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THE CONFIGURATION OF RESIDENTIAL SPACES ON OCCUPANTS' BEHAVIORAL PATTERNS

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So Yun Park

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April D. Ellen
Major Professor's Signature

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THE CONFIGURATION OF RESIDENTIAL SPACES ON OCCUPANTS' BEHAVIORAL PATTERNS

By

So Yun Park

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ABSTRACT

THE CONFIGURATION OF RESIDENTIAL SPACES
ON OCCUPANTS' BEHAVIORAL PATTERNS

By

So Yun Park

In Environment Behavior Studies (EBS), many theories have established different factors between built environments and occupants' behavioral patterns. Among them, Amos Rapoport focused on the form of the built environment in cultural aspects. In this study, the indoor-footwear-wearing habit (i.e., wearing outdoor shoes, indoor shoes, or remaining bare-foot inside of the house) was suggested as one of residents' behavioral patterns that can be a part of their culture and investigated the relationship with the configuration of the entrance area of their houses.

Three hundred fourteen students at Michigan State University participated in an on-line survey and approximately thirty-five percent of them answered as staying bare-foot or wearing only socks in their houses. In cultural aspect, the indoor-footwear-wearing habits showed relationship not with the concerns that residents put higher value on their housing, but with the lifestyle such as the number of residents, the existence of pets, and the housing type or condition. In environmental aspect, the indoor-footwear-wearing habits did not have relationship with the evaluation of overall condition for the entrance area of the house. However, the type of floor material, shoes storing habit, and the activities held at the entrance area were dependent to that behavioral pattern.

This study suggests households' different indoor-footwear-wearing habits as a part of their culture related to everyday living style and that should be considered importantly in designing the entrance area of the house.

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CHAPTER I

INTRODUCTION

People use their residential spaces in their own unique way, demonstrating their identity through houses' form, style, interior, or exterior decoration (Cooper Marcus, 1995; Hummon, 1989). For example, in certain ancient Asian countries, people sat on the floor, folding their legs, rather than sitting on chairs. Even today, these countries find it more natural to sit on the floor although they have many chairs in their houses. As a result, it is common for people in these countries to remain bare-foot inside the house unlike people from Western cultures, who tend to wear shoes inside their houses. However, in these days, people from Western cultures including Americans also often have a no-shoes policy in their houses. This "indoor-footwear-wearing habit", as termed in the current study refers to the different habits about wearing either outdoor or indoor shoes inside of the house, or remaining bare-foot (Munro & Steele, 1999). Given the enhanced sharing of cultures through increasing globalization, culture alone may not be the sole reason for the indoor-footwear-wearing habit. For instance, concerns for indoor environment quality or health problems that became important recently can be responsible.

The fact that the indoor-footwear-wearing habit is a behavior that varies according to the utilization of residential spaces makes it an appropriate characteristic to be linked to the entrance area of a house. Most people wear shoes outside the house; if people wear these same shoes inside the house, they may enter the domicile without performing any habitual activities. On the other hand, people who wear indoor shoes or

go bear-foot in their houses need to change or remove their shoes at the entrance area of the house. Therefore, the current utilization and evaluation of this space will be different, resulting in different needs and wants in the design process.

Purpose of this Study

The purpose of the current study is to investigate the relationship between residents' indoor-footwear-wearing habits and the configuration of the entrance area of their houses. Broadly speaking, this research focuses on the connection between the behavioral patterns and the built environment.

The design process of the built environment incorporates a gap between clients and actual users, and it is the designer's responsibility to overcome this gap (Zeisel, 2006). A problem may not present itself if the client is the ultimate user of the built environment, as sometimes happens in residential buildings. However, in many cases, people buy existing houses rather than build a new one. After purchases, houses are often remodeled to fit users' needs and wants (Kent, 1991), which became more visible in the design process thanks to Environment-Behavior-Studies (EBS) (Zeisel, 2006). Among the many theories in the EBS field, Rapoport's theory, which can be summarized by emphasizing "the critical and multifaceted role of culture in shaping the built environment" (Rapoport, 2006, p. 56), will be applied as the theoretical background of this study.

In the discussion of culture, Rapoport (2008) suggested '*culture core*' (culture that changes little and slowly) and '*culture periphery*' (culture that changes quickly, easily, and eagerly). In the current study, the indoor-footwear-wearing habit is assumed

as a culture core since this behavior cannot be shifted easily, representing the characteristics of the household. People may keep their indoor-footwear-wearing habits according to their parents' behavior or their belief regarding housing. Thereby, this habit can be considered as creating the identity of residents, in other words, the culture of their households.

The specific objectives of this study are:

1. To examine which characteristic of residents (i.e. values, lifestyles, etc.) are related to the indoor-footwear-wearing habits.
2. To examine how the indoor-footwear-wearing habits of residents are related to their current utilization or evaluation of the entrance area of the house.

Significance of this Study

The house reflects, but also shapes the culture of its residents (Sebba, 1991). Therefore, it is important to know both how the entrance area is currently being utilized and what residents need according to their behavioral patterns.

In practical terms, providing designers with information about residents' needs and wants according to their behaviors offers significant insights. Instead of designing with the knowledge of simple functionality, needs and wants based on users' behavior should be studied (Mangum, 2000). This may be particularly important in residential spaces, as, except for a few visitors, residents are the only occupants who possess and use the space. In designing the entrance area of the house, the indoor-footwear-wearing habit is an important behavior to be considered. The size of the entrance area and the usage of closets or display items can differ by residents' different behavioral patterns.

On the other hand, theoretically speaking, applying the relationship between indoor-footwear-wearing habits and the configuration of the house's entrance area to Rapoport's theory will be meaningful, since it will allow for some examination of how human behavior is related to the built environment according to cultural aspects. If the residents' indoor-footwear-wearing habits show the relationship to the cultural factors and be identified as a part of household culture, and also if that habits show the relationship with the entrance area of the house, this can be one of the examples for the role of culture in Environment-Behavior-Studies (EBS).

Organization of the Following Chapters

This thesis is organized with four more other chapters. Chapter II, literature review is composed with two parts, theoretical background and conceptual framework. The former describes Rapoport's EBS theory and the latter explains the conceptual model of this study. Chapter III shows the method of this study, focused on the process of the survey. Chapter IV reports the findings of the survey. First, the results of descriptive statistics are provided. Then, the discussions for each research questions are presented with the results from statistical analyses. Finally, chapter V discusses overall conclusions of this study.

CHAPTER II

LITERATURE REVIEW

Theoretical Background

Moore (1997) identified thirteen theories in the field of Environment-Behavior-Studies (EBS). Among them, Amos Rapoport and Irwin Altman were two scholars who contributed significantly to early EBS (Lawrence-Zúñiga, 1997). Both built their own frameworks by establishing many factors between built environments and behavioral patterns. However, Rapoport focused on the form of built environment and the design processes in cultural aspects, while Altman extended EBS to environmental psychology. Rapoport thought designers should always be aware of users' needs and wants by studying their culture through the design process (Lawrence-Zúñiga, 1997; Rapoport, 1976). As indoor-footwear-wearing habit is one of residents' behavioral patterns that can be a part of their culture, it will affect residents' needs and wants in their houses, especially in the entrance area. Therefore, Rapoport's theory, which Moore (1997, p. 21) named as "cultural orientation to housing", will be used as the theoretical background in the current study.

Rapoport's Environment Behavior Studies (EBS)

In general, EBS is defined as a field of study that seeks to determine how people influence and how they are influenced by the built environment (Werner & Altman, 2000). Based on this concept, Rapoport always asked three basic questions at the beginning of his discussions (Rapoport, 1985, p. 257; 1987, p. 10; 2000a, p. 118; 2000b,

p. 118; 2005, p. 10; 2006, p. 59):

1. What characteristics of human beings influence the built environment?
2. What effects do environments have on people?
3. Given this two-way interaction between people and environments, there must be mechanisms that link them. What are these mechanisms?

The mechanisms mentioned in question 3 serves as the main idea behind Rapoport's theory. He pointed out several mechanisms, including physiology, anatomy, perception, cognition, meaning, affect, evaluation, behavior, and supportiveness (Rapoport, 2000a; 2005). These mechanisms can interact among each other, as well as be expanded or dismantled. However, it is important that most of them are cultural or are related to culture (Rapoport, 2000a; 2005).

Discussing "good" housing design, Franklin (2001) argued that Rapoport concluded that the built environment should be congruent with and supportive of the users' culture. The failure to do so means that, the built environment will cause stress (Franklin, 2001). Rapoport thought that culture presents a reason for users' needs and wants in detail. Therefore, the environment should be culturally responsive (Rapoport, 1987). To be responsive, the environment has to be congruent with culture (Rapoport, 1987). According to this logic, the congruence between the indoor-footwear-wearing habit and the configuration of a house's entrance area should be considered in the design process.

The famous diagram that Rapoport presented in his several studies clarifies the relationship between culture and the residential built environment. He argued that concepts of both culture and environment are too general, broad, and abstract to be

connected directly to each other. Therefore, he dismantled them into several factors and demonstrated the connections among them (Rapoport, 1989; 2000a; 2005; 2008). The following paragraphs detail how Rapoport dismantled culture and environment in his diagram.

"Dismantling" Culture

Culture plays an important role in Rapoport's EBS framework. It is a complex term that can be defined in several ways. According to Rapoport (1989), culture is a way of typical life and a way of coping with the ecological setting. It is also a shared system of beliefs, values, symbols, and styles that characterizes a group of people (Lang, 1987). However, the most basic concept of culture is that "culture is what makes humans human" (Rapoport, 1989, p.12).

Determining exactly how many kinds of cultures exist in the world is a challenging prospect. The answer depends on how groups are delineated. However, each culture is very unique with its own peculiar history (Lang, 1987). Consequently, culture is a method by which the group maintains its identity and relates to the environment (Rapoport, 1987).

Rapoport further interpreted culture as "a theoretical construct" (Rapoport, 2005, p.94). Given that culture is too complicated to be described in a single word and too broad to be connected directly to the residential built environment, Rapoport proposed "dismantling" culture (Rapoport, 1989; 2000a; 2008). Basically, he dismantled culture in two different ways. First, culture is taken apart into kinship, family structure, roles, social network, status, identity, institutions, and so on. In this way, each factor represents social

expression and becomes more concrete, manageable, and observable than culture itself. Second, Rapoport conceptualized culture in a more specific expression. Culture can be developed into a world view which shapes one's values. Values influence lifestyle, while lifestyle affects activity systems. In addition, ideals, images, schemata, meanings, norms, standards, rules, and expectations were also considered as the specific expressions. In this study, values, lifestyle, and behavior (activity systems) will be applied to the factors of the culture since lifestyle and behavior explain residential spaces better than culture itself incorporating values to some degree (Rapoport, 1970; 1989; 2000a; 2008).

"Dismantling" Built Environment

As with culture, the built environment is so general that it cannot be connected directly to culture (Rapoport, 1989). Therefore, built environment also needs dismantling. Rapoport suggested several ways to conceptualize the built environment (Rapoport, 2000a; 2000b; 2005). Among them, describing the built environment as a composition of fixed elements, semi-fixed elements, and non-fixed elements was considered as the most concrete and simplest approach (Rapoport, 2000a; 2000b; 2005).

A fixed element is a building itself, such as walls, floors, ceilings and columns. A semi-fixed element can be the furnishings. Finally, residents and their activities are called non-fixed elements. Usually in residential environments, residents cannot change fixed elements easily. Meanwhile, the non-fixed elements are the residents themselves. The characteristics or behaviors of residents should not be modified to suit the built environment. However, semi-fixed elements can be manipulated to express the identity of residents and to utilize the space according to residents' behaviors (Rapoport, 1982a).

In the current study, evaluation of the environmental quality for the entrance area of the house can be examined as fixed elements. The closet for shoes, coats, hats, and umbrellas or displays such as shoe racks and floor mats can be explored as semi-fixed elements. Finally, all the different activities that can occur at the entrance area, such as welcoming visitors, changing shoes, and getting dressed in coats or jackets will serve as non-fixed elements.

Conceptual Framework

Factors in Culture

Values. The concept of value can be defined as a person's point of view regarding the various beliefs in the world. Values identify what issues are considered seriously. Rapoport stated that "values describe how people value various goods" (2000b, p. 151). In the design process of the house, values explain residents' preferences and choices. Some may put more value on health, while others are more concerned with comfort. Some may put more value on privacy, while others are more focused on visitors for entertainment.

Lifestyle. It is difficult to understand all the different needs and wants for all people in the design process. However, lifestyle represents a more limited range of these people (Michelson, 1987), defining who an individual is and the identity of a group to which that individuals belongs (Bonaiuto & Bonnes, 2000). Rapoport (2000b; 2005) stated that the concept of lifestyle is particularly useful to apply to the design process for three reasons: 1) lifestyle is general; 2) most other aspects, such as age, sex, race, religion, education, occupation, and ideology, can be included; and 3) it has been used for many

studies in other fields.

Lifestyle can be classified into various ranges using various criteria (Rapoport, 1985). Sorokin, Zimmerman, and Galpin (1931) defined four stages according to the development of a nuclear family: a couple without children, a couple with grade-school-aged children, a couple with high-school-aged children, and an all-adult family. Meanwhile, Bell (1968) proposed three different lifestyles related to the choice of housing: familism, careerism, and consumerism. Familism refers to the preference for living in suburban, single-family houses, while the other two indicated center-city residential choices. This focuses on the value of the family rather than the stage of family development.

It is important to clarify that lifestyle is different than life-stage or life-cycle, which are defined in terms of age or biological development. Lifestyle considers the backgrounds of the family. Stokols (1982) gave an example of the difference using two working mothers. If one is working to pursue her career while the other is forced to work for economical reasons, they cannot be in the same lifestyle group. Given these unique aspects of lifestyle, values should be considered with lifestyle.

Behavior (activity system). Organization or utilization of the residential space differs among different cultures, making it a challenge to figure out which specific factor is responsible for the configuration of the residential space (Kent, 1991). Ultimately, daily living should be the focus. Daily living consists of residents' primary behaviors (Howell & Tentokali, 1989), which are basically regarded as the culture (Kent, 1991), namely the most specific expression of culture (Rapoport, 2000b). Thus, behaviors can be a mediating factor between residents and their built environment (Michelson, 2000). For

this reason, Rapoport (1989) described behaviors or activities as an expression of needs and wants that determine the function of the space. They can serve to define the organization of built environments, linking them directly to design (Rapoport, 2005). In fact, Rapoport (1982b) argued that the cultural difference in behaviors is most important in the form of the built environment. However, he did not reduce culture to behavior directly. Rather, he emphasized the meaning of behaviors, making it meaningful to consider the values and lifestyles.

Indoor-Footwear-Wearing Habits

The form of the house may be an expression of the occupant. However, it is also a stereotyped expression. For instance, most Americans reject the high-rise apartment building as a family home. A free-standing, independent house with a yard is more often preferred (Cooper, 1974). Behavioral patterns within the house can also be expressions of the residents, as determined by their unconscious image of the house, in other words, the stereotyped house image in their society.

The indoor-footwear-wearing habit (i.e., wearing outdoor shoes, wearing indoor shoes, or being bare-foot inside of the house) is a fundamental behavior that causes other differences in daily activities. Residents who wear outdoor shoes in their house will usually sit on chairs and may not care too much about floor sanitation. However, residents who remain bare-foot in their house tend to sit on the floor more often and need to be aware of floor cleaning.

Many factors can lead to the indoor-footwear-wearing habit. First, it could be a cultural matter. If one's parents wear outdoor shoes inside the house, the children may

follow this behavior as a stereotyped behavioral pattern. However, cultural matters may not be the only reason. Given that sustainability has become such an important issue today, many people are conscious of indoor air quality. As such, they may prefer wood flooring to carpeting (Andes, 2000; Spetic, Kozak, & Cohen, 2007) because of toxic effects of carpet exposure or indoor humidity (Andes, 2000), or they may remove outdoor shoes while at home for sanitation purposes. Moreover, health issues can affect such habits. Perennial rhinitis, atopic dermatitis, and asthma have been known to be related to indoor environment quality (Beguin & Nolard, 1996). Rizzo, Naspitz, Femandex-Caldas, Lockey, Mimica & Sole (1997) concluded that shoes' soles bring negative bacteria inside the house. Therefore, they advised leaving shoes outside the house or at least outside the bedroom.

Munro and Steele (1999) also conducted a study on household-shoe wearing and purchasing habits. They found that, among people, aged 65 years and older, 32.4 percent of women and 28.3 percent of men did not wear shoes inside their houses. In other words, more than one quarter of the elderly do not wear shoes inside. This rate may increase due to concerns about environmental quality and health issues.

Entrance Area of Housing

In general, a living room is known as a space in which the integration and the identity of the residents are expressed (Reme, 1993). However, before entering the living room, visitors have to pass the entrance area of the house, where they first experience the residents' identity. Lawrence (1984; 1987; 1989) conducted several studies about the entrance area of residential spaces, concluding that the entrance area serves as a boundary

between public and private, exterior and interior, polluted and non-polluted. According to Lawrence's (1984) research that was held in Switzerland, this small area serves as the most social space in the house, acting as the role of a sala. A sala is the most public room that was placed between the bedroom and the entry of the house in the Renaissance period. Even though a sala was the largest space used for banquet and entertainment in the past (Blakemore, 2006, p. 95), the important function of receiving welcomed guests as well as uninvited visitors is continued to a small entrance area of today.

In addition, the functions of an entrance area can also include being a controller of visibility, a shelter from the weather, and an area for storage of clothing and accessories (Alexander, Ishikawa, Silverstein, Jacobson, Fiksdahl-King, & Angel, 1977). Many other activities can occur here as well. Residents can put on or take off their hats and coats, or gather their umbrellas. Indeed, the space for such activities as well as storage for coats, hats, and umbrellas is needed (Lawrence, 1987). The needs and wants for the entrance area design can also differ according to the indoor-footwear-wearing habits. If residents are used to being bare-foot inside their houses, the entrance area will need to have space to put on or take off shoes as well as store them. Visitors may also be asked to remove their out-door shoes in this area.

Conceptual Model of this Study

For the purpose of the current study, which seeks to investigate the relationship between residents' indoor-footwear-wearing habits and the configuration of the entrance area of their house, the conceptual model is developed based on Rapoport's diagram, as previously mentioned (Rapoport, 1989; 2000a; 2005; 2008). Rapoport's (2005) combined

diagram defines the relationship between two different ways of dismantling culture and the expressions of the built environment. However, in this study, only a certain part of this diagram is used to examine the research question:

> Is there any relationship between residents' indoor-footwear-wearing habits and the configuration of the entrance area of their house?

Culture is dismantled into specific expressions instead of social expressions. Values, lifestyles, and behavior (activity systems) are selected from among several expressions. In addition, the simplest and most definite expression is selected from among four different ways of conceptualizing environment and used for the conceptual framework in this research. Figure1 illustrates the conceptual model of this study.

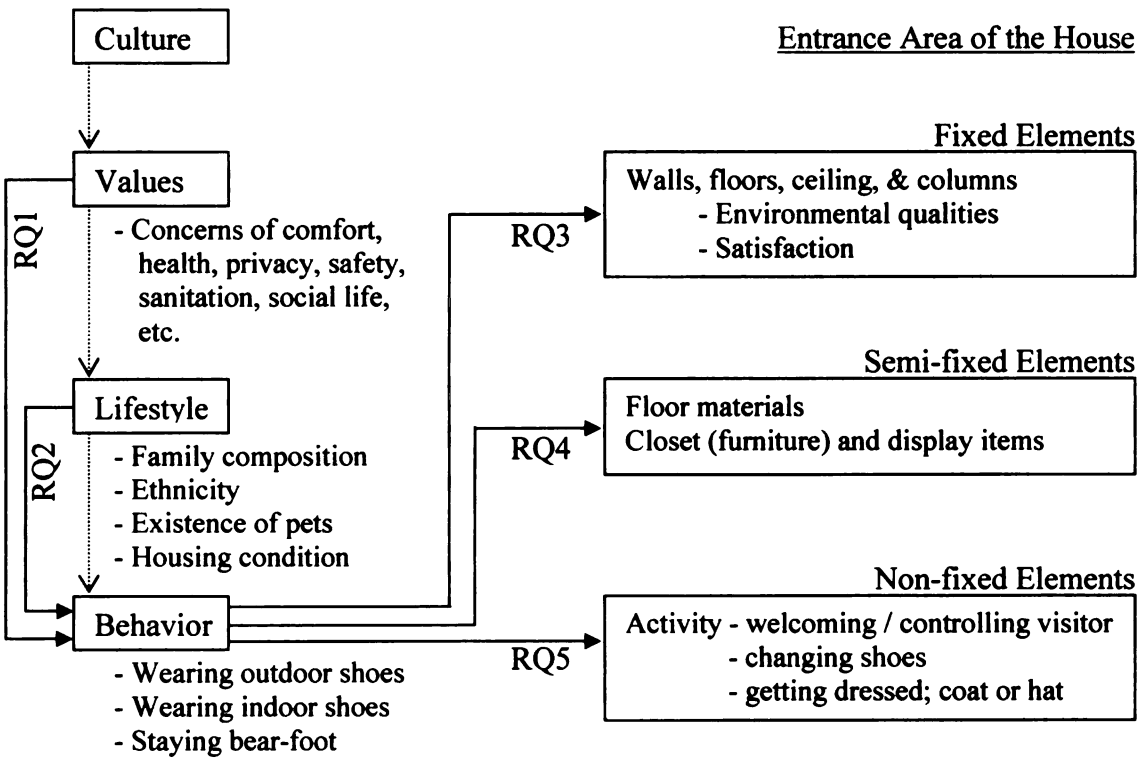

Figure 1. *Conceptual Model of This Study*

The conceptual model of this study (see Figure1) shows several relations between behavior and the entrance area of the house. In addition, influences are expected through values, lifestyles, and behavior. Specific research questions that will be examined are suggested as follows:

RQ1. Does residents' behavior (i.e., indoor-footwear-wearing habit) differ by the different concerns which the residents place higher value on?

RQ2. Does residents' behavior (i.e., indoor-footwear-wearing habit) differ by their different lifestyles?

RQ3. Does residents' current evaluation and satisfaction of the fixed elements at the entrance area of the house differ by their different behavior (i.e., indoor-footwear-wearing habit)?

RQ4. Does residents' current utilization of the semi-fixed elements at the entrance area of the house differ by their different behavior (i.e., indoor-footwear-wearing habit)?

RQ5. Do residents' activities, the non-fixed elements at the entrance area of the house differ by their different behavior (i.e., indoor-footwear-wearing habit)?

CHAPTER III

RESEARCH METHODS

Research Methods and Procedures

The research method of this study is a survey. Survey research is useful for collecting detailed quantitative information and adequate for discovering phenomena such as housing satisfaction (Zeisel, 2006). According to Fraenkel and Wallen (2006), there are four basic ways to collect data in a survey; a direct administration to a group, a mail survey, a telephone survey, and a personal interview. However, an on-line survey was employed in this study. "Survey Monkey", the web-based survey tool is the specific product. Generally, an on-line survey is similar to a mail survey, but it requires fewer expenses and shorter time. Also, it is easier to recruit participants, send reminders to them, and process the data (Lee, 2008; Porter & Whitcomb, 2003).

A pilot study was conducted on purpose of ensuring the validity of the questionnaire. The participants were sixteen undergraduate students enrolled in a class in interior design at Michigan State University. Some questions of the survey were modified according to the results of the pilot study.

Survey Method

Population and Sample

The target population of this study is the households in the Lansing area, including Lansing, East Lansing, and Okemos in Michigan. However, since it is impracticable to gather the e-mail addresses of the residents in this area, students at

Michigan State University were determined as the survey participants based on a convenience sampling method.

The total number of students who do not live in the residence halls and whose local addresses are in the Lansing area was 13,756. This included both undergraduate and graduate students at Michigan State University. Among them, 6,000 were selected randomly. A recruitment letter that included a link to the on-line survey was sent by an e-mail. Four hundred forty-one started to answer the survey with 314 completing it. Overall response rate is only 7.35%. Since the sample was selected only among the students at Michigan State University who are using their e-mail daily, it may not represent all households in the Lansing area. The sample may tend to be educated more highly and aged younger compared to the average of households in the Lansing area. This may result in limitations when generalizing the results of this study.

Survey Instrumentation

The instrumentation of this survey was developed based on prior research and the conceptual model of this study (see Figure1). It was also modified according to the results of the pilot survey. Questions are categorized according to the six variables of the study.

Values. Participants were asked to answer questions about the value that they consider most important related to their opinion on housing. Indicators of value were abstracted from several previous research studies. Privacy, social life, and sanitation of the house serve as indicators for the discussion of the entrance area of the house (Lawrence, 1984; 1987; 1989), while comfort, safety, and privacy serve as indicators of

perceived residential quality (Amerigo & Aragones, 1997). Concerns about health and sanitation were drawn from the discussion of the indoor-footwear-wearing habit (Munro & Steele, 1999) and research on flooring materials for houses (Andes, 2000; Spetic, Kozak, & Cohen, 2007). At first, this question was designed as a 5-point Likert-type scale. However, according to the result of the pilot study, most of the respondents rated 4 (important) or 5 (very important) for all values. It is because all the six values represent important functions in housing. Therefore, for the main survey, a multiple choice question was used to select up to three that they think most important among the values of comfort, health, privacy, safety, sanitation, and social life.

Lifestyle. Lifestyle has been broadly studied in the field of marketing and advertising. Plummer (1974) suggested four dimensions of lifestyle for marketing research: activities, interests, opinions (AIO) and demographics. Activities tell how residents spend their time, interests explain what they deem important in their surroundings, opinions imply their view of the world around them, and demographics show some basic characteristics of residents. In this study, as AIO (activities, interests, and opinions) was considered in the question related to value, behavior, and non-fixed elements, only demographics was asked in regard to lifestyle.

The stage of family development was the focus. Broadly speaking, the stage is divided into four categories: families with children, single-parent families, single individuals, and couples with no children (Morris & Winter, 1978). In detail, participants were asked to provide the ages and the number of children due to the fact that wearing or not wearing shoes inside the house is expected to be a bigger issue among families with younger children. In addition, education, income, ethnicity, and the current condition of

the house were asked as closed-ended questions.

Behavior. Information on the current condition of residents' indoor-footwear-wearing habits is the core focus of this study. Munro and Steele (1999) surveyed people aged 65 years and older regarding their household-shoe wearing and purchasing habits. Based on their research, an indoor-footwear-wearing habit can be categorized as wearing outdoor shoes, wearing indoor shoes, and being bare-foot or wearing socks. In this survey, they were divided into seven categories, including residents who take off their outdoor shoes only in particular rooms (such as their own bedroom). In addition, the reason for indoor-footwear-wearing habits was asked by using a 5-point Likert-type scale.

Fixed elements. Fixed elements of the house consist of walls, floors, ceilings, and columns. Using fixed elements, the evaluation of the current condition of the entrance area of the house can be determined. Therefore, environmental quality questions were asked to be evaluated using the semantic differential scale, which presents several pairs of adjectives through which the researchers can measure participants' attitude toward a particular concept (Fraenkel & Wallen, 2006). Twenty-two pairs of adjectives out of sixty-four, which serve as the lexicon of environmental descriptors (Kasmar, 1970), were used for this study (Bechtel, 1976). These are considered to be related to the values in this study, focusing primarily on size, function, atmosphere, and usage of the entrance area of the house. In addition, satisfaction was also asked along with evaluation.

Semi-fixed elements. Semi-fixed elements indicate furnishings in the built environment. Materials that are related to shoes can be floorings, and the furniture placed at the entrance area of the house is usually closets. Therefore, in the questionnaire of this study, the floor materials of the entrance area and the current conditions of needs or

wants related to the closets, which store shoes, coats, umbrellas, and hats, were asked using closed-ended questions. The current usage of other furniture and display items such as floor mats or shoe racks were asked as well.

Non-fixed elements. The questions about various kinds of activities occurring in the entrance area of the house were included in the questionnaires.

Data Analysis

Survey data were analyzed by Statistical Package for the Social Science (SPSS version 13). For the first step, demographic characteristic, housing and the entrance area, and indoor-footwear-wearing habit were observed by descriptive statistics such as frequency, percentage, and mean to understand current condition and distribution of the respondents. Then, since the instrument had various types of questions and therefore the data of each variable had different types of measurement scale, T-test, analysis of variance (ANOVA), regression analysis, and chi-square were used adequately to examine each research question.

CHAPTER IV

RESULTS

Descriptive Statistics

A total of 314 completed questionnaires were collected by on-line survey. As the first step of analyses, descriptive statistics for demographic characteristics, housing, entrance area, and indoor-footwear-wearing habits were conducted.

Demographic Characteristics

The frequency and the percentage distribution of respondents' age, gender, and education level are presented in Table 1.

Table 1. *Percentage Distribution of Demographic Characteristics*

		Frequency	Percentage
Respondent age	18 – 24	209	66.6 %
	25 – 34	89	28.3%
	35 – 44	8	2.5%
	45 – 54	7	2.2%
	55 – 64	1	0.3%
Respondent gender	Male	116	36.9%
	Female	198	63.1%
Respondent education level	Some high school / No degree	2	0.6%
	High school graduate	36	11.5%
	Technical school / Some college	94	29.9%
	College degree	121	38.5%
	Graduate degree or higher	61	19.4%
	Total	314	100.0%

More than half of respondents (n = 209, 66.6%) was between 18 and 24 years old. Eighty-nine (28.3%) was between 25 and 34 years old, 8 (2.5%) was between 35 and 44 years old, 7 (2.2%) was between 45 and 54 years old, and only 1 (0.3%) was between 55

and 64 years old. Dominant gender was female (n = 198, 63.1%), while male was 116 (36.9%). Regarding education level, over one-third of respondents reported to have college degree (n = 121, 38.5%), 94 (29.9%) as technical school or some college, 61 (19.4%) as graduate degree or higher, 36 (11.5%) as high school graduate, and only 2 (0.6%) as some high school or no degree followed. Since the participants of this survey were undergraduate and graduate students at Michigan State University, respondent age tended to be younger and education level tended to be higher.

However, the majority of participants were Caucasian (n = 270, 86.0%), and 91.7% (n = 288) of participants' native country was United State of America. Since respondents' ethnicity and native country was concentrated to one group, these may not be considered as one of the variables to test differences in indoor-footwear-wearing habits.

Housing and the Entrance Area

Table 2 shows the percentage distribution on the concept of residents or family, housing, and the entrance area of the house. For family composition, about half of the respondents (n = 173, 55.1%) indicated that they do not live with other family members which can be named as single individuals, 60 (19.1%) indicated as a couple with no children, 74 (23.6%) as a family with children, and only 7 (2.2%) as a single-parent family. This can also mean 81 (25.8%) out of 314 respondents have children in their household. Number of residents who live together in their houses ranged from one to eight. 118 (37.6%) was two, 68 (21.7%) was four, 57 (18.2%) was three, and 46 (14.6%) was one. This finding can be considered that many single individuals live with their

roommates rather than their families. In terms of housing type, 140 (44.6%) were living in apartment buildings, and similarly 138 (43.9%) were living in a single-family detached house. Only 35 (11.1%) answered for a multi-family attached house and there was no response for other types of housing.

Table 2. *Percentage Distribution of Housing and Entrance Area Characteristics*

		Frequency	Percentage
Family composition	Family with children	74	23.6%
	Single-parent family	7	2.2%
	Couple with no children	60	19.1%
	Single individual(s)	173	55.1%
Number of residents	1	46	14.6%
	2	118	37.6%
	3	57	18.2%
	4	68	21.7%
	5 or more	25	7.9%
Housing type	Single-family detached house	138	43.9%
	Multi-family attached house	35	11.1%
	Apartment building	140	44.6%
	Others	1	0.3%
Housing condition	Very poor condition	0	0%
	Poor condition	5	1.6%
	Adequate condition	67	21.3%
	Good condition	178	56.7%
	Excellent condition	64	20.4%
Number of entrance doors	1	120	38.2%
	2	117	37.3%
	3	58	18.5%
	4 or more	19	6.1%
Main entrance door	Front door	228	72.6%
	Door to the backyard	29	9.2%
	Door to the garage	42	13.4%
	Side door	15	4.8%
Entrance area layout	Separated from other areas	136	43.3%
	Not separated from other areas	178	56.7%
Closet near main entrance area	Yes	219	69.7%
	No, but need one	49	15.6%
	No, and do not need one	46	14.6%
	Total	314	100.0%

In addition, for housing condition, 56.7% (n = 178) of respondents rated as good

condition, 21.3% (n = 67) as adequate condition, 20.4% (n = 64) as excellent condition, and 1.6% (n = 5) as poor condition were followed. This tells that 98.4% answered that the condition of their current house is acceptable or even better. The range of entrance door number was from one to six. More than one-third (n = 120, 38.2%) of respondents had only one entrance door in their house. Almost equally 117 (37.3%) had two, and 58 (18.5%) had three. The majority of respondents were using the front door as their main entrance door (n = 228, 72.6%). Among them, 120 can be considered it is because they have only one entrance door. Forty-two (13.4%) were using a door to the garage, 29 (9.2%) were using a door to the backyard, and 15 (4.8%) were using a side door.

Slightly over half of participants (n = 178, 56.7%) answered their entrance area is not separated from other areas in their houses, while 136 (43.3%) answered it is separated. Regarding furniture, 219 (69.7%) reported they have a closet near the main entrance area of their house. However, among 95 (30.2%) who do not have closet near the main entrance area, 49 (15.6%) reported they need one, and similarly 46 (14.6%) reported they do not need one.

Indoor-Footwear-Wearing Habits

The findings of participants' indoor-footwear-wearing habits were the most core part in this survey. Table 3 presents the frequency and percentage distribution for different indoor-footwear-wearing habits, and table 4 shows descriptive statistics for the reason for this habit. Regression analysis was conducted to examine if there is a relationship between those two variables, the indoor-footwear-wearing habit and the reason for that habit (Table 5). Conducting regression analysis, the mean of indoor-

footwear-wearing habits was calculated by seven categories (Table 3). Score one is always staying bare-foot, and as the score goes up, the residents wear shoes often start with indoor shoes to outdoor shoes, and at last, score seven is usually wearing outdoor shoes inside of the house.

Table 3. *Percentage Distribution of Indoor-Footwear-Wearing Habits*

		f	%		f	%
1	always bare-foot (socks)	112	35.7	bare-foot	112	35.7
2	usually bare-foot (socks) / sometimes indoor shoes	108	34.4	indoor shoes	134	42.7
3	usually indoor shoes	26	8.3			
4	both indoor shoes & outdoor shoes	32	10.2	outdoor shoes	68	21.7
5	usually outdoor shoes / sometimes bare-foot	29	9.2			
6	usually outdoor shoes except some rooms	3	1.0			
7	usually outdoor shoes	4	1.3			
	total	314			314	

As shown in table 3, participants reported their indoor-footwear-wearing habits among seven different categories. Slightly over one third of respondents said that they always stay bare-foot or wear only socks inside of their houses (n = 112, 35.7%). One hundred eight respondents (34.4%) usually stay bare-foot but also wear indoor shoes. This indicates that 70.1% are used to staying bare-foot at home even though sometimes they wear socks or indoor-shoes. Twenty-six (8.3%) answered that they usually wear indoor shoes and 32 (10.2%) wear both indoor and outdoor shoes. Also, 10.2% (n = 32) can be said to wear outdoor shoes usually even though they sometimes stay bare-foot or take off their outdoor shoes in some particular areas. Only 1.3% (n = 4) answered that they wear outdoor shoes inside of the house.

In a prior study (Munro & Steele, 1999), indoor-footwear-wearing habits were

categorized as being bare-foot or wearing socks, wearing indoor shoes, and wearing outdoor shoes. According to this division, seven different groups were combined into three. One hundred twelve participants (35.7%) do not wear any shoes inside of the house. They stay bare-foot. One hundred thirty-four respondents (42.7%) wear indoor-shoes and 68 (21.7%) wear outdoor-shoes. In addition, this habit can also divided into people who do not wear outdoor shoes inside of the house (n = 246, 78.4%) and people who wear outdoor shoes (n = 68, 21.7%).

Table 4. *Descriptive Statistics for Reason of Indoor-Footwear-Wearing Habit*

	Mean	SD	N
Lifelong habit from childhood	3.68	1.292	314
Comfort	**4.26**	0.885	314
Convenience in living	3.85	1.006	314
Sanitation of the house	3.38	1.286	314
Family health	2.82	1.118	314

The reason of indoor-footwear-wearing habit was measured by 5-point Likert-type scale (1 = strongly disagree and 5 = strongly agree). According to table 4, participants rated comfort highest with the mean of 4.26 (SD = 0.885). Convenience in living (M = 3.85), lifelong habit from childhood (M = 3.68), sanitation of the house (M = 3.38), and family health (M = 2.82) followed.

Table 5 presents the result of regression analysis of indoor-footwear-wearing habits on reasons that people agree most. Except for convenience in living, all the others showed statistically significant relationship with indoor-footwear-wearing habits. It appears that respondents who stay bare-foot more than others tend to think that their habit is because of a lifelong habit from childhood (F = 7.533, p<.01), comfort (F = 20.464, p<.01), sanitation of the house (F = 13.928, p<.01), or family health (F = 8.118, p<.01).

Table 5. *Regression of Reasons on Indoor-Footwear-Wearing Habits*

Reason dependent variable	Beta	t	R^2	Adjusted R^2	F	Sig.
Lifelong habit from my childhood	-.138	-2.745	.024	.020	7.533	**.006**
Comfort	-.153	.034	.062	.059	20.464	**.000**
Convenience in living	-.008	-.202	.000	-.003	.041	.840
Sanitation of the house	-.185	-3.732	.043	.040	13.928	**.000**
Family health	-.124	.044	.025	.022	8.118	**.005**

Reliability Test

Most of survey questions that are categorized in six variables (i.e., values, lifestyle, behavior, fixed elements, semi-fixed elements, and non-fixed elements) were measured by different scales in different aspect. Therefore, reliability analysis in most questions may be meaningless. However, respondents' evaluation on current fixed elements was asked by twenty-two pairs of adjectives, and it was measured by rating scale which measurement is interval. Therefore, for this part, reliability analysis can be conducted by grouping adjectives into four different focuses: size, function, atmosphere, and usage. Cronbach's alpha was employed to test the internal consistency of scales and the results are shown in table 6. Cronbach's alpha coefficient ranged from .729 to .850, and they are considered to be acceptable for further research in this variable.

Table 6. *Reliability Analysis on Fixed Elements' Evaluation*

	N of items	Mean	Cronbach's Alpha
size	3	3.173	.850
function	4	2.526	.793
atmosphere	12	2.862	.806
usage	3	2.358	.729

Results and Discussion

To investigate the relationship between residents' indoor-footwear-wearing habits and the configuration of the entrance area of their houses, there were two specific objectives for this study: (1) to examine which characteristic of residents (i.e. values, lifestyles, etc.) are related to the indoor-footwear-wearing habits and (2) to examine how the indoor-footwear-wearing habits of residents are related to their current utilization or evaluation of the entrance area of the house. At the base of these two objectives, five research questions were suggested and they were examined as follows.

RQ 1. *Does residents' behavior (i.e., indoor-footwear-wearing habit) differ by the different concerns which the residents place higher value on?*

For the different concerns which the residents place higher value on, participants were asked to choose up to three values that they think most important related to their housing among six values (i.e., comfort, health, privacy, safety, sanitation, and social life).

Table 7. *Chi-Square of Indoor-Footwear-Wearing Habits on Values*

Descriptive Statistics (Values on housing)					Pearson Chi-Square	
Frequency	bare -foot	indoor shoes	outdoor shoes	*total*	Value	Asymp. Sig.
comfort	103	124	64	**291**	.296**	.863
health	32	49	28	109	3.321*	.190
privacy	58	68	31	157	.702*	.704
safety	80	94	46	220	.289*	.865
sanitation	36	41	16	93	1.613*	.446
social life	27	35	17	79	.132*	.936
total	*112*	*134*	*68*	*314*		

* *0 cell (.0%) have expected count less than 5.*

** *1 cell (16.7%) have expected count less than 5. The minimum expected count is 4.98.*

Since, the measurement scale of both variables are nominal (however, in some other tests, such as analysis of variance or regression, the measurement scale of indoor-

footwear-wearing habit are considered as interval), Chi-Square was conducted to examine the relationship between indoor-footwear-wearing habits and the values that residents think important for their housing. Table 7 shows the descriptive statistics of values on housing and the results of Pearson Chi-square. Comfort (n = 291) appears as the value that the most respondents, regardless of their indoor-footwear-wearing habits, chose as an important one related to their housing. This result corresponds with the reason of indoor-footwear-wearing in which respondents also rated comfort highest (Table 4). After comfort, safety (n = 220), privacy (n = 157), health (n = 109), sanitation (n = 93), and social life (n = 79) followed.

However, any of the six values failed to show a significant relationship with indoor-footwear-wearing habits. It means, in the population, the observed frequencies will be equal to the expected frequencies. So, the indoor-footwear-wearing habit is independent to the values on the housing. This result is dissimilar with the statistically significant relationship on indoor-footwear-wearing habits with comfort, sanitation of the house, and family health as the reason for the habit (Table 5). It may be because the former was asking for the value of the whole housing and participants' everyday life, while the latter was concentrating on the reason for indoor-footwear-wearing habits.

RQ 2. *Does residents' behavior (i.e., indoor-footwear-wearing habit) differ by their different lifestyles?*

In order to examine differences in indoor-footwear-wearing habits according to residents' lifestyle, family composition, ethnicity, existence of pets, housing type and condition were planned to be analyzed.

At first, analysis of variance (ANOVA) was used to examine if the mean of

indoor-footwear-wearing habits is different by different family compositions. The factors of the independent variable were four different types of family composition; a family with children, a single-parent family, a couple without children, and a single individual. For the dependent variable, the mean of indoor-footwear-wearing habit was calculated using seven categories (Table 3); one was staying bare-foot and seven was wearing outdoor shoes inside of the house. It means that the higher respondents get for the mean of indoor-footwear-wearing habit, the more they tend to wear outdoor shoes inside of the house.

Table 8. *ANOVA of Indoor-Footwear-Wearing Habits on Family Composition*

			F	Sig.
between groups			4.020	**.008**
Post Hoc Tests (Bonferroni)		Mean difference	Std. Error	Sig.
Family w/ children	Single-parent family	-1.344	.560	.102
	Couple w/o children	.447	.246	.421
	Single individual(s)	.271	.197	1.000
Single-parent family	Family w/ children	1.344	.560	.102
	Couple w/o children	**1.790***	.565	**.010**
	Single individual(s)	**1.614***	.546	**.020**
Couple w/o children	Family w/ children	-.447	.246	.421
	Single-parent family	**-1.790***	.565	**.010**
	Single individual(s)	-.176	.212	1.000
Single individual(s)	Family w/ children	-.271	.197	1.000
	Single-parent family	**-1.614***	.546	**.020**
	Couple w/o children	.176	.212	1.000

* $p<.05$

According to table 8, the significance level of analysis of variance (ANOVA) is .008. It indicates that indoor-footwear-wearing habits can be different by different family composition. However, Bonferroni's post hoc tests show that the difference exists only between a single-parent family and a couple without children, and a single-parent family and a single individual. And as the result of mean difference, a single-parent

family tends to wear outdoor shoes more than a couple without children or a single individual. A single-parent family is a group that has children while the other two groups do not. Therefore, a T-test was conducted again to examine if the mean of indoor-footwear-wearing habits differs according to the existence of children under five. Two groups were divided by having children younger than five or not.

Table 9. *T-test of Indoor-Footwear-Wearing Habits on Children under Five*

	Descriptive Statistics of Indoor-Footwear-Wearing Habits			Levene's Test for Equality of Variance	
	N	Mean	SD	F	Sig.
Yes	23	2.43	1.409		
No	291	2.30	1.440	.162	.688
total	314				

The result on table 9 indicates that it is not significant (sig. = .688). Therefore, there is no difference in indoor-footwear-wearing habits between the respondents with children under five and without children under five. At the beginning of this study, the residents with younger children were expected to be more sensitive with wearing outdoor shoes inside of their houses. However, according to the finding in this survey, it turned out indifferent.

In addition, number of residents was also analyzed related to indoor-footwear-wearing habits. Since, the measurement scale of this variable, number of residents, was ratio scale, regression analysis was conducted for examination. According to table 10, the number of residents has significant effects on indoor-footwear-wearing habits ($\beta = .192$, $F = 9.125, p < .01$). Only 2.8% ($R^2 = 0.028$) of the variance in indoor-footwear-wearing habits was explained by the number of residents. However, it appears that the more residents live together they tend to wear outdoor shoes more than indoor shoes and tend

to wear indoor shoes more than staying bare-foot inside of their houses. It can be assumed that greater the number of residents can be the reason of an unclean floor and that may cause residents to wear shoes inside of their houses.

Table 10. *Regression of Indoor-Footwear-Wearing Habits on Number of Residents*

	Beta	t	R^2	Adjusted R^2	F	Sig.
Residents size	.192	3.021	.028	.025	9.125	**.003**

Second, the ethnicity of participants was not able to be considered as one of the variables in lifestyle. Since respondents' ethnicity or native country were concentrated in Caucasian (n = 270, 86.0%) or U.S.A. (n = 288, 91.7%), and the rest were distributed widely over a large range, it seemed to be meaningless to compare the mean of indoor-footwear-wearing habits among the group of ethnicity or native country.

Table 11. *T-test of Indoor-Footwear-Wearing Habits on Pets*

Descriptive Statistics of Indoor-Footwear-Wearing Habits				Levene's Test for Equality of Variance	
	N	Mean	SD	F	Sig.
Pets	154	2.45	1.526		
No pets	160	2.18	1.334	5.485	**.020**
total	314				

Third, pets were considered to be a factor that causes difference in residents' everyday lifestyle in their houses. T-test was used to examine if there is any difference in indoor-footwear-wearing habits by the existence of pets. Table 11 presents that it is significant (Sig. = .020). Comparing the means of two groups living with pets (M = 2.45) and without pets (M = 2.18), household that does not live with pets tends to stay bare-foot or do not wear outdoor shoes more that the other. It can be assumed that if there is a pet in the house, the floor can get dirty easily and that could bring some residents not to

stay bare-foot.

At last, analysis of variance (ANOVA) was conducted to examine if there is any difference, regarding to indoor-footwear-wearing habits, in different types of houses (Table 12). The factors for the independent variable were three groups; a single-family detached house, a multi-family attached house, and an apartment building. A dependent variable, the mean of indoor-footwear-wearing habits, is calculated in the same way with the prior test of ANOVA. On the other hand, to examine the effect of housing condition on indoor-footwear-wearing habit, regression analysis was used. Housing condition was asked to select among five levels: very poor, poor, adequate, good, and excellent, and they were used as an interval scale for regression analysis (Table 13).

Table 12. *ANOVA of Indoor-Footwear-Wearing Habits on Housing Type*

			F	Sig.
between groups			9.040	**.000**
Post Hoc Tests (Bonferroni)		Mean difference	Std. Error	Sig.
Single-family detached house	Multi-family attached house	.052	.265	1.000
	Apartment building	**.687***	.168	**.000**
Multi-family attached house	Single-family detached house	-.052	.265	1.000
	Apartment building	.636	.265	.051
Apartment building	Single-family detached house	**-.687***	.168	**.000**
	Multi-family attached house	-.636	.265	.051
N = 313				

* $p<.05$

According to table 12, the significance level shows .000. It appears that indoor-footwear-wearing habits can be different by different types of houses that respondents live in. Moreover, according to Bonferroni's post hoc tests, the difference is presented

between the respondents of a single-family detached house and an apartment building. By the result of mean difference, the respondents who live in an apartment building tend to stay bare-foot more than the respondents in a single-family detached house. The smaller sizes for an apartment building or the front yard and the back yard for a single-family detached house could be the reason for this result. Since, an apartment building (n = 140, 44.6%) and a single-family detached house (n = 138, 43.9%) are the house type that were answered most frequently (Table 2), difference between these two groups can be considered more meaningful.

Table 13. *Regression of Indoor-Footwear-Wearing Habits on Housing Condition*

	Beta	t	R^2	Adjusted R^2	F	Sig.
Housing condition	-.352	-3.049	.029	.026	9.294	**.002**

The result in table 13 tells that regression analysis is statistically significant (F = 9.294, sig. = .002). The R^2 value of .029 indicates that only about 2.9% of the variance in indoor-footwear-wearing habits can be explained by housing condition. And according to the value of beta (β = -.352), it can be suggested the residents in better condition of the house tends to stay bare-foot more than others.

RQ 3. *Does residents' current evaluation and satisfaction of the fixed elements at the entrance area of the house differ by their different behavior (i.e., indoor-footwear-wearing habit)?*

A fixed element in research question 3 designates a house building itself, such as walls, floors, ceilings and columns (Rapoport, 1982a). Therefore, it cannot be changed according to residents' different behaviors. However, the evaluation and satisfaction for the building can vary. For this research question, analysis of variance (ANOVA) was

conducted. Three categories of indoor-footwear-wearing habit (Table 3) were used as the factor of an independent variable. A dependent variable was the score on five points of rating for each set of adjectives. Twenty-three different tests were operated and table 14 presents descriptive statistics of each pair of adjectives and the result of analysis of variance.

Table 14. *ANOVA of Fixed Elements' Evaluation on Indoor-Footwear-Wearing Habits*

Descriptive Statistics				ANOVA (bare-foot / indoor shoes / outdoor shoes)	
Min.	Max.	Mean	SD	F	Sig.
Size					
Adequate size (1)	Inadequate size (5)	2.50	1.435	.086	.918
Huge (1)	Tiny (5)	**3.63**	1.098	.356	.701
Roomy (1)	Cramped (5)	**3.39**	1.181	.126	.882
Function					
Functional (1)	Nonfunctional (5)	2.04	1.167	.693	.501
Organized (1)	Disorganized (5)	2.53	1.213	.779	.460
Well planned (1)	Poorly planned (5)	2.97	1.200	1.602	.203
Well organized (1)	Poorly organized (5)	2.56	1.195	1.829	.162
Atmosphere					
Clean (1)	Dirty (5)	2.47	1.206	1.660	.192
Comfortable (1)	Uncomfortable (5)	2.63	1.025	.623	.537
Complex (1)	Simple (5)	**4.24**	.950	.866	.421
Empty (1)	Full (5)	3.03	1.180	.233	.792
Free space (1)	Restricted space (5)	**3.12**	1.241	.412	.662
Inviting (1)	Repelling (5)	2.58	.970	.480	.619
Neat (1)	Messy (5)	2.53	1.354	.151	.860
Pleasant (1)	Unpleasant (5)	2.52	.923	.117	.889
Private (1)	Public (5)	**3.16**	1.282	.297	.743
Uncluttered (1)	Cluttered (5)	2.60	1.395	.430	.651
Uncrowded (1)	Crowded (5)	2.92	1.251	.771	.463
Tidy (1)	Untidy (5)	2.50	1.280	.418	.658
Usage					
Convenient (1)	Inconvenient (5)	2.21	1.100	.242	.785
Multiple purpose (1)	Single purpose (5)	2.68	1.453	.112	.894
Useful (1)	Useless (5)	2.18	1.109	.550	.577
Satisfaction					
Satisfied (1)	Unsatisfied (5)	2.56	1.149	1.081	.340

The descriptive statistics shows that the participants answered that they think the entrance area of their house is rather simple (M = 4.24), tiny (M = 3.63), cramped (M = 3.39), public (M = 3.16), and restricted (M = 3.12). However, the result of analysis of variance (ANOVA) appears that there is no difference in the evaluation and satisfaction of the entrance area according to different indoor-footwear-wearing habits (i.e., staying bare-foot, wearing indoor shoes, or wearing outdoor shoes inside of their houses). It can be considered that in population, there is no relationship between the evaluation of entrance area and indoor-footwear-wearing habits. Also, most of the respondents were neither satisfied nor unsatisfied with this area (M = 2.56).

RQ 4. *Does residents' current utilization of the semi-fixed elements at the entrance area of the house differ by their different behavior (i.e., indoor-footwear-wearing habit)?*

Rapoport (1982a) defined semi-fixed elements as the furnishings of the house in his studies. In this research, semi-fixed elements were understood by floor materials, furniture, shoe storing, and display items. At first, the relationship between the floor materials of entrance area and the indoor-footwear-wearing habits was inquired. Then the questions whether the participants have a closet near the entrance area of their house, what they store in that closet, where do they store their shoes other than the closet near the entrance area, and what kind of display items do they have at the entrance area was answered.

Carpet (n = 111, 35.3%) was the most frequently used material for the entrance area flooring, vinyl (n = 80, 25.4%) and wood (n = 79, 25.1%) followed. According to the result of chi-square (Table 15, sig. = .030), the flooring materials of entrance area and

indoor-footwear-wearing habits was dependent. Also, with the differences between observed frequencies and expected frequencies in carpet, more respondents tended to remove their shoes at home when the carpet is used at the entrance area (Table 15).

Table 15. *Chi-Square of Entrance Area Flooring on Indoor-Footwear-Wearing Habits*

Descriptive Statistics (Floor material of entrance area)						Pearson Chi-Square	
Frequency		bare -foot	indoor shoes	outdoor shoes	*total*	Value	Asymp. Sig.
carpet	O	51	43	17			
	E	39.6	47.4	24.0	111		
wood flooring	O	17	38	24			
	E	28.2	33.7	17.1	79		
vinyl flooring	O	34	29	17			
	E	28.5	34.1	17.34	80		
ceramic tiles	O	9	19	8			
	E	12.8	15.4	7.8	36		
stones	O	1	2	1			
	E	1.4	1.7	0.9	4		
others	O	0	3	1			
	E	1.4	1.7	0.9	4		
total		*112*	*134*	*68*	*314*	19.973*	**.030**

** 6 cells (33.3%) have expected count less than 5. The minimum expected count is 0.87.*

For the furniture, 219 (69.7%) out of 314 respondents appeared to have a closet near the entrance area of the house (Table 2). With this total number of 219, chi-square was conducted to analyze if the type of items stored in the closet is dependent on residents' indoor-footwear-wearing habits. Respondents who answered that there is a closet near the entrance area of their house (n = 219) were asked to check all different kinds of items in their closet, and indoor-footwear-wearing habits were categorized into three groups, which are staying bare-foot, wearing indoor shoes, and wearing outdoor shoes inside of their houses (Table 3).

Table 16. *Chi-Square of Closet Items on Indoor-Footwear-Wearing Habits*

Descriptive Statistics (Items in the closet near entrance area)					Pearson Chi-Square	
Frequency	bare -foot	indoor shoes	outdoor shoes	*total*	Value	Asymp. Sig.
shoes	45	56	24	125	3.731*	.155
bags	31	29	15	75	.894*	.640
coats	63	77	38	**178**	4.969*	.083
hats, gloves, scarves, etc.	42	54	23	119	3.818*	.148
umbrellas	41	42	17	100	3.602*	.165
cleaning equipment	49	48	26	123	.817*	.665
tools	23	28	12	63	1.071*	.585
total	*82*	*87*	*50*	*219*		

* *0 cell (.0%) have expected count less than 5.*

According to descriptive statistics in table 16, coats (n = 178) were the item that is stored in most participants' closet near the entrance area. Shoes (n = 125) and cleaning equipment (n = 123) followed. There were also some unusual answers beside the ones suggested in the question. One of them was a washer and a dryer (n = 2). This item seemed to be for the respondents who use a door to the backyard as their main entrance door. On the other hand, all the significance levels for the result of chi-square were not acceptable (Table 16). No items could be concluded to have relation with different indoor-footwear-wearing habits. In population, the observed frequencies will be equal to the expected frequencies. They are independent.

There were only 95 (30.2%) who do not have a closet at the entrance area (Table 2). However, among 219 respondents who have a closet, only 125 stored their shoes in that closet (Table 16). Therefore, all the places where participants store their shoes mainly were asked. Chi-square analysis was used to examine if the place where participants store their shoes is dependent on different indoor-footwear-wearing habits. Table 17 presents the frequency for the place where the participants store their shoes and the result of chi-square analysis.

Table 17. *Chi-Square of Shoe Storing on Indoor-Footwear-Wearing Habits*

Descriptive Statistics (Shoe storing place)						Pearson Chi-Square	
Frequency		bare -foot	indoor shoes	outdoor shoes	*total*	Value	Asymp. Sig.
closet near main entrance area	O	32	43	9		8.478*	**.014**
	E	30.0	35.8	18.2	84		
cabinet or shoe rack near main entrance area	O	33	21	7		12.040*	**.002**
	E	21.8	26.0	13.2	61		
closet in bedroom	O	45	77	37		7.786*	**.020**
	E	56.7	67.9	34.4	**159**		
closet in dressing room	O	4	4	2		.085***	.959
	E	3.6	4.3	2.2	10		
closet or cabinet in garage	O	5	5	2		.272**	.873
	E	4.3	5.1	2.6	12		
floor	O	38	38	29		4.157*	.125
	E	37.5	44.8	22.7	**105**		
total		*112*	*134*	*68*	*314*		

** 0 cell (.0%) have expected count less than 5.*

*** 2 cells (33.3%) have expected count less than 5. The minimum expected count is 2.60.*

**** 3 cells (50.0%) have expected count less than 5.The minimum expected count is 2.17.*

Slightly over half of the participants (n = 159) store their shoes in the closet in the bedroom. The following answer was the floor (n = 105), that many participants recorded specifically for the category of others. It was the second most frequent place to store their shoes, and it distributed over the floor of entrance area, living room, bedroom, and even under the bed. However, placing shoes on the floor cannot actually mean storing. Moreover, since the question allowed for a multiple choice, this place can be for some shoes that residents wear most often in that season.

For the result of chi-square in table 17, the level of significance in a closet near the main entrance area, a cabinet or a shoe rack near the main entrance area, and a closet in the bedroom were low enough to be concluded that they are dependent on indoor-footwear-wearing habits. By comparing observed frequencies and expected frequencies, residents who stay bare-foot or wear indoor-shoes inside of their house tend to store their

shoes in the closet near the entrance area more than residents who wear out-door shoes inside. For the cabinet or the shoe rack near the entrance area of the house, residents who stay bare-foot store their shoes in that place more than residents who wear indoor or outdoor shoes inside their house. Therefore, residents who do not wear out-door shoes in their house can be assumed that they store their shoes near the entrance area more than others. Moreover, residents who stay bare-foot or wear only socks intend to place an extra cabinet or shoe rack for storing their shoes compared to others. In addition, the result appears that bare-foot residents store shoes in the bedroom closets less than residents who wear indoor or outdoor shoes inside of their house.

Table 18. *Chi-Square of Display Items on Indoor-Footwear-Wearing Habits*

Descriptive Statistics (Display items near entrance area)					Pearson Chi-Square	
Frequency	bare-foot	indoor shoes	outdoor shoes	*total*	Value	Asymp. Sig.
floor mat	81	108	46	**235**	4.604*	.100
storage cabinet	7	8	5	20	.149**	.930
console table	14	19	6	39	1.190*	.551
bench or chair	8	21	9	38	4.277*	.118
shoe rack	22	14	5	41	7.032*	**.030**
	14.6(E)	17.5(E)	8.9(E)			
coat hanger	18	29	14	61	1.284*	.526
decorations	27	48	22	97	4.008*	.135
none	14	14	8	36	.261*	.878
total	*112*	*134*	*68*	*314*		

** 0 cell (.0%) have expected count less than 5.*

*** 1 cell (16.7%) have expected count less than 5.The minimum expected count is4.33.*

For the display items at the entrance area of the house, 235 out of 314 respondents answered they have floor mats (Table 18). The floor mat seems to become a necessary item in living, both in the functional aspect and the symbolic aspect. However, only a shoe rack showed a significant relationship with indoor-footwear-wearing habits (sig. = .030). Comparing observed frequencies and expected frequencies for a shoe rack,

respondents who stay bare-foot inside of the house definitely show higher frequency (O = 22, E = 14.6). This result can be easily expected that residents who take off their shoes at the entrance area need a shoe rack if there is no closet or the closet is not planned for storing shoes.

RQ 5. *Do residents' activities, the non-fixed elements at the entrance area of the house differ by their different behavior (i.e., indoor-footwear-wearing habit)?*

Non-fixed elements of the house in this study are defined as residents' activities at the entrance area of the house (Rapoport, 1982a). Activities such as welcoming guests, changing shoes, or putting on coats were assumed to occur differently according to different indoor-footwear-wearing habits.

Table 19. *Chi-Square of Residents' Activities on Indoor-Footwear-Wearing Habits*

Descriptive Statistics (Residents' activities)						Pearson Chi-Square	
Frequency		bare -foot	indoor shoes	outdoor shoes	*total*	Value	Asymp. Sig.
welcoming or saying good-bye to guests	O	99	112	57		1.291*	.524
	E	95.6	114.4	58.0	**268**		
changing, putting on, or taking off shoes	O	100	111	30		53.226*	**.000**
	E	86.0	102.8	52.2	**241**		
putting shoes into closet	O	31	41	6		12.205*	**.002**
	E	27.8	33.3	16.9	78		
asking visitors to remove outdoor shoes	O	40	47	7		15.978*	**.000**
	E	33.5	40.1	20.4	94		
putting on or taking off coats, hats, gloves, etc.	O	71	101	35		11.969*	**.003**
	E	73.8	88.3	44.8	207		
putting coats into closet	O	46	62	17		8.632*	**.013**
	E	44.6	53.3	27.1	125		
checking appearance before going out	O	17	21	11		.033*	.984
	E	17.5	20.9	10.6	49		
total		*112*	*134*	*68*	*314*		

** 0 cell (.0%) have expected count less than 5.*

According to table 19, welcoming or saying good-bye to guests (n = 268) and changing, putting on, or taking off shoes (n = 241) were the activities that appeared most frequently at the entrance area of the house. All the activities categorized on the question were about guests, shoes, or coats. Besides those seven activities that were suggested in the question, caring for pets especially cleaning their paws was reported for other activities. The result of chi-square in table 19 indicates that all activities except welcoming or saying good-bye to guests and checking appearance before going out are dependent on indoor-footwear-wearing habits. For changing, putting on / taking off shoes, putting shoes into the closet, and asking visitors to remove outdoor shoes, observed frequency shows higher than expected frequency for respondents who stay bare-foot and wearing indoor shoes inside of their houses. This result corresponds to the expectation, that residents who stay bare-foot or wear indoor shoes inside their houses will conduct more activities related to taking off or changing shoes at the entrance area of the house. Also, it can be assumed that they may need more space for these activities. However, respondents who wear indoor shoes tends to put on / take off coats, hats, gloves or put them into the closet more than others.

CHAPTER V

CONCLUSION

Conclusion

Generally speaking, staying bare-foot inside the house is known as a part of Asian culture. However, in this study, despite 86.0% of participants being Caucasian and 91.7% of participants' native country being the United State of America, 35.7% (n = 112) answered they always stay bare-foot and 34.4% (n = 108) said they usually stay bare-foot but sometime wear indoor shoes (Table 3). This indicates that 70.1% of respondents are used to staying bare-foot. According to Munro and Steele (1999)'s study, 32.4% of women and only 28.3% of men aged 65 years and older did not wear shoes inside of their houses. Even though, ten years have passed since then and their study was targeting the elderly, the result of 70.1% respondents staying bare-foot in this study is more than expected.

There were two specific objectives in this study. Research question 1 and 2 were about the first one, examining which characteristics of residents are related to the indoor-footwear-wearing habits, and research question 3, 4, and 5 were about the second, examining whether the indoor-footwear-wearing habits are related to their entrance area of the house.

RQ1 was about the relationship between the value which residents place higher for their housing and the indoor-footwear-wearing habits. According to the result of this study, all the six values failed to show a significant relationship with indoor-footwear-wearing habits. It means, in the population, the observed frequencies will be equal to the

expected frequencies. So, the indoor-footwear-wearing habit is independent to the values concerned for housing. This result did not agree with the statistically significant relationship between indoor-footwear-wearing habits and the reasons which are comfort, sanitation of the house, and family health (Table 5). It could be because the former was asking for the value of the whole housing or participants' everyday life, while the latter was concentrating on the reason for the behavior. Health and sanitation were the values that were discussed in previous studies on indoor-footwear-wearing habit (Munro & Steele, 1999) and flooring materials for houses (Andes, 2000; Spetic, Kozak, & Cohen, 2007). Those two values were expected to be taken higher by the respondents who stay bare-foot inside of their house. However, it appeared that those can be the reason for taking off shoes inside, but residents who wear outdoor shoes still consider them as an important value on housing. It can be also concluded that considering the values of their whole housing, residents do not even recognize that they have a behavioral habit of staying bare-foot or wearing outdoor shoes. They accept it as so natural that they may not even think about other behavioral patterns. This can support partly that the indoor-footwear-wearing habit can defined as '*culture core*', which means culture that changes little and slowly (Rapoport, 2008). It is not a behavior that can be changed by the demand such as sanitation or family health.

RQ2 asked about the relationship between lifestyle and the indoor-footwear-wearing habit. There were many factors for the variable of lifestyle. At first, although analysis of variance (ANOVA) of indoor-footwear-wearing habit presents significant difference on family composition, the result of Bonferroni's post hoc tests showed that differences existed only between limited groups (Table 8). Rather than, family

composition, the number of residents and the existence of pets were the factors that explained the relationship to indoor-footwear-wearing habits (Table 10 & 11). According to statistical analysis and general perception, it is reasonable to conclude that as more residents or pets are living in the house, the more they tend to wear outdoor shoes. It is difficult to keep the floor clean enough to stay bare-foot if there are many people or pets in the house. Also, analysis of variance (ANOVA) on the type and the condition of housing, living in an apartment building and the better condition have a relationship to the behavioral pattern, which is staying bare-foot inside (Table 12 & 13).

Indoor-footwear-wearing habit can be affected by the culture of the entire society, such as some Asian countries where most of the households distinguish inside from outside of the house by taking off their outdoor shoes and staying bare-foot. However, according to this study, this habit could be affected by the different culture of each household. Indoor-footwear-wearing habit can vary according to the households' lifestyle which can be defined as the number of residents, the existence of pets, the type of housing, and the condition of housing.

RQ3 assumed that indoor-footwear-wearing habit is related to the fixed elements at the entrance area of the house. However, no relationship was supported (Table 14). Much the same with the conclusion of RQ1, which remarked that there is no relationship between the value concerned for the whole house and the indoor-footwear-wearing habit, the evaluation of the overall condition for the entrance area of the house was not affected by the indoor-footwear-wearing habit.

RQ4 was about the relationship between indoor-footwear-wearing habit and the semi-fixed elements at the entrance area of the house. The floor materials of the entrance

area were dependent to indoor-footwear-wearing habits. Respondents who have carpet at the entrance area tend to remove their shoes more than expected (Table 15). It can be explained by considering that carpet is more difficult to clean than wood flooring or vinyl flooring. Also it is warmer for the people staying bare-foot inside of their houses.

For the furniture, the variety of items that were stored in the closet near the entrance area was not statistically different by indoor-footwear-wearing habits (Table 16). Whether respondents stay bare-foot or not, the utilization of the closet had no difference. However, people who stay bare-foot at home tend to store their shoes in the closet, cabinet or shoe rack near the entrance area of the house. Of course, respondents who wear shoes at home tend to store their shoes in the closet of their bedrooms (Table 17). Overall semi-fixed elements could be concluded to have a relationship to the indoor-footwear-wearing habits, although the closet near the entrance area is not utilized at most according to different indoor-footwear-wearing habits.

RQ5 could be also concluded to show a relationship between non-fixed elements and indoor-footwear-wearing habit (Table 19), especially in most activities that is connected to shoes; changing, putting on, taking off, storing or asking to remove shoes. However, only 94 respondents answered that they ask visitors to remove or change their outdoor shoes (Table 19). Considering that 112 respondents out of 314 always stay bare-foot and 134 wear indoor-shoes (Table 3), 94 is only 38% of respondents who do not wear outdoor shoes (n = 246) inside of their houses. This indicates that many people do not wear their outdoor shoes at home for the reason of comfort, sanitation or any others, but they still accept visitors wearing outdoor shoes. This means that the general culture in this area do not mind wearing outdoor shoes inside of the house, even though the

majority of residents (78.4%, Table 3) do not wear outdoor shoes at home. They may think staying bare-foot is just their household's behavioral pattern, not the culture of the entire community. Also, they seem to respect others' life style.

Implications

Design implications. Rapoport (1976, p.31) emphasized *'culture-specific design'*, but also discussed two sets of problems for that. One was the fact that culture changes. The other was the heterogeneity of the population who are using the environment. In the case of residential design, these two problems are not of concern. Indoor-footwear-wearing habits, a part of household's culture, can be defined as *'culture core'* (Rapoport, 2008), which does not change easily. Also, a residential environment is usually used by one certain household which share their own homogeneous culture. With this theoretical basis, indoor-footwear-wearing habits were studied related to housing in the aspect of culture in this study.

Based on the findings of this study, indoor-footwear-wearing habit is related not to fixed-elements but to semi-fixed elements and non-fixed elements. However, there are two-way interactions between people and environments (Rapoport, 1985; 1987; 2000a; 2000b; 2005; 2006). By different indoor-footwear-wearing habits, residents may affect the place where they store their shoes and the type of display items at the entrance area of the house. If the designers consider the line of flow of storing shoes and activities related to shoes, residential environmental design may be able to lead human beings effectively. There are some practical implications for designers.

First, although residents who stay bare-foot intend to store their shoes near their

entrance area more often than residents with other indoor-footwear-wearing habits, there were still more respondents who store shoes in the closet of bedrooms (Table 17). In this case, they often need to carry shoes from the bedroom to the entrance area or the reverse. If the closet near the entrance area is well designed for storing shoes, this place could be more practical for residents who stay bare-foot or wear indoor shoes.

Second, considering that many residents, whatever their indoor-footwear-wearing habits are, place their shoes just on the floor (Table 17), enough space or a shoe rack for everyday shoes may be needed at the entrance area. Also, if the entrance area is separated in any method it could be helpful to arrange residents' outdoor shoes. However, this suggestion could be dependent on residents' taste.

Third, residents who do not wear outdoor shoes inside of their house carried out more activities than others at the entrance area, for example changing shoes (Table 19). Therefore, more room may be helpful.

Theoretical implications. First of all, studying indoor-footwear-wearing habit as a behavioral pattern could be meaningful by itself. There were not many prior studies on indoor-footwear-wearing habit. Munro and Steele (1999) did the research on this subject, but they related to purchasing shoes and the sample target was seniors. Therefore, this study is one of the first studies to investigate indoor-footwear-wearing habit related to the residential environment. If the whole society has the same indoor-footwear-wearing habit, such as some Asian countries where all the people accept it as natural to take off outdoor shoes at home and no one needs to ask visitors to remove outdoor shoes at home, this subject may be unnecessary to be studied. However, the findings in this study imply that the indoor-footwear-wearing habit is different in every household and their utilization of

the space is different according to that habit.

Second, the conceptual model of this study (Figure 1) was based on Rapoport's famous diagram (Rapoport, 1989; 2000a; 2005; 2008) that showed a relationship between dismantled culture and dismantled environment. According to the findings, it implies that indoor-footwear-wearing habit can be one of the activity systems (behaviors), which is the last level of dismantled culture. This habit did not have a relationship to value which is a more abstract concept in dismantled culture, but showed some relationship to lifestyle which is a more concrete concept. However, in the relationship between indoor-footwear-wearing habit and residential environment of the entrance area, the habit implies some relationship to semi-fixed elements and non-fixed elements but not to fixed-elements. Theoretically, indoor-footwear-wearing habit fits into the activity system of the conceptual model. It is related not to the whole image of housing (i.e., value or fixed elements), but to everyday living style (i.e., lifestyle, semi-fixed elements, or non-fixed elements). These relationships can suggest many other future studies.

Limitations

Limited generalization of findings. First of all, a convenience sampling method that is used for this survey may cause the limitation in generalizing the results of this study. Since the survey was conducted on-line, the sample was selected among the e-mail addresses that were accessible. They were undergraduate and graduate students in Michigan State University. For this reason, the results are skewed to younger age, from 18 to 24 years old (66.6%, Table 1) and single individuals (55.1%, Table 2) in family composition. With random sampling among all the households of Lansing area in

Michigan, this study will be more representative. Therefore, the sample may not represent the target population. Care should be taken when applying the conclusion of this study to the whole community.

Limitation in validity and questionnaire interpretation. In literature review, prior research on indoor-footwear-wearing habits was hardly found. Many of the questionnaires in this survey were newly made based on only a few research studies (Munro & Steele, 1999; Lawrence, 1984; 1987; 1989). Since the questions were not adopted from an existing study or scale, they were not verified and the validities of some variables can be low.

Moreover, the different interpretation of questions in the survey can also be a limitation. Since this survey relied on self-reported data, there can be some biases. Respondents could interpret differently on the same questions of asking the utilization of the elements in residential spaces. Also, they might have different standards in measuring evaluation or satisfaction of the entrance area. If the case study is conducted prior to the survey, the questionnaire can be complemented.

Limitation in statistical analysis. With the limitation in questionnaires, many different kinds of statistical analysis were conducted. However, none of them could test casual relationship. Therefore, in this study, the reasons or the effects of indoor-footwear-wearing habits could not be concluded. Only differences, relationships, or independency among variables were tested.

In spite of these limitations, it is hoped that this study can bring a better understanding of indoor-footwear-wearing habits related to the cultural aspect and residential spaces.

Future Research

Since there were not many prior studies on indoor-footwear-wearing habit especially related to the residential environment, there can be many suggestions for future research.

First, differences are expected in indoor-footwear-wearing habit and related issues in the residential environment among different ethnic groups. Rapoport (1976, p.12) said anthropology can contribute to environmental design by providing descriptions of environment and how they are used. However, in this study, 86.0% of respondents were Caucasian and 91.7% answered their native country is the United State of America. If the survey is conducted through various ethnic groups in the United States or in many other countries, differences in indoor-footwear-wearing habits and their utilization of residential spaces can be found according to different ethnicity. Also different structures of the houses from different culture can be considered with residents' behavioral patterns. And this will allow cross-cultural comparisons in indoor-footwear-wearing habit.

Second, if the survey is conducted with the respondents of general households not students, the result can be more generalized. Moreover, differences in the indoor-footwear-wearing habits according to the different age groups can be expected.

Third, weather can be a new variable. In this study, 35.7% of respondents reported that they always stay bare-foot at home and 34.4% said they usually stay bare-foot although they sometimes wear indoor shoes (Table 3). There were more people who stay bare-foot than expected. However, considering a long period of winter with frequent snowing in Michigan, the weather can be an issue in indoor-footwear-wearing habit. When snowing outside, shoes will be wet and dirty and no one would like to wear those

outdoor shoes inside of their houses even though they are not used to staying bare-foot. Therefore, if the survey is done at the same time in the southern area of the US where summer is much longer than winter with little or no snowfall, the effect of different weather in indoor-footwear-wearing habit could be figured.

Fourth, indoor-footwear-wearing habit can be also related to other daily habits in residential spaces. In this study, indoor-footwear-wearing habit was only related to residents' opinions of houses, lifestyles and the entrance area of the houses. However, the indoor-footwear-wearing habit is a fundamental behavior that causes other different activities. Therefore, it will be meaningful to study the relationship between indoor-footwear-wearing habit and other habits in residential habits such as sitting on the floor, lying down on the floor, the way of cleaning the floor, and so on.

Fifth, the survey in this study found only the surface of a relationship between indoor-footwear-wearing habit and the entrance area of the houses. The situation of every house is different. If the case study followed by interview is conducted on the representative houses for each group of different indoor-footwear-wearing habits, there could be much more interpretation to be considered as the result of qualitative study. Also, this will bring more suggestions in the practical design process.

APPENDIX: Survey Instrument

MICHIGAN STATE
UNIVERSITY

September 22, 2009

Dear Sir or Madam:

I am a Master of Arts candidate in Interior Design at Michigan State University. You are invited to participate in a research study regarding your household's shoe wearing habits. The purpose of this study is to investigate the relationship between residents' indoor-footwear-wearing habits and the configuration of the entrance area of the house. This study is for residential spaces in the Lansing area. If you are not a resident of Lansing, East Lansing, or Okemos, or if you live in dormitories, please do not continue.

Your participation in this study will take approximately ten minutes. Your answers will remain anonymous. Your privacy will be protected to the maximum extent permitted by law. Your participation is completely voluntary and you may choose not to participate at all, or you may refuse to answer certain questions or discontinue your participation at any time without consequence. There are no right or wrong answers.

If you have questions about this study, please contact So Yun Park at parkso3@msu.edu, or Dr. April Allen at allenapr@msu.edu. If you have questions or concerns about your role and rights as a research participant, would like to obtain information or offer input, or would like to register a complaint about this survey, you may contact, anonymously if you wish, the Michigan State University's Human Research Protection Program at 517-355-2180, Fax 517-432-4503, or e-mail irb@msu.edu or regular mail at 207 Olds Hall, MSU, East Lansing, MI 48824.

Thank you so much for your time and participation. By completing and submitting the questionnaire, you are indicating your voluntary participation.

Sincerely,

So Yun Park, MA Candidate
School of Planning, Design & Construction

April D. Allen, Ph.D.
Assistant Professor

Section I. The current condition and the evaluation of the entrance area of the house

1. The number of the entrance doors in my house is _____.

2. My family uses _____ most frequently. *(Please check one.)*

☐ the front door ☐ a door to the garage
☐ a door to the backyard ☐ others *(please specify:* _____*)*

* *The main entrance area that is mentioned in the questions below indicates the one your family uses most frequently, the answer of Q2.*

3. The main entrance area of my house is separated from the living room or the other areas.

☐ Yes *(move to question 3A)* ☐ No *(move to question 4)*

3A. It is separated _____. *(Please check all that apply.)*

☐ by wall ☐ by different floor material
☐ by columns ☐ by others *(please specify:* _____*)*

4. I have a closet near the main entrance area of my house.

☐ Yes *(move to question 4A)* ☐ No *(move to question 4B)*

4A. Items which I store in that closet are: *(Please check all that apply.)*

☐ shoes ☐ coats ☐ hats, gloves, scarves, etc.
☐ bags ☐ umbrellas ☐cleaning equipments
☐ tools ☐ others *(please specify:* _____*)*

4B. I don't have a closet near my main entrance area, but I need one.

☐ Yes ☐ No

5. I usually store my shoes in _____. *(Please check all that apply.)*

☐ a closet near the main entrance area
☐ a cabinet or a shoe rack near the main entrance area
☐ a closet in the bedroom
☐ a closet in the dressing room
☐ a closet or a cabinet in the garage
☐ others *(please specify:* _____*)*

6. Display items that I place at the main entrance area of my house are: *(Please check all that apply.)*

☐ floor mat ☐ storage cabinet ☐ console table
☐ shoe rack ☐ coat hanger ☐ bench or chair
☐ decorations (vase, sculpture, fish bowl, etc.) ☐ others *(please specify: _____)*

7. Activities that are held at the main entrance area of my house are: *(Please check all that apply.)*

☐ welcoming guests, or saying good-bye to guests
☐ changing shoes / putting on or taking off shoes
☐ putting shoes into the closet
☐ asking visitors to change or remove their out-door shoes
☐ putting on or taking off coats, hats, gloves, or scarves
☐ putting coats, hats, gloves, or scarves into the closet
☐ checking my appearance before going out
☐ others *(please specify: _____)*

8. I think the current condition of the main entrance area of my house is: *(Please circle only one number for each set of adjectives.)*

	very	somewhat	neither	somewhat	very	
Huge	1	2	3	4	5	Tiny
Roomy	1	2	3	4	5	Cramped
Adequate size	1	2	3	4	5	Inadequate size
Empty	1	2	3	4	5	Full
Free space	1	2	3	4	5	Restricted space
Uncrowded	1	2	3	4	5	Crowded
Complex	1	2	3	4	5	Simple
Uncluttered	1	2	3	4	5	Cluttered
Neat	1	2	3	4	5	Messy
Well organized	1	2	3	4	5	Poorly organized
Tidy	1	2	3	4	5	Untidy
Functional	1	2	3	4	5	Nonfunctional
Well planned	1	2	3	4	5	Poorly planned
Organized	1	2	3	4	5	Disorganized
Useful	1	2	3	4	5	Useless
Multiple purpose	1	2	3	4	5	Single purpose
Convenient	1	2	3	4	5	Inconvenient
Clean	1	2	3	4	5	Dirty
Pleasant	1	2	3	4	5	Unpleasant
Inviting	1	2	3	4	5	Repelling
Private	1	2	3	4	5	Public
Comfortable	1	2	3	4	5	Uncomfortable
Satisfied	1	2	3	4	5	Unsatisfied

Section II. The opinion on the house

9. In regard to my house, I think the most important values are: *(Please check up to three values.)*

☐ comfort ☐ health ☐ privacy
☐ safety ☐ sanitation ☐ social life

Section III. Indoor-footwear-wearing habit

10. My indoor-footwear-wearing habit can be best described as: *(Please check one.)*

☐ always staying bare-foot or wearing only socks inside of my house.
☐ usually staying bare-foot or wearing socks, and sometimes wearing indoor shoes.
☐ usually wearing indoor shoes inside of my house.
☐ wearing both indoor shoes and outdoor shoes inside of my house.
☐ usually wearing outdoor shoes inside of my house, but sometimes staying bare-foot.
☐ usually wearing outdoor shoes inside of my house.
☐ usually wearing outdoor shoes inside of my house except for some particular rooms.
(please specify the rooms: _____)

11. I think the reason of my indoor-footwear-wearing habit is: *(Please circle only one number for each statement.)*

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Lifelong habit from my childhood	1	2	3	4	5
Comfort	1	2	3	4	5
Convenience in living	1	2	3	4	5
Sanitation of the house	1	2	3	4	5
Family health	1	2	3	4	5

Section IV. The current situation of the house and the family

12. My present house is: *(Please check one.)*

☐ a single-family detached house
☐ a condominium, a duplex, etc. (multi-family attached house)
☐ an apartment building
☐ a mobile house
☐ others *(please specify: _____)*

13. The ownership of the house which I live in now is:

☐ own home ☐ rent home ☐ other _____

14. The current condition of my house is: *(Please check one.)*

- ☐ very poor condition, needs to be torn down
- ☐ poor condition, needs major repairs
- ☐ adequate condition, needs many repairs but mostly minor ones
- ☐ good condition, needs some minor repairs
- ☐ excellent condition

15. The floor finishing for each room in my current house is: *(Please check all that apply.)*

	carpet	wood flooring	vinyl flooring	ceramic tiles	stones	others
Main entrance area	☐	☐	☐	☐	☐	_____
Living room	☐	☐	☐	☐	☐	_____
Kitchen	☐	☐	☐	☐	☐	_____
Bedroom	☐	☐	☐	☐	☐	_____
(if the main entrance is not the front door)						
Front entrance area	☐	☐	☐	☐	☐	_____

16. My family can be described as: *(Please check one.)*

- ☐ a family with children
- ☐ a couple with no children
- ☐ a single-parent family
- ☐ a single individual

17. The number of people who live in my house (including me) is _____. Here are the people who live with me. *(Please check all that apply.)*

- ☐ Spouse / Partner
- ☐ Children age 2 and under. How many? _____
- ☐ Children age 3 to 5. How many? _____
- ☐ Children age 6 to 18. How many? _____
- ☐ Children over the age of 18. How many? _____
- ☐ Parents. How many? _____
- ☐ Other relatives. How many? _____
- ☐ Roommates. How many? _____

18. I live with a pet.

☐ Yes *(move to question 18A)* ☐ No *(move to question 19)*

18A. My pets are: *(Please check all that apply.)*

- ☐ dog
- ☐ cat
- ☐ bird
- ☐ fish
- ☐ others *(please specify: _____)*

Section V. General Information

19. My gender is: ☐ male ☐ female

20. My age is:

☐ less than 18 years
☐ 18 to 24 years
☐ 25 to 34 years
☐ 35 to 44 years
☐ 45 to 54 years
☐ 55 to 64 years
☐ 65 to 74 years
☐ 75 years and older

21. My highest education level completed is:

☐ some high school / no degree
☐ high school graduate
☐ technical school / some college
☐ college degree
☐ graduate degree or higher

22. My ethnicity is: *(Please check one.)*

☐ Caucasian
☐ African-American
☐ American Indian or Alaska Native
☐ Asian
☐ Hawaiian or other Pacific Islander
☐ Hispanic
☐ Indian
☐ others _____

23. The other family member whose ethnicity is different from me is: *(Please check all that apply.)*

☐ *not applicable*
☐ Caucasian
☐ African-American
☐ American Indian or Alaska Native
☐ Asian
☐ Hawaiian or other Pacific Islander
☐ Hispanic
☐ Indian
☐ others _____

24. My native country is: _____

25. My household income in 2008 can be described as:

☐ less than $19,999
☐ $20,000 to $39,999
☐ $40,000 to $59,999
☐ $60,000 to $79,999
☐ $80,000 to $99,999
☐ $100,000 to $119,999
☐ $120,000 or more

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