that both culture groups had similar patterns in perceiving environmental characteristics suitable for residential burglary, except for a few differences. Both groups showed a similar pattern of balancing risk and ease factors in their target selection. Overall, both groups considered risk factors as relatively more important than ease factors in decision making. However, the Korean group showed a relatively balanced consideration of risk and ease factors in dwelling unit selection than the US group.

Keywords

residential burglary; target selection; burglar's template; risk factor; ease factor

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Introduction

On examining the spatial and geographical distribution of crime incidence, it is evident that most are not distributed uniformly, but are concentrated in specific areas and buildings or against specific victims. Such crime concentration patterns indirectly show that criminals do not select crime targets arbitrarily but do so through a rational and reasonable target selection process (Brantingham and Brantingham, 1978; Taylor, 1987).

Cornish and Clarke (1986) insisted that criminals commit crimes not because of the consequence of irresistible force such as genetic or socio-economic factors, but because of the consequence of rational choice they make on the criminal situation. They criticized the tendency of traditional criminology to “overpathologize” offenders and to focus on their supposedly abnormal personality, deviant character, or irrational mode of thinking, discounting “the fact that most criminal behavior is of a mundane, opportunistic, and rational nature, and the vast majority of criminals are normal people driven by the same motives that drive most of us” (Clark and Felson, 1993).

Unlike the dispositional approach in traditional criminology, which defines criminals as a group that differs from the general population and that focuses on the personal characteristics of criminals, such as socio-economic, psychological, and genetic factors, the situational crime prevention approach argues that when a situation provides the opportunity and motivation to commit a crime, there is a likelihood for any person to commit a crime. Therefore the situational crime prevention approach attaches great importance to the role of environmental characteristics that provide opportunities for criminal activities, and to the criminal’s perception and decision-making processes related to such environmental characteristics. This approach had its beginnings since the early 1970s, but studies on theories such as rational choice theory (Cornish and Clarke, 1986), routine activity theory (Cohen and Felson, 1979), and the crime site selection model (Brantingham and Brantingham, 1978) began in earnest from the late 1970s.

Most especially, Brantingham and Brantingham (1993) contributed to the development of a theoretical model of crime site selection. Their model of crime site selection views actual commission of crime as an end result of a multi-staged decision process, which seeks out and identifies a target in time and space. The model also argues that the environment emits many signals or cues about the characteristics of the site, and criminals use these cues to locate and identify easy targets. Criminals are conceived to develop their own template as they learn which cues or clusters of cues are associated with easy targets. Therefore, if a specific building closely matches a criminal’s template, then the probability increases for that specific building to become a crime target. The crime concentration pattern for a specific building that was mentioned earlier refers to congruence between a specific building and the

criminal's template, and suggests that while slight differences may exist between individual templates, individuals will be fairly consistent in their choice of targets.

Based on these theoretical models, a few empirical studies on residential burglary have tried to identify environmental characteristics that meet a burglar's template of a good target. In his study of 40 convicted burglars, Bennett (1986) argued that a criminal's perception of environmental characteristics can be classified broadly into the three main concepts of risk, ease, and reward factors. Of the three factors, Bennett argued that risk plays the most important role in the target selection process compared with the other two factors. Taylor and Nee (1988) conducted a similar experiment using a simulation that made use of pictures of actual residences, on a group of 15 convicted burglars and a group of 15 members of the public. The results of their analysis show that the situational cues that influence the decision-making processes of residential burglars when selecting their targets are broadly divided into the four categories of layout cues, wealth cues, occupancy cues, and security cues. When comparing the "non-burglar" and burglar group, differences did exist in target searching methods, but the two groups appeared to use almost identical environmental cues in their decision-making process for target selection. Finally, MacDonald and Gifford (1989) asked 43 convicted burglars to sort 50 photographs of single-family dwellings along a 7-point scale of vulnerability (likelihood of being a burglary target), and found that environmental cues about surveillability played the most important role, but environmental cues about territorial concern did not demonstrate any significant effects.

To some extent, these research efforts have unveiled a burglar's target selection process and identified environmental characteristics that constitute the burglar's template. However, as some researchers (Bennett and Wright, 1984; Brantingham and Brantingham, 1993; Lee and Kim, 2000) mentioned, there exist some limitations in the research methods. And these limitations not only have obscured the findings and resulted in validity problem, but also fundamentally restrain research efforts that directly examine burglars' perception.

While research efforts to unveil the burglars' target selection process and the template they use have continued for more than two decades, there exist only a handful of studies (Bennett, 1986; Rengert and Wasilchick, 1988; Taylor and Nee, 1988; MacDonald and Gifford, 1989) that directly examine burglars' perception. Among such studies, Rengert and Wasilchick used interviews of a small group of convicted burglars, to qualitatively examine the entry route and considerations at the time of entry, for the residences that were broken into. The other three studies were carried out on groups of 15–40 convicted burglars each, using simulations featuring pictures, slides, or videotapes of actual residential environments. Such simulation methods save time and expenses when compared with methods in which crime sites are visited and examined in person, together with the burglar, and they also help resolve the

legal and ethical problems that arise from the possibility of crime scene investigation data being used in actual crimes later. However, simulation methods used in existing research have also posed the following problems: (1) since they are simulations (pictures, slides, videotapes) of actual residential environments, it is difficult to manipulate a variety of research variables to test individual effects and interactional effects and (2) simulation methods that use pictures, slides, and videotapes only provide one-way information within a very limited range, and are therefore unable to reflect properly the interactive two-way searching processes used by burglars. In a real world of residential burglary, burglars do not subjectively receive information. They actively explore specific dwelling units more closely when they find some vulnerable cues in the course of the searching process, and sometimes involve more active behavior (such as breaking *street* lights) to create a more supportive environment for burglary.

This study addresses such problems, and by conducting experiments using simulation methods that improve upon the validity aspects of existing simulation methods, it attempts to identify the environmental characteristics that constitute burglars' templates. More specifically, this study aims to elucidate which environmental characteristics play a facilitating role in the target selection process and which play an inhibiting role. Another goal of this study is to test Brantingham and Brantingham's (1978) argument that individual similarities can be found in templates, by comparing "potential burglars" from two distinct cultures. To examine the research questions mentioned above, this study conducted experiments using a simulation model of the burglars' target searching process.

Methods

Simulation model

To identify environmental characteristics that affect a burglar's template of good targets and to understand whether there are any similarities between culture groups, a walk-through simulation model that simulates the burglar's target searching process was used in this experiment.

First, the walk-through simulation model developed for this study is not an extant building environment, but an artificially created, imaginary environment. An imaginary environment allows the researcher various combinations of different research variables, and thus offers the advantage of being able to examine the effect of research variables of interest, while partially controlling for extraneous variables. Furthermore, since the investigation can take place in the lab, without the need to visit the actual environment, time and expenses are saved. The use of imaginary environments provides freedom from legal and ethical problems that can potentially arise from on-site investigations.

Secondly, an interactive simulation model was developed and used, albeit in a limited capacity. The animated simulation model for the search process has

Figure 1 Sequential views of target searching in the simulation model.

Figure 2 An example of still images for closer observation.

been developed to be as similar as possible to a burglar’s actual search process in selecting target, and it shows in animation form the sequential process (Figure 1) of observing the dwelling units within each block, while moving at walking speed, from a human eye level viewpoint. The simulation model enables subjects not only to browse an experimental neighborhood, but also to examine specific dwelling units closely. To simulate the target searching process of burglars in the real world, involving an in-depth and close examination of the dwelling units that attract burglars’ attention, the model was constructed to allow subjects to stop the walk-through animation and view some close-up pictures (Figure 2) of the dwelling units from different directions whenever they wanted a closer examination of particular dwelling units. Therefore, although selecting and examining applicable dwelling units from all directions or distances desired by the experimental subjects was not possible in all cases because of practical limitations such as technical difficulties and high expenses, by constructing an interactive model that allowed, within a limited range, selection of a more detailed examination of desired dwelling units, the validity problem of existing simulation methods was improved upon greatly.

Thirdly, the simulation model is divided into the following two stages: a block searching model composed of 12 blocks, and an individual dwelling units searching model made up of 109 dwelling units. The model was separated into these two different stages because a burglar goes through different

Table 1 Operational definitions of research variables

<i>Research variables</i>		<i>Measurement method</i>
Dependent variable	Probability of burglary victimization	(Frequency of actual victimization of a dwelling unit or block/total frequency of possible answers) $\times$ 100(%)
Independent variables for block	Type of road (number of connecting streets)	Few connecting streets at both ends of the block: +1/many connecting streets at both ends of the block: -1
	Distance from major highways	Block situated right by major artery: +1/block removed from major artery: -1
	Proximity to park	Block close to parks: +1/block removed from parks: -1
Independent variables for individual dwelling unit	Fence height	Fence height above eye-level (1.5 m): -1/fence height below eye-level (1.5 m): +1
	Fence characteristics	CLOSED type of fence: -1/open type of fence: +1
	Surveillance	Cannot be surveyed easily by neighbors: -1/easily surveyed by neighbors: +1
	Hide-away space created by landscape	Gardening landscape creating hideaway space: -1/gardening landscape creating no hideaway space: +1
	Building configuration	Building having a rugged surface, with a complicated configuration: -1/building having a simple configuration, and surface is not rugged: +1
	Building color	Building with a dark color: -1/building with a bright color: +1
	Window size	Large windows: -1/small windows: +1
	Number of windows	Many windows: -1/few windows: +1
	Window gratings	No gratings in the windows: -1/gratings in the windows: +1
	Symbols of wealth	Residence having trappings of wealth: -1/residence showing signs of poverty: +1

stages in the process of selecting a target, from selection of a broad area, to selection of a block, and finally to selection of individual dwelling units, and because it seemed that the variables considered at each stage might be different. Each of 12 blocks was arranged to test the hypothesis in relation to the variables that are assumed to affect a burglar's block selection, such as proximity to the park, proximity to the major arteries, and street configuration. Most of the blocks consisted of 10 dwelling units while two blocks have only five dwelling units because one side of the block was facing the park. One block was designed to have nine dwelling units and one commercial facility to test the effect of a commercial facility in burglars' decision making. Each of 109 dwelling units was constructed by combining various environmental

features to test the hypothesis in relation to the number of variables that are assumed to affect a burglar’s dwelling selection.

Measures

In this study, based on a review of existing literature, environmental characteristics that were deemed to be related to burglars’ target selection were selected as variables. The research variables were classified broadly into the three categories of risk factors, ease factors, and reward factors.

Risk factors refer to variables that increase or decrease the likelihood of being detected, deterred, or apprehended during residential burglary. Risk factors include variables such as amount of cover offered by the dwelling, landscape, or immediate environment, proximity of neighboring dwellings to the building being assessed, traffic volume around the site, frequency of police patrol, etc. Ease factors refer to variables that are related to the ease of entry and escape, that is, height of fence, location and size of windows, existence of window gratings, number of escape routes provided by the street, existence of escape routes such as a back alley, vacant lots, or a park, and a building configuration that allows burglars to easily climb up. Reward factors refer to variables that are related to possible economic gains as a result of burglary such as signs of wealth that can be judged by size, material, and decorations of a building and its immediate environment.

Research variables (Table 1) are all measured through two types of situations: situations that are favorable (–1) to burglary and situations that are unfavorable (+1) to burglary (Figure 3). Four variables (building configuration, building color, symbols of wealth, and surveillability) that were difficult to measure using objective criteria were evaluated by three experts. Additionally, the probability of residential burglary victimization, which is a dependent variable, was measured using the percentage value (%) of an applicable dwelling unit’s actual frequency of selection, out of the total frequency possible

variables	situation that facilitates burglary (-1)	situation that inhibits burglary (+1)
transparency of fence
building configuration

Figure 3 Examples of dwellings constructed in the simulation model.

Table 2 Probabilities of block burglary victimization

<i>Block</i>		<i>Probability of burglary victimization (%)</i>	
		<i>US</i>	<i>Korean</i>
Blocks near major artery	Block 1	3.70	6.46
	Block 2	4.63	2.43
	Block 3	1.85	4.65
	Block 4	4.63	4.24
	Average	3.70	4.45
Blocks in the core of neighborhood	Block 5	1.85	4.86
	Block 6	0.93	7.08
	Block 7	3.24	1.81
	Average	1.46	4.58
Blocks in proximity to the park	Block 8	16.67	10.07
	Block 9	12.96	15.00
	Block 10	6.94	11.53
	Block 11	31.48	19.86
	Block 12	11.11	8.19
	Average	15.83	12.88

for a response, and the weights for cases when selected as rank 1 and cases when selected as rank 2 were assigned differential grades.

Subjects and procedure

The subjects of the experiment consisted of 80 college students in K University in Seoul, Korea, and 40 college students in W University in Wisconsin, USA, who volunteered to participate in the experiments.

At the first stage of the experiment, the bird's-eye view perspective, which shows the layout of experimental blocks, was presented to the subjects, and then subjects experienced a walk-through animation of 12 blocks. Subjects were then asked to select three blocks in order of suitability for committing burglary, and briefly describe why they thought so.

At the second stage of the experiment, each subject viewed walk-through animations of randomly assigned six blocks. Subjects were allowed to stop the animations whenever they wanted closer images of a particular dwelling, and they were able to see close-up still images of that particular dwelling from two different directions by controlling the mouse. After experiencing a walk-through animation of each block, subjects were asked to select two dwelling units from each block experienced in order of suitability for committing burglary, and briefly describe why they thought so. Subjects were asked to select only one dwelling unit from block 9 and block 10 to make the probability of selection equal with that of other blocks, because these two blocks consisted of five dwelling units while other blocks consisted of ten dwelling units.

Table 3 Reasons for selecting blocks as targets

<i>Reasons</i>		<i>Korean</i>		<i>US</i>	
		<i>Freq.</i>	<i>%</i>	<i>Freq.</i>	<i>%</i>
Risk factors	Anonymity	33	9.71	10	5.71
	Surveillance opportunity	144	42.35	101	57.71
	Police patrol	12	3.53	0	0
	Total	192	56.47	111	63.43
Ease factors	Ease of entry/escape due to the proximity to the streets	62	18.24	45	25.71
	Ease of entry/escape due to the proximity to the park	83	24.41	18	10.29
	Others	2	0.59	1	0.57
	Total	147	43.24	64	36.57
Reward factors	Signs of wealth	1	0.29	0	0
	Total	1	0.29	0	0

RESULTS

Block characteristics

As shown in Table 2, it appeared that for both the US and Korean subject groups, block 11 (31.48% *vs* 19.86%) showed the highest probability of victimization. The next highest victimization probabilities were seen in blocks 8, 9, and 12 (16.67, 12.96, 11.11%) in the US group, and in blocks 9, 10, and 8 (15.0, 11.53, 10.07%) in the Korean group. So while the orders showed slight differences, the two groups showed similar patterns in terms of victimization probabilities. In particular, it was found that blocks close to parks occupied ranks 1–5 in the list of blocks with the highest probabilities of victimization for both subject groups. Thus it appeared that blocks close to parks were seen as good crime targets. In contrast, blocks with the lowest probabilities of victimization were block 6 (0.93%) in the US group, and block 7 (1.81%) in the Korean group, indicating that blocks situated in the core of neighborhoods were not considered easy targets.

When the 12 blocks were categorized according to whether they were near major arteries, in the core of neighborhood, or close to parks, and the average values for probability of burglary victimization were compared, in both the US and Korean groups, blocks adjacent to parks showed the highest probabilities of victimization (15.83% *vs* 12.88%). However, whereas in the US group, blocks near arteries had the second highest probability of victimization (average 3.70%), and blocks in the core of neighborhoods were judged to be the safest blocks (average 1.46%), the Korean group deemed blocks near arteries to be the safest blocks (average 4.45%).

Figure 4 Comparison of reasons for selecting blocks between US and Korean groups.

Further analysis of the reasons (Table 3) given for selecting blocks as burglary targets showed that response rates related to risk factors (56.47% for the Korean group, 63.43% for the US group) were comparatively higher than response rates for ease factors (43.24% for Korean group, 36.57% for the US group). Therefore, it appeared that during block selection, risk-related factors were much more important considerations than ease factors or reward factors (Figure 4). Especially in the case of US subjects, risk factor-related responses showed an almost two-fold rate compared to ease factor-related responses. In contrast, in terms of ease factors the Korean group showed a 43.24% rate while the US group showed a 36.57% rate, indicating that Korean subjects gave more importance to ease factors. A key difference was that whereas the US group considered ease of entry and escape through streets (25.71%) more important than ease of entry and escape due to proximity to open spaces such as parks or vacant lots (10.29%), the Korean group considered ease of entry and escape due to proximity to open spaces (24.41%) more important than ease of entry and escape due to proximity of streets (18.24%). Such a difference may originate in *modus operandi* differences, where in the US the rate of burglaries using vehicles is relatively higher. On the other hand, the reward factor appeared to have almost no effect on the block selection process in both groups.

The *t*-test was used to analyze whether significant differences existed between the probability of burglary victimization for situations unfavorable to burglary and situations favorable to burglary. Looking at the results (Table 4), for both the Korean and US groups, blocks close to parks showed higher probabilities of burglary victimization than blocks not close to parks (14.12% *vs* 4.97% in the Korean group; 17.01% *vs* 3.99% in the US group), and blocks removed from major arteries showed higher probabilities than blocks situated near major arteries (12.93% *vs* 4.50% in the Korean group; 15.83% *vs* 2.98% in the US group). Additionally, blocks with few connecting streets showed

Table 4 *t*-test results for the probability of burglary victimization according to block characteristics

Variables		Probability of burglary victimization (%)		<i>t</i>	
		Korean	US	Korean	US
Accessibility of the block (number of connecting streets)	Low	10.64	13.61	1.338	1.693
	High	6.14	4.56		
Proximity to the Major artery	Close	4.50	2.98	-3.856*	-3.025*
	Distant	12.93	15.83		
Proximity to the park	Close	14.12	17.01	3.958*	2.437
	Distant	4.97	3.99		

* $P < 0.05$; ** $P < 0.01$

higher probabilities of victimization than blocks with many connecting streets (10.64% *vs* 6.14% in the Korean group, 13.61% *vs* 4.56% in the US group).

Findings from existing literature on the relationship between the probability of burglary victimization and block characteristics such as accessibility (number of connecting streets) and proximity to parks or major arteries have shown inconsistent results. Some researchers (Molumby, 1976; Dietrick, 1977; Lim and Park, 1992) argued that blocks close to open spaces or vacant lots show higher crime rates for reasons such as ease of escape, provision of hiding space, absence of surveillance by neighbors, and unclear territorial hierarchy. However, contrary to these findings, some other studies (Luedtke *et al.*, 1970; Bevis and Nutter, 1977) reported that blocks with many connecting streets or blocks that are situated close to major arteries have lower victimization rates because of the abundant surveillance opportunities provided by traffic. On the other hand, some studies (William Brill Associates, 1977; Dietrick, 1977; Hunter and Baumer, 1982) that examined the relationship between traffic volume and crime rate reported that heavy traffic volume tended to increase the crime rate, by facilitating anonymity. Combined together, these findings imply that there may exist a U-shape type of relationship between traffic volume and crime rates. Sporadic traffic volume may result in a high crime rate because of lack of natural surveillance, while overly heavy traffic volume also results in a high crime rate because of anonymity provided by excessive traffic.

Therefore the findings of this study that burglary victimization is low in blocks that have many connecting streets or in blocks that are situated close to major arteries need to be interpreted with great caution. As mentioned earlier, a U-shape type of relationship may exist between traffic volume and probability of burglary victimization. But since the traffic volume simulated in

the model used in this study was only light or moderate, the possibility exists that the effect of traffic volume was not properly examined.

Individual dwelling characteristics

Table 5 summarizes the subjects' self-reported reasons for selecting target dwelling units. Just as the risk factors appeared more important than ease factors in the decision-making process for target block selection, both groups place more emphasis on the risk factors than on the ease factors (51.65% *vs* 44.19% for the Korean group; 61.73% *vs* 35.69% for the US group) in the selection of the target dwelling unit. However, more balanced consideration is given to both risk and ease factors in target dwelling unit selection than in target block selection. This appears to be because unlike in the block selection stage, where immediate entry routes do not need to be considered, in the stage of selecting individual dwellings, whether or not routes exist for easy intrusion and escape must be considered simultaneously, together with considerations of the risks of being detected or arrested. The risk factors considered at the stage of dwelling unit selection are mostly related to surveillance by neighbors, which was an important element taken up mostly by the existence of concealed spaces due to dense gardening landscape or high fences. For the Korean subjects, the blocking off of surveillance by high fences was the most important reason for selecting a target dwelling unit (13.49%), but US subjects felt

Table 5 Reasons for selecting dwelling units as targets

Reasons		Korean		US	
		Freq.	%	Freq.	%
Risk factors	Concealments by landscape	85	12.20	258	28.96
	Concealments by bldg. configuration and color	48	6.89	39	4.38
	Fence height	94	13.49	124	13.92
	Surveillance from surrounding	107	12.01	100	11.22
	Size/number of windows	22	2.47	33	3.70
	Total	360	51.65	550	61.73
Ease factors	Trees to climb-up	2	0.29	6	0.67
	Bldg. configuration to climb-up	88	12.63	64	7.18
	Fence height (easy to climb-up)	84	12.05	121	13.58
	Window grating	30	4.30	24	2.69
	Escape routes	106	15.21	103	11.56
	Total	308	44.19	318	35.69
Reward factors	Sign of wealth	29	4.16	23	2.58
	Total	29	4.16	23	2.58

that blocking off of surveillance by dense gardening landscape was the most important reason (28.96%).

While the Korean group showed a balanced consideration of risk and ease factors, the US group placed much more emphasis on risk factors (61.73%) than on ease factors (35.69%) in target dwelling unit selection (Figure 5). The reason why the risk factor ratio appears noticeably higher in the US group, seems to be because residential houses in Korea are mostly surrounded by high fences, which serve to block surveillance from nearby houses or from the streets, and thus decrease risk factors. On the other hand, high fences serve to make entry more difficult. In the US however, residential culture is such that fences are absent or low, so surveillance by neighbors or passersby in the streets (risk factors) is relied upon more heavily. Since there is much less difficulty of entry due to high fence (ease factor), consideration of the ease factor appears to be relatively low.

The *t*-test was also carried out to examine whether significant differences in the probability of burglary victimization existed between dwelling units that have unfavorable characteristics to burglary and units with favorable characteristics (Table 6). After dividing into the two groups of situations unfavorable to burglary and situations favorable to burglary, according to each variable, and comparing probabilities of burglary victimization, dwelling unit configuration was the factor that showed the most noticeable changes in both US and Korean groups. Especially in the case of the Korean group, it appeared that houses with complex configurations (18.08%) had probabilities of burglary victimization that were almost twice as high compared to those of units with simple configurations (9.61%), and the difference was statistically significant. On examining the specific reasons for selection, in the case of units with excessively complicated configurations, ease factor-related responses, which said structures facilitating climbing, such as terraces and railings, were readily available, making entry easier, were 12.63%, and risk factor-related responses, which said that building configurations served as places to hide, therefore allowing avoidance of surveillance detection, made up 6.89%. Therefore, it may be concluded that complicated building configurations can operate on aspects of both ease and risk, but that the ease factor is considered first. Such a tendency appeared almost identically in the US subjects as well; hence it seems that no particular difference exists between the Korean and the US groups.

In contrast, the factors that showed statistically significant differences were transparency of the fence in Korea, and concealments provided by landscape in the US. In the Korean group, houses with fences that did not allow passersby or neighbors to look in showed higher probabilities of burglary victimization than houses with fences that did not afford such privacy (13.46% *vs* 8.97%). In the US group, houses with dense landscape vegetation that provided hideaway places showed higher probabilities of victimization (13.76%) than houses without such dense vegetation (7.67%).

Figure 5 Comparison of reasons for selecting dwelling units between US and Korean groups.

DISCUSSION

By using improved methods of simulation for burglars' target selection processes, this study attempted to identify the environmental characteristics that make up the template that burglars use in their target selection process, and examine whether similarities exist between different cultural groups. To summarize, the templates that these two groups used in their block selection processes and individual dwelling unit selection processes had very similar characteristics, but the Korean and US groups did show slight differences in a few variables due to their cultural differences.

For the environmental characteristics that make up the template, proximity to major arteries was discovered to be an important common factor for both experimental groups in the block selection stage, and in the stage of selecting individual dwelling units, concealments by landscape and building configuration were found to be the statistically significant factors.

- However, the following differences also existed between the two experimental groups. In the US, where rates of burglaries using automobiles are relatively high, ease of escape due to proximity to roads, etc. was considered important. In contrast, the Korean group considered ease of escape due to proximity to parks or vacant lots more important.
- According to Korean residential culture, most houses are surrounded by high fences. Transparency of the fence, which enables surveillance from neighboring houses or from passersby in the streets, correspondingly operated as an important inhibiting factor in the Korean group. In contrast, in the US, where fences are less common, clearing of landscape vegetation such as trees or bushes so that these elements did not block external views of the house functioned as an important inhibitor.

Table 6 *t*-test results for the probability of burglary victimization according to dwelling unit characteristics

<i>Variables</i>		<i>Probability of burglary victimization (%)</i>		<i>t</i>	
		<i>Korean</i>	<i>US</i>	<i>Korean</i>	<i>US</i>
Height of the fence	Low	10.139	10.900	-1.485	0.099
	High	12.473	10.702		
Transparency of the fence	Opaque	13.461	11.447	2.998**	0.683
	Transparent	8.965	10.089		
Opportunity of surveillance from adjacent houses	Rare	11.423	11.603	-0.203	-1.182
	Frequent	11.118	9.297		
Concealments by landscape	Exist	13.082	13.763	2.365*	3.230**
	Not exist	9.451	7.668		
Building configuration	Complex	18.082	17.622	3.702**	3.379**
	Simple	9.606	9.074		
Color of the building	Dark	14.600	13.125	2.032*	1.303
	Bright	10.181	9.995		
Size of the windows	Small	12.525	10.336	1.110	-0.330
	Large	10.721	11.028		
Number of the windows	High	11.494	9.164	0.213	-1.605
	Low	11.154	12.291		
The existence of window grating	Exist	12.198	10.800	1.128	0.001
	Not exist	10.419	10.799		
Sign of wealth	Affluent	13.795	12.508	2.397*	1.311
	Poor	9.763	9.728		

* $P < 0.05$; ** $P < 0.01$

- Finally, compared to the Korean group, which gave a balanced consideration to ease factors and risk factors, the US group gave relatively more important consideration to risk factors.

Nevertheless, despite such differences, the general elements of the templates, and the overall tendency to consider risk factors and ease factors in the selection process for targets, appeared to be almost identical.

Although many improvements have been made to the simulation model by using animations, compared to previous simulation methods that use pictures, slides, and videotapes, many limitations still exist, which need to be further

improved upon. First, a perfect interactive search process has not yet been created, due to technical problems and excessive expenses involved in creating the model. In other words, signs of occupancy (signs indicating that people are at home, such as TV sounds and parked cars, etc.), which could be the most important variable among the risk factors, or street traffic volume due to pedestrians and vehicles etc. are yet to be simulated. Additionally, the simulation model simulates daytime conditions, and therefore one limitation of this study is that its results cannot be generalized to all situations.

Furthermore, a practical limitation that the sample numbers for the US and Korean subjects, at 40 and 80 respectively, were different could also be pointed out as a limitation of this study. The procedures and environments for all experiments were kept as similar as possible, but the fact that a sufficient number of experiment participants could not be obtained during the given research period operated as a problem during analysis, and improvements need to be made on these limitations in follow-up studies in the future.

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