

CULTURAL MEANING OF COLOR  
IN HEALTHCARE ENVIRONMENTS:  
A SYMBOLIC INTERACTION APPROACH

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## **Dedication**

This dissertation is dedicated to my loving parents, Eulsun Kwon and Namhee Kim.

## **Abstract**

Color planning in today's healthcare environments is a challenge for interior designers due to the diverse occupants who may establish different meanings of environmental colors based on their backgrounds and life experiences. Researchers have shown the close relationship between color perception and patients' mental and/or emotional attitudes. Moreover, studies have shown that certain colors can affect some people as stressors while the same colors can be positive distractions to others.

This exploratory qualitative study investigates the significance of culture in the ways people interpret and establish color meaning in healthcare environments. The theoretical framework of this study is based on Blumer's (1969; 2004) discussion on symbolic interaction between humans and environments. Specifically, the relationship between a role of 'the self' and cultural influences was analyzed to investigate people's interpretation and establishment of color meaning in healthcare environments.

A semi-structured interview questionnaire and a color palette instrument were developed and used to collect data from a sample of 13 female and 12 male Koreans living in Twin Cities, MN and ranging in age from 25 to 39. A research model based on the theoretical constructs of symbolic interaction—the self, objects, social interaction, and joint action—was used to formulate interview questions. Five color palettes were based on the five primary interior color combinations in the Korean tradition and used to assess the subjects' meaning assigned to color in the cultural context. The interview data were analyzed to determine the role of the constructs of symbolic interaction—the self,

object, self-interaction, and social interaction—in Koreans’ meaning establishment of color in healthcare environments.

Findings include: 1) Color as an abstract object appeared to be related to self-interaction, and color as a physical object and a social object was related to social interaction; 2) the subjects’ concepts of healthcare color were based on their personal experiences and cultural backgrounds. Care/warmness, stability, and vitality seemed to be established in the subjects’ self-interaction, and hygiene status, comfort from familiarity, professionalism, and users’ characteristics were established through the subjects’ social interaction. The subjects did not seem to consider ‘healing’ as a concept of healthcare color.

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## CHAPTER ONE: INTRODUCTION

Color is a fundamental visual element of designed environments by which human beings are physically, psychologically, and socially influenced. Since the prehistoric era, humans have applied color in interior environments for various purposes and in diverse contexts. Particularly, the general patterns of color usage within a culture have had a strong connection to color symbolism, which may be defined as the use of color as a conventional or traditional sign to convey meaning within a culture (Merriam-Webster OnLine, n.d.). However, as there is no generally accepted definition of symbolism (Betalanffy, 1981; Petocz, 1999), definitions of color symbolism also vary.

Interior color has aesthetic and functional features and often conveys symbolic meanings. Such color symbolism is common within a homogeneous culture, yet individual differences still exist. Although today's multicultural society shares global color meanings such as red means 'stop' and yellow means 'caution,' individuals from various cultures assign diverse meanings to color in their environments. For example, in traditional Korea, blue symbolized low social class (Kwon, 2001), but in ancient Egypt, it was the color of the god Osiris (Feisner, 2006).

Historically, color has been found to have connections with health in multiple domains—e.g., medicine, hospital design, and color therapy—and the positive and/or negative connection between color and health has varied in cultural contexts (Feisner, 2006; Malkin, 2002). For example, high-intensity colors are known to provide better color cueing in senior care (Cooper, 1995). However, in some cultures, high-intensity colors may provide negative stimuli because these colors have negative meanings.

Similarly, light blue-green is considered to be a soothing color and is often used in today's healthcare environments, but it was seen as the color of toxin in Korean tradition because silver spoons turn blue-green when they rust. Black, in Korean tradition, often symbolized poison when it was associated with food, because silver spoons turn black when they are exposed to arsenic poison, which has no color or smell. Such symbolic color associations can also vary depending on the individual and may change over time, yet designers often remain unaware of the backgrounds or underpinnings of symbolic color associations.

Color planning in today's healthcare environments is complicated because designers have become more sensitive to the diversity and needs of the occupants. The diverse backgrounds of healthcare facility occupants challenge interior designers because individuals can establish different meanings for environmental color based on their life experiences. Life experience is an important factor in establishing color meaning because "to perceive color means to experience [it]" (Mahnke, 1996, p.10).

Furthermore, researchers have recognized the significance of color as a means of support for healing, as a relationship exists between healing treatments and the patients' mental and emotional attitudes that are closely related to perceiving color (Meerwein, Rodeck, & Mahnke, 2007). Color of healthcare facilities needs to be carefully planned because diverse people—patients and their families, visitors, and care-giving staff—populate healthcare facilities for various purposes. These purposes may cause different levels of expectations for or experiences of comfort, arousal, and familiarity. Therefore, interior designers should be aware of the color meaning that is appropriate to different

cultures and be able to apply the color meaning in interiors so that it can satisfy diverse users, especially in stressful healthcare environments.

### **Purpose of the Study**

The purpose of this exploratory, qualitative study is to investigate the significance of culture in the ways people establish color meaning in healthcare environments. Based on Blummer's (1969) discussion of symbolic interaction theory, which represents the interaction between humans and designed environments, this study seeks to determine what role the self and socio-cultural influences play in an individual's interpretation and establishment of color meaning in healthcare environments. The findings of this study can be used to inform interior designers' decisions about color palette selection, which may help reduce occupants' stress from fear, anxiety, or discomfort in healthcare environments through use of colors.

Geertz's (1979) definition of culture is "a historically transmitted pattern of meanings embodied in symbols, a system of inherited conceptions expressed in symbolic forms by means of which people communicate, perpetuate[,] and develop their knowledge about and attitudes toward life" (p. 89). In this study, the terms *cultural* and *social* are interchangeably used because the term 'society' in symbolic interactionism, the theoretical framework of this study, is used in a macro sense embracing the concept of culture.

### **Color Meaning**

It is crucial to note that meaning in the environment is inescapable (Jenks, 1980,

p. 7) and is “not an object but a product of mental process” (Osgood, 1952; Talbot, 1982, p. 99). People construct meaning in the process of interacting with physical, psychological, and social environments. Since Osgood, Suci, and Tannenbaum (1967) determined *meaning* as “a representational mediation process” (p. 5), meaning has been investigated in environmental color research.

Color is considered informative and a way to interpret and understand meaning of designed environments (Mahnke, 1996). Since people assign meaning to designed environments in social interaction (Blumer, 1969), color as a property of designed environments may not have intrinsic meaning. Instead, color meaning is established through the process in which external color stimulation corresponds with an inner reaction of the perceiver (Mahnke, 1996). This process involves interaction between the self and environments and between two or more people, the perceivers of designed environments in the socio-cultural contexts.

For the past few decades, interior design researchers have provided data mainly on the color preferences of user groups in various environmental settings such as healthcare (Arneill & Devlin, 2002; Martin, 1992), senior housing (Cooper, 1995; Rodiek & Fried, 2005), office (Kaya & Crosby, 2006), residential buildings (Kaya & Crosby, 2006; Lucila, Geymonat, & Whitfield, 2008; Park & Guerin, 2002), and school environments (House-Gardner, 1985). Although some of these studies emphasized the importance of research on color meaning, the researchers mostly focused on preference, not meaning. As will be shown by examples from the literature in Chapter Two of this study, color meaning within a culture is influenced by various socio-cultural, political,

and economic changes and, in turn, impacts these changes and color applications. The shared meaning of color in a culture is often assigned based on people's life experiences in the cultural context. Therefore, "designers must be knowledgeable about the meanings individuals from various cultures attach to colors within an interior" to be able to produce culturally-identified or culturally-sensitive environments (Park & Guerin, 2002, p. 27).

### **Importance of the Study**

From the earliest drawings of animal images on walls and ceilings of caves, "a visual narrative ranging from the activities of daily life to expeditions, battle scenes, and guides to the hereafter" (Rompilla, 2005, p. 15) was shown. Since written language was limited, color in the visual narrative often conveyed the symbolic meaning of the drawings—e.g., murals, ceiling paintings, and carvings in ancient Egyptian temples and tombs. Later, in medieval architecture and painting, color played an important role in representing religious symbolic meaning. Although there were variations of color use in the era—e.g., red and blue were interchangeably used to mean Christ and Holy Spirit—consistencies in the symbolic colors existed. White was used for the feasts of the Virgin and present in the robe of Christ in the Transfiguration. Red symbolized Pentecostal fire, and blue and purple were considered heavenly colors (Gage, 1999).

Today's color meaning within a culture is seemingly more varied since the members have diverse backgrounds, and the diversity often challenges designers because interior colors have various meanings for people. Colors can affect some individuals as stressors because they represent negative meaning in their cultures, however the same colors can have the opposite effect for others, reducing pain and stress, because they are a

positive distraction for them (Ulrich, Zimring, Quan, & Joseph, 2006).

Highlighting the relationship between healthcare design and the impact on the occupants, the physical environment of healthcare facilities has been recognized as an integral part of the patients' experience and medical outcomes (Guenther, Vittori, & Atwood, 2006; Hutton & Richardson, 1995; Reidenbach & Sandifer-Smallwood, 1990; Stern et al., 2003). Especially over the past decade, healthcare research and the industry have been increasingly engaged in a transformation of design, construction, and operational practice to improve the design quality of healthcare environments so that it benefits people's health (Guenther et al., 2006; Stern et al., 2003).

### **Cultural Diversity**

An early definition by the World Health Organization (WHO) defined health as “a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity” (WHO, 1948, para 1). This relates to the role design can play in healthcare environments because healthcare quality has been affected by rapid societal changes in the quest for well-being (Martin & Guerin, 2005). Formerly, although the focus of hospital design had been on the needs of physicians and staff (Baker & Lamb, 1992), it often generalized the user group and rarely considered the diversity that has been one of the most rapid transformations of U.S. society.

Today's healthcare occupants reflect a wide mixture of gender, age, culture, social status, and physical ability, requiring special consideration in the care-giving and work environments. Although the following census data of minority population does not directly refer to diversity, these may reflect a facet of the continuing growth of the



diversity of the U.S. society since the minority population includes generations of immigrants from diverse countries. As the minority population continues to grow—35.2% of the U.S. population was minority in 2002 (U.S. Census Bureau, 2006)—so has this population risen in healthcare facilities. According to the Association of American Medical Colleges (AAMC), 35.7% of U.S. physicians reported minority status in 2004. Considering that the physician is one of the least ethnically and culturally diverse groups in the U.S., one can assume that the diversity of other healthcare workers and occupants overall is even greater. Such societal changes in the U.S. can influence healthcare design quality that affects occupants' comfort and satisfaction; the occupants' cultural diversity should be considered in healthcare design.

This study focuses on the Korean culture, one of the fastest growing populations in the United States. Asians are the second most rapidly increasing population in the U.S. (U.S. Census Bureau, 2000). The Korean population is one of the top three ethnically homogeneous groups among Asians in the U.S. (U.S. Census Bureau, 2000); yet it seems to maintain its unique cultural tradition and is affected by it even generations after immigration. Additionally, census data published in 2003 showed that Koreans are considered one of the most stable immigrant groups in terms of social and economic status. Regarding such status, Koreans in the U.S. may have higher levels of concern for their health than other ethnic groups, and the Korean population in healthcare environments is continuously growing. For such reasons, it is appropriate to use Koreans as the subject group of this study to investigate cultural influence in establishing color meaning that can contribute to quality healthcare design.

## **Influences of Physical Environments on Health**

Much research has demonstrated that healthcare occupants—patients, families of patients, and staff—experience considerable stress, and one of the major stresses is produced by poorly designed physical environments (Clark & Malone, 2006; Ulrich 1991; Ulrich et al, 2006). Since stress increases fatigue and stress-related immune impairment slows or worsens recovery outcomes (Ulrich, 1991; Ulrich et al., 2006), quality healthcare design should be able to promote stress-reducing influences that can help patients’ recovery and improve staff performance.

Color is one of the contributing factors to quality healthcare design (Arneill & Devlin, 2002). As a fundamental element of the physical environment, color in healthcare settings is increasingly considered as an environmental factor that can impact patients’ and staffs’ stress, safety, fatigue, and wayfinding. Since color stimulus is closely related to stress, poorly planned interior color has been known as a stressor in an interior space (Meerwein et al., 2007; Ulrich, 1991; Ulrich et al., 2006). Conversely, color palettes have also been found to positively affect people’s healing processes as well as increase the work efficiency of healthcare staff (Malkin, 2002; Ulrich, 1991; Ulrich et al., 2006).

The need for reliable color research is increasing as interior designers tend to create optimal healthcare environments that are the best fit and the least intrusive visual conditions for each individual in the setting (Meerwein et al., 2007) to help cure patients and retain staff (Fredman, 2003). The issue is that since today’s healthcare occupants are from diverse cultures, commonly used color palettes in healthcare environments seen as “calm” and “healing” by one culture may be seen as stressful by another.

Color meaning is closely linked to symbolism of which an important quality is the homogeneity of its materials (Sapir, 2002). In symbolism, not the object itself—including color—but the assignment of meaning to it with all kinds of apparently dissimilar things can be the issue (Sapir, 2002). The human mind is reacting symbolically when some component of experience elicits beliefs, ideas, and emotions that refer to the meaning of people’s experiences rather than to the objective characteristics: “Although some symbols may arouse little feeling in their users, others are deeply attached to personal or social significance” (Sapir, 2002, pp. 219-220). For such reasons, symbolic color meaning is influenced by people’s experience, especially by shared experience in the cultural context that determines homogeneity.

Because there is a diversity of color meaning among cultures, research is necessary to contribute to evidence-based healthcare design so that it can positively influence, as detailed by Ulrich et al. (2006), employees’ work performance and patient satisfaction, reduce staff stress and fatigue, and improve overall safety.

### **Theoretical Framework: Symbolic Interaction Theory**

The theoretical framework of this study is based on symbolic interaction theory developed by Herbert Blumer (1969). The reason is that his standpoint is specifically on the relationship between the *meaning* people assign to objects—including physical environments as objects—and the self. Symbolic interaction theories have been used in architectural and environmental sociology to explore the connection between environments and “human thought, emotions, and conduct” (Smith & Bugni, 2006, p. 124). Although there are a number of symbolic interaction theories, many of these

theories are less related either to designed environments or to the meaning that occupants assign the environments.

Color meaning has often been studied in the relation to symbolism. One can compare two different approaches to symbolism related to meaning in designed environments: semiotics and symbolic interactionism. While semiotics involving the study of signification of human subjects in a cultural system (Silverman, 1983) primarily concerns “a minority of culturally significant objects,” design theorists deal with “general models for the process of design that eventually lead to normative procedures in the future production” (Llorens, 1982, p. 311). Although semiotics has often been used as a theoretical background for research on meanings in designed environments, such an application seems controversial because of the evident difference of the general perspectives between semiotics and design theories. Due to this difference, studies based on the semiotic perspective have focused on the structure of symbolism as a system while those based on symbolic interactionism have emphasized meaning in the social relationship that is an ongoing process of interaction between environments and the self. Since the concepts of symbolic interaction theories include the interaction between designed environments as physical objects and a self as a socio-cultural entity, such a perspective regarding design concepts seems to better meet the emphasis of research on color meaning.

Meaning is fabricated through the processes of *self-interaction* and *social interaction* (Blumer, 1969). Mead (1934) identified two levels of social interaction and Blumer (1969) interpreted and named those two levels as “non-symbolic-” and “symbolic

interaction.” While non-symbolic interaction refers to human beings’ direct response to one another’s gestures or actions, symbolic interaction involves interpretation that produces meaning. As the distinction implies, meaning is directly related to people’s process of interpretation and interaction within a society. Therefore, for Blumer, symbolic social interaction is essential in establishing meaning. Although Mead-Blumer’s perspective of symbolic interaction aims to explain human action, it seems clear that Mead and Blumer also emphasized the process of human interpretation that constitutes meaning of objects because they viewed interpretation and definition as the basis to determine human actions.

The methodological stance of symbolic interactionism is based on direct examination or probing of the actual empirical social world rather than a simulation or a preset model of that world (Blumer, 1969). Blumer (1969) described the empirical world as “the natural social world of everyday experience” and explained “in the natural world, every object of [human] consideration has a distinctive, particular, or unique character and lies in a context of a similar distinctive character” (p. 148). In such a stance, by approaching color as a phenomenon, researchers can explore color meaning in depth.

### **Responsibilities of Interior Designers**

In the interior design process, environmental user research that includes target group analysis is used to structure the basis of the design that consists of the environmental requirements of the project (Meerwein, 2007). According to Meirovich (2006), “improvement of design quality takes place when new valuable attributes are incorporated into a product” (p. 213). The valuable attributes of interior design can be

defined by better understanding occupant research. User research, in many stages of a design project, offers a more appropriate description of user activities (Hanington, 2003). Likewise, for optimal color plans of healthcare environments, it is crucial to understand the requirements, expectations, preferences, and experiences of building occupants (Stern et al., 2003). Since the most valuable attribute of healthcare design is to form environmental settings that can help healing, interior designers should understand the occupants' interpretation of environmental color that can impact healing.

Additionally, design research needs to include cultural diversity in the definition of the user group. For culturally-identified or culturally-inspired design, designers need to understand the building occupants' needs and expectations based on their experiences in cultural contexts and be able to apply this knowledge to design projects. In the design process, the role of interior designers is not only to understand and interpret existing cultural requirements but also to apply them to design projects. Well-designed healthcare environments based on an evidence-based color plan will satisfy patients and their families, who are customers of the healthcare facility, and the workforce of the healthcare facility.

### **Research Question**

The focus of this study is to probe the subjects' lived experiences that produce color meaning, not to collect probable meanings from simulation. Therefore, this study will extend Blumer's discussion of symbolic interaction, focusing on color as a phenomenon that produces meaning in the physical environments of healthcare facilities.

Based on the rationale of this study, the research question is:

- What is the relationship between color meaning in healthcare environments and influences of self- and social interaction for Korean healthcare users?

## CHAPTER TWO: REVIEW OF LITERATURE

This chapter begins with an introduction to the theoretical framework of this study, which is based on Blumer's notion of symbolic interaction. Using a theoretical framework for research suggests a clear process of analysis and provides quality findings. In this study, the framework based on symbolic interaction will be explained in relation to meaning in designed environments, specifically meaning of color in the Korean tradition, and supported by examples of spatial experiences. Most of the terminology—except abbreviations—used in this chapter follows that of Mead and Blumer.

### **Theoretical Framework: Symbolic Interaction Theory**

Symbolic interaction theory originated in sociology and has been developed in multiple related disciplines such as architectural sociology, environmental sociology, and social psychology (Becker & McCall, 1990; Smith & Bugni, 2006; Stryker, 2002). The term “symbolic interactionism” was coined by Blumer in his article in *Man and Society* published in 1937 (Blumer, 1969; Stryker, 2002). To understand the concepts of symbolic interaction, it is important to note that Blumer's term “indication” can be considered as a mental process of pointing to, drawing attention to, or signifying things (Prus, 1996). There are four central concepts of symbolic interactionism (Blumer, 1969):

- 1) People, individually and collectively, are prepared to act on the basis of the meanings of the objects that comprise their world;
- 2) [a human society functions in] a process in which [people] make indications to one another and interpret each other's indications;
- 3) social acts, whether individual or collective, are constructed through a process



in which [people] note, interpret, and assess the situations confronting them; and  
4) the complex interlinkages of acts that comprise organization, institutions,  
division of labor, and networks of interdependency are moving and not static  
affairs. (p. 50)

In other words, people give meanings to objects in their environments and act or interact in certain ways based on the meanings. Meaning is produced through the process in which people note, interpret, judge, and adjust on the basis of situations. Meaning is not static since situations in human society are ever changing in an ongoing process of interaction among people. People interpret, convey meanings to each other, and adjust meanings based on what they have been informed in the social context. Further, as it will be explained later in this chapter, it is important to note that the term “object” in symbolic interaction is broadly defined to include abstract, physical, and social things in human environments.

Although the “self-environment” connection was not the main theme of early symbolic interactionism (Smith & Bugni, 2006), theorists acknowledged the significance of the connection between humans and designed environments. Georg Simmel is best known for his emphasis on the study of the *forms* of human association (Prus, 1996). In his writing “*The Metropolis and Mental Life*,” Simmel (1917; 1950) discussed the significance of interaction between *the self* and place. Focusing on social interaction of the city with *the self*, he opened a dialogue on how environments and people influence and respond to each other. This concept of the self was further developed by George Herbert Mead and Herbert Blumer.

Mead is considered the founder of the initial concept of symbolic interactionism,

which is human action. The concept of “object” takes a central position in Mead’s notion of human action. He (1934) defined “meaning” as “the nature of objects” (p. 92) and “the central factor in adjustment to one another of the acts of different human individuals within the human social process” (p. 75). According to Mead’s assertion, a human has a self and acts toward the self; a human can be the object of his/her own actions. The “central mechanism” ability of such action enables one to indicate to oneself things and to create objects by assigning meaning to them; through the central mechanism, adjustment takes places through communication by means of gesture, vocal, and significant symbols; adjustment constitutes meaning that is the outcome of human intelligence (Mead, 1934). Therefore, from Mead’s perspective, meaning occurs through an individual’s interaction with objects that are animate or inanimate and thus things in the world do not merely exist in the environment as stimuli but are assigned meaning by the individual. Later, Mead’s discussion on meaning of objects was expanded by Herbert Blumer.

Blumer (1969) coined the term “symbolic interactionism” and expanded Mead’s concept, focusing on social interaction in human conduct. Since Blumer proposed his own terms, analyzing and expanding Mead’s discussion on self, mind, and society, in this study, certain terms and concepts of symbolic interaction will be introduced in Blumer’s terms and definitions.

Blumer (1969; 2004) determined symbolic interaction as a “communicative” process that has five elements: the self, the act, social interaction, objects, and joint action. He (1969; 2004) suggested that the essence of Mead’s analysis of symbolic

interaction presupposes that the self is a process, not a structure; society consists of individuals who have selves; individual action is not a release of a process of self-interaction but a construction that takes place inside social action; joint action consists of aligning individual actions through a process of individuals interpreting, defining, and taking into account one another's actions. Since symbolic interaction is a process in which the five key elements—the self, the act, social interaction, objects, and joint action—are interrelated, no ultimate causal-effect relationship among the elements exists. Instead, every element plays a role as an integral part of the whole process; outcomes of this process are not any of the five elements but meanings of the objects. People interact by interpreting another's acts based on the meanings produced by their interpretation. Using his own terms, Blumer reorganized yet maintained Mead's original concepts of symbolic interaction. As an organized framework, Blumer's notion of symbolic interaction—compared to Mead's initial discussion—can clearly show the relationship between human behavior and the designed environment and thus better fits this study.

### **The Self**

A theoretical model of symbolic interaction was developed by this researcher to show the components of symbolic interaction and the interrelationship of its parts (see Figure 2.1). In the figure, the five components of symbolic interaction, the self (S), the act (A), social interaction (SSI), objects (O), and joint action (JA), show their interrelationships in symbolic interaction. The sequence of symbolic interaction in which an individual is involved begins with *the self* (S) as a being that designates an object through a process of self-indication. In this process, the self also can become an *object*

(O) of self-indication (Blumer, 1969). In other words, when a person sees himself or herself as an object, the person points to the self (S) and identifies what kind of being it is as an object (O). As people obtain a sense of objects' relations through association with particular human groups, they develop capacities for self-reflexivity (Prus, 1996). People, as interacting and self-reflexive beings, not only develop ways of viewing and acting toward other objects but can also direct, monitor, assess, and adjust over time their own behaviors and meaning they assigned to objects (Mead, 1934; Prus, 1996). Through the process of self-indication, an individual selects a given stimulation "by designating it to the self, checking his or her immediate response to it, conversing with the self about it, and organizing his or her expression toward it in terms of how he or she defines it through the process of self-indication" (Blumer, 2004, p. 64). Self-indication seems to be an introspective decision-making process through which various matters surrounding "the self" are reviewed and determined for action. For example, when a person sees a color in an interior environment, he or she may look at it and determine what color it is. The individual judges its level of significance and mentally examines it to decide whether he or she likes the color, wants to change the color, or needs to consult with an expert to help determine what new color should be used. In this self-indication process, the individual responds toward the color stimulation and builds a plan of further reaction.

The self designates given stimulation from abstract, social, or physical objects and organizes and defines the meaning through the process of self-interaction (SEI) (see Figure 2.1). Self-interaction is defined as "a mechanism that is used in forming and guiding [an individual's] conduct" (Blumer, 1969, p. 62).

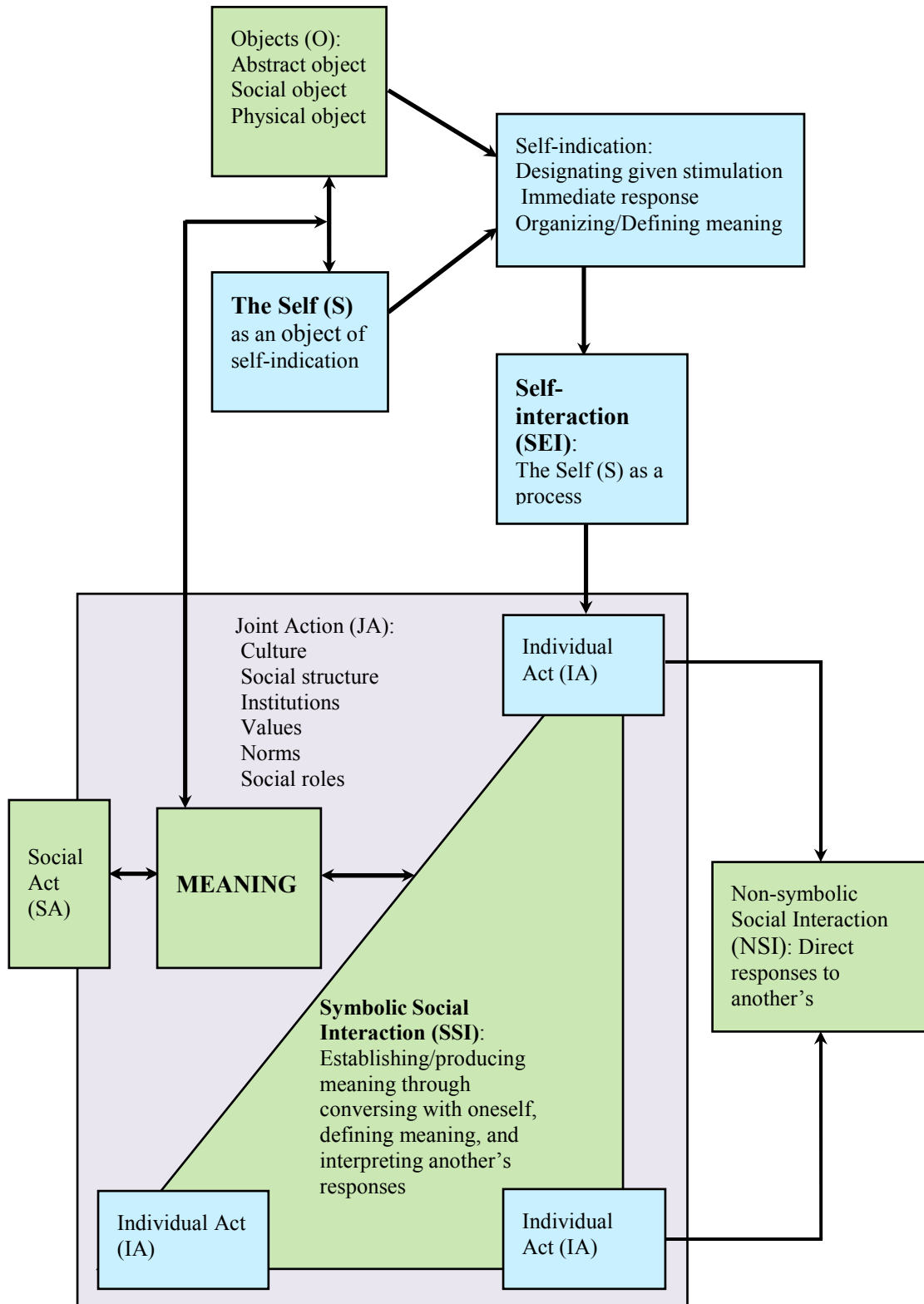


Figure 2.1. Theoretical model of symbolic interaction

The process of self-interaction is an inner or covert process that precedes the outer or overt part of expression, and lies between the points of stimulation and the form of terminal behavior that involves terminal meaning of the behavior (Blumer, 2004). Self-interaction takes the form of making an “indication” and meeting the indication by making further indications. For example, in perceiving the lighting condition in a room, an individual may check his or her immediate response to the light, define it, and transform the idea of the light into an “object” of his or her response. After that, through judging and adjusting his or her definition of the lighting condition, the individual establishes patterns of his or her response toward the specific lighting condition.

Therefore, in having the self as an object, humans confront the world filled with stimulation in a very different way from that of other organisms without selves, and thus become able to establish meaning of objects surrounding them and acting toward the meaning.

### **The Act**

Mead-Blumer’s symbolic interaction sees society in terms of action. Social action of human beings is the basis of human society and made up of “acts” (Mead, 1934; Blumer, 2004). People act based on the meaning they give to things such as abstract, physical, and social objects. For example, a person may act differently in an office setting from a home setting because the person has established the meaning of “office” as a setting for formal behavior, which is different from the meaning of “home” that is a setting for rest. Such meanings are based on the person’s interpretation of features such as purposes of the space, others’ general behavior in the space, or rules of conduct in the space. Human action acquires an outcome of the process of self-indication. An individual

acts in self-directed ways by making indications to himself or herself and by interpreting what he or she indicates such as wants, feelings, goals, the action of others, the expectation and demands of others, the rules of his or her group, his or her situation, conceptions of himself or herself, his or her recollections, and his or her prospective lines of conduct (Blumer, 1969). Therefore, the concept of the act is not an outcome of self-interaction but a part of its construction.

The model shows (see Figure 2.1), a person's act (IA) is prepared through the process of self-interaction (SEI) and symbolic social interaction (SSI) in which he or she establishes meanings of objects (O). There are two types of act, individual act (IA) and social act (SA). An individual act belongs to a single person while, as it will be explained later in this chapter, a social act involves joint activity (JA) of two or more persons (Blumer, 1969). It is important to note that the individual act does not innately have the nature of social act yet becomes part of social act by the fact that the person is engaged in interaction with other people (Blumer, 2004).

### **Social Interaction**

Mead (1934) and Blumer (1969) distinguished two levels of social interaction: non-symbolic social interaction (NSI) and symbolic social interaction (SSI). In non-symbolic social interaction, people respond directly to one another's gestures or expressions, showing bodily posture or facial expressions. In symbolic social interaction, people interpret each other's gestures or overt expressions and act on the basis of the meaning produced by their former interpretation (Blumer, 1969). For example, when a person sees another looking at him or her and smiling, based on the meaning of "smiling" he or she established previously, the person may smile back or say something. In

Blumer's studies, the term "social interaction" seemingly referred to symbolic social interaction unless specified as a concept that also includes non-symbolic social interaction.

Social interaction is essential to people's establishment of meaning, which is based on their interpretation. Through the process of social interaction (SSI), an individual converses with the self (S) in experiencing, identifying, and judging others' responses or expressions (see Figure 2.1). The social process that involves communication is in a sense responsible for the appearance of new objects—or new content of an old object—in the field of experience of human beings implicated in that process; the response of a self to the expression of another in any given social act is the meaning of the expression (Mead, 1934). In other words, the process of social interaction determines or changes meanings of things in the society, and individuals react to one another or interact with each other based on the meaning of acts they have established. Mead (1934) argued that "meaning can be described, accounted for, and stated in terms of symbols...at its highest and most complex stage of development" in human experience (p. 79). For example, when an individual finds a group of people wearing black garments at a cemetery, the individual may identify the cemetery, judge people's facial expressions or gestures, and establish meaning of "black" in relation to the place cemetery. In this process, the individual establishes meaning of the experience that includes things such as cemetery, black, tears, and funeral. Other individuals participating in the funeral also have the same or very similar experiences and thus such shared experiences constitute concept of "black" as a symbol.

People conceptualize things and develop meanings of them by sharing their



experiences through linguistic or symbolic interchanges based on their existing knowledge; in sharing experiences with others, the process of “indicating”—pointing to, drawing attention to, or signifying things—and “representing”—illustrating, describing, or recording—is substantial (Prus, 1996). As Mead (1934) observed in his notion of the *symbol*, “successful sharing [of meaning] is contingent on one person’s ability to invoke the sensations that [he or she] experiences in the mind of [another person]. Better approximations of shared experiences are dependent, therefore... on the sender’s attempts and abilities to formulate experiences to [another person in ways that this person] would comprehend [and] also on the recipient[’s] willing[ness] and [ability] to adopt the viewpoint of the sender in interpreting these messages” (Prus, 1996, pp. 12-13). Therefore, a symbol accompanies the most complex meaning of people’s shared experience that is produced through the process of social interaction.

In brief, each individual interacts with other people or groups by interpreting others’ acts (A) in certain social settings, and it is called social interaction (SSI)—social interaction can occur between two individuals, between an individual and a group of people, and between two groups. Meaning of the designated object (O) is defined through the process of this symbolic social interaction (SSI) (see Figure 2.1).

### **Objects**

Mead (1934) argued that objects are assigned meanings within the social process of people’s experience that involves people’s responses and communication through social interaction. Objects “constitute an individual’s operating environment, the thing toward which the individual is oriented, the focal points around which the individual’s activity becomes organized, and the implements by which the individual’s activity is built

up in a step-by-step sequence” (Blumer, 2004, p. 39). For example, an individual may see a chair as an object that constitutes part of a work environment where the person works; the individual’s activities such as “sitting” and “leaning” arise; the chair constitutes meaning of “working” in a sequence of activities such as sitting, looking, and organizing or meaning of “resting” in a sequence of stretching, repositioning, and leaning.

Mead (1934) and Blumer (1969; 2004) suggested there are three types of objects: abstract, physical, and social objects. Abstract objects refer to concepts such as liberty, charity, and intelligence; physical objects refer to things such as a chair, a table, and a building; and social objects such as a law, a meeting, and a war (Blumer, 2004).

Blumer (1969) suggested important points of Mead’s (1934) analysis of objects as follows:

- 1) The nature of an object is constituted by the meaning it has for the person or persons for whom it is an object;
- 2) this meaning is not intrinsic to the object but arises from how the person is initially prepared to act toward it;
- 3) all objects are social products in that they are formed and transformed by the defining process that takes place in social interaction;
- 4) people are prepared or set to act toward objects on the basis of the meaning of the objects for them. (pp. 68-69)

From Blumer’s perspective, objects have no intrinsic meaning; meanings that people assign to the objects that constitute their world are the product of the interactions people have with themselves and others; people act or express on the basis of the meanings.

### **Joint Action**

The term “joint action” refers to a larger collective form of action comprised by

the participants' acts that can range "from a simple collaboration of two individuals to a complex assignment of the acts of huge institutions or organizations" (Blumer, 1969, p. 70; 2004). Joint action requires conscious cooperative behavior and constitutes a large part of human group life that can be described, judged, and analyzed by concepts of culture, social structure, institutions, values, norms, and social roles (Blumer, 2004).

Blumer (2004) suggested that Mead's concept "social act" involves joint activity of people and thus has collective character. For Mead, group life precedes the individual act of a person and the individual act arises and takes its form inside of human association; "human group life is not an addition or assemblage of separate individual acts" but a social process, which is the collective activity of people; "individual acts exist as integral parts of [the social] process" (Blumer, 2004, p. 94).

As shown in the Theoretical Model of Symbolic Interaction (see Figure 2.1), when a person acts with other people as a group, his or her act (A) becomes a part of joint action (JA). Although the theoretical model seems to have a linear shape, it is not to present a linear feature of the process but to emphasize the interrelationship among the components of symbolic interaction.

Meaning is produced through the process of symbolic interaction that consists of interactions between and among individual acts; the individual act that is construction of self-interaction is in a sequence from self-indication of objects that are social products. Therefore, meaning exists only in the relationship with the context that is social and cultural. From such a stance, this study investigates cultural meaning of color as significant part of symbolic interaction. Color meaning in a healthcare environment (O) may occur through the process whereby an occupant (S) defines ideas of the colors (O),

interprets the existing meaning, and adjusts the color meaning. The person may react (A) to the color setting based on his or her experiences in healthcare environments, and this whole process can be influenced by other people in conversing with them and judging their interpretation of the colors (SSI). Another influence may occur in the usage of colors for certain types of group events in the culture, such as weddings, funerals, and celebrations (JA). Cultural meaning of color in relation to symbolic interaction will be discussed in depth in the following section.

### **Color and Objects**

Although color is not an object in the conventional definition, it is an “*object*” of symbolic interaction because the term “*object*” has much broader definitions from the perspective of symbolic interaction. Color is a multi-faceted phenomenon that has abstract, social, and physical features and therefore can be considered as an object in those three different senses based on how color is used and how people assign meaning to it. For example, color is an element of a designed environment that is a physical object; color can be designated often with abstract meaning; and symbolically, color is a social object that produces meaning based on people’s shared values and understanding.

Today, only a small number of symbolic interactionists (Milligan, 1998; Smith & Bugni, 2006) continue the discussion about designed forms and self. Although it seems that studies on designed environments often adopt Goffman’s (1951; 1959; 1974) discussion, his notion of symbolic interaction was concerned with “impression management” of individuals during performance within a physical setting, therefore it may be a better fit to study designers’ decision-making process rather than the occupants’

interpretation of the designed environments.

Design studies that apply Mead-Blumer's notions of symbolic interaction imply that designed environments do not have intrinsic meaning and that people assign meaning to the designed environments. However, as the literature review will show, there has been a common fallacy of color studies, which stems from the assumption that color meaning is intrinsic and thus can globally refer to the same things by people. Since the standpoint of Blumer's symbolic interactionism is fundamentally against such an assumption, this study expects to produce better outcomes by applying symbolic interaction theory as the framework, so that the findings can contribute to color palette development in interior design practice.

### **Meaning of Designed Environments**

Researchers started defining, investigating, and measuring meaning over 50 years ago. Osgood, Suci, and Tannenbaum (1957) defined *meaning* [of a sign] as “a representational mediation process” (p. 5) and introduced systematic measurement to color meaning. Applying the classification used by Morris (1946), Osgood et al. classified *meaning* into three categories: the relationship of signs to situations and behaviors is (sociological) *pragmatic meaning*; the relationship of signs to other signs is (linguistic) *syntactical meaning*; and the relation of signs to their significates is *semantical meaning* (p. 3). Osgood et al. attempted to apply semantic measurement, the semantic differential, to meaning, and their research influenced later studies on the measurement of meaning. Due to the nature of semantic measurement, Osgood et al.'s study was conducted with a tendency toward a linguistic stance, although they posited

their own study as a psychological approach.

Researchers have tried to find the cultural meaning of designed environments since Bourdieu (1971), in his famous study *The Berber House*, explored the cultural meaning of the interior environment of the Kabyle house in North Africa from an anthropological stance. He provided a structuralist notion of how the physical environments establish social relations that tie members of the society together on the basis of shared values and understandings.

Rapoport (1976; 1982; 1990) investigated meaning of designed environments, integrating linguistic, psychological, and semantic schemes, yet relying on an anthropological stance as he positioned his own studies. In his study *Sociocultural Aspects of Man-Environment Studies* (1976) that focused on the socio-cultural meaning of human-environment interactions, he argued that meaning is one of the central aspects of culture-environment relations. The meaning of a designed environment occurs in human-environment interactions; each cultural group has its specific way of organizing meaning in the environment (Rapoport, 1976). Therefore, meaning established in a culture represents specificity that better fits people's understanding in the culture and, as Rapoport stated, "the notion of specificity leads to the idea of culture-specific design" (1976, p. 28).

Llorens (1982) argued that meaning and context are deeply involved with each other. He pointed out that context can lead designers to achieve better fit for their design projects. However, although Llorens emphasized the importance of context, he seemed to fail to explain the risk of generalizing the concept of the term *meaning*, by overlooking the wide range of diversity of meaning that individuals may have. Thus, there is need to

study meaning in designed environments, respecting the diversity of culture rather than generalized concepts. As represented in Blumer's (1969) symbolic interaction, meaning is produced through the process of symbolic interaction that consists of interactions between and among individual actions; the individual action, the act that is construction of self-interaction is in a sequence from self-indication of objects that are social products. Therefore, meaning exists only in the relationship with the context that is social and cultural.

Llorens's fallacy can be complimented by Moore's notion of culture. Analyzing Rapoport's studies, Moore (2000) concluded that meaning is an outcome of the relationship between culture and environment: "culture and environment are conceptualized as two ideational constructs in whose nexus is formed meaning" (p. 18); meaning is socially constructed in human understanding because of the pluralism and multiplicity of culture. Such perspective can be linked to Mead-Blumer's notion that meaning is produced through the process of symbolic interaction that reflects specificity of each social group and culture.

### **Meaning of Color and Symbolism**

Often related to color symbolism, color meaning has been a research subject in multiple domains such as anthropology (Kilpatrick & Kilpatrick, 1970), design (Mahnke, 1996; Martin, 1992), art/art history (Gage, 1999; Hall, 1992; Hutchings, 1998), linguistics (Berlin & Kay, 1969; Eco, 1975; Marable, 1991; Osgood et al., 1957), and psychology (Birren, 1963; Derefeldt et al., 2004; Plümacher & Holz, 2007; Sahlins, 1975).

Anthropologists Kilpatrick and Kilpatrick (1970) introduced color symbolism in Cherokee shamanism. Using a notebook of the Cherokee shaman as the text, they focused on seeking the symbolic meanings of the expressions of the Cherokee color language. Kilpatrick and Kilpatrick concluded that these meanings were not self-explanatory but intrinsic. However, the conclusion that color meaning is intrinsic seems to be a misinterpretation. In fact, contrary to Kilpatrick and Kilpatrick's argument, symbolic color meaning can be different among cultures and thus cannot be intrinsic (Blumer, 1969; Mahnke, 1996).

Color symbolism that reflects cultural values and norms can be considered as an outcome of joint actions. Plümacher and Holz (2007) investigated the neuro-psychological sensory process of color perception and found that people coordinate their sensory impressions with other individuals to perform purposeful and meaningful interactions; categorization is a cognitive activity that contributes to developing personal experience and to establishing inter-individual understanding in the process of joint action.

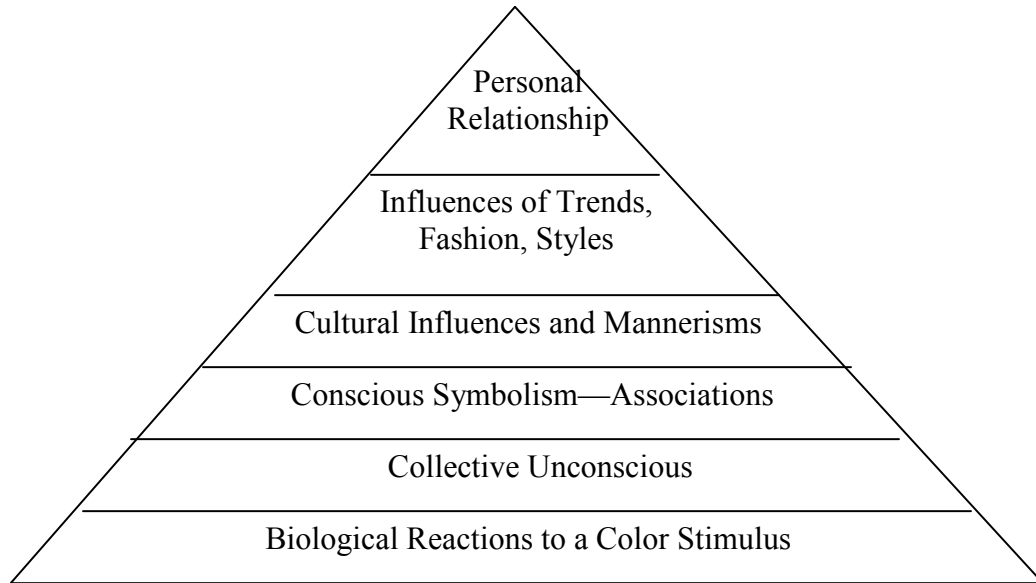
Since Berlin and Kay's study *Basic Color Terms* (1969), researchers have recognized that there is a significant relationship between language and color meaning. Marable (1991) expanded Berlin and Kay's study on basic color terms, including cultural schemes. She explored cross-cultural color symbolism and argued that such a symbolic aspect of color is a means to enhance cross-cultural communication, and that idiomatic usage of color terms can be a key to the value system of the culture. Such perspective meets Mead's (1934) notion of symbols in symbolic interaction, which is that a symbol accompanies the most complex meaning of people's shared experience, and the meaning



is produced through the process of social interaction. Further, this concept can stretch to the collective nature of joint action that can be explained along with concepts of culture, social structure, institutions, values, norms, and social roles.

Since designed environments are considered as communicators to convey meaning to the users in everyday life (Meerwein et al. 2007); color in designed environments needs to be considered in the cultural context because people construct meaning through color-in-context and never alone (Smith, 2003, p. 365). Hutchings (1998) argued that “color can have many ‘meanings’ even within one culture, hence each culture must be studied within its context” (p. 207). Later, he concluded that “a colo[u]r can ‘mean’ whatever we wish it to ‘mean’,” referring to the fact that “color is a perception, not the property of [a tangible] object” (Hutchings, 2004, p. 57). Thus, color meaning can vary depending on the life experiences of the subject who perceives and interprets color and cannot be described with a single word. As shown in symbolic interaction theory, people develop meanings of all things—social products—by sharing their experiences through linguistic and symbolic interchanges based on their existing knowledge in the society. Therefore, culture as an important part of human society must be essential in people’s meanings of their environments including color.

People establish color meaning in combination with different levels of color experience. Mahnke (1996) suggested that color associations, symbolism, impressions, and mannerisms that are characteristics of specific cultures and groups, play a role in the ways color is experienced and used. He explained color experience by applying his “color experience pyramid” that was originally developed in 1990 (see Figure 2.2).



*Figure 2. 2.* The “Color Experience Pyramid” (Mahnke, 1996, p. 11)

The pyramid, from the base, consists of 1) biological reactions to a color stimulus; 2) collective unconscious; 3) conscious symbolism—associations; 4) cultural influences and mannerisms, influence of trends, fashion, and styles; 5) and personal relationship (see Figure 2. 2).

Some of the elements of this color experience pyramid are related to the elements of Blumer’s social interaction: collective unconscious can refer to the initial step of self-indication; conscious symbolism refers to joint action; cultural influences and mannerisms and influence of trends imply a combination of joint action and social interaction; personal relationship includes the concept of social-interaction of an individual with other individuals or groups.

However, in Mahnke’s color experience pyramid, “the act”—individual action—is missing and thus it does not represent the mental process that an individual designates

the color as an object and defines meaning of the color stimulation. The first stage, biological reactions in Mahnke's color experience pyramid, is not counted in the concept of symbolic interaction because biological reactions are not a part of mental process that is related to meaning.

Related to color symbolism, Birren (1963) distinguished "creative tradition" and a "classical tradition" of color usage. The classical tradition was the tendency, prior to the Renaissance, that artists' color choices were determined by religion or myth rather than by individuals. The creative tradition emerged in the Renaissance and explored nonreligious themes. Birren's distinctions of color were focused on general color usage rather than inherent color meaning and thus the terms lacked the concept of human interactions with other individuals and/or environments. Therefore, it is difficult to apply Birren's categorization—a creative tradition and a classical tradition—to explore today's color meaning in environments.

Eco (1975), as a semiotician, approached color as a sign system that is constituted of cultural conditions. Individuals' chromatic perception is determined by language, which is determined by the way that systems of values, things, and ideas are established in the culture. Later, Gage (1999) criticized Eco's approach as flawed in the "imprecision of his term 'culture'" (p. 21). From Gage's point of view, the problem is that color studies did not approach the concept of culture and color meaning on an ordinary level of interpretation, but analyzed using "high-level" theories and methods. However, Eco's notion of color meaning implies a problem in color research related to healthcare environments. To date, no research has been conducted specifically investigating color meaning across cultures in healthcare environments. Instead, studies often generalize and

limit color meaning and provide descriptive and referential words as the findings of “color meaning,” which Eco (1985) criticized as “confusion between *meaning* and *reference*.” While *meaning* is defined as “a representational mediation process” (Osgood et al., 1967), *reference* is defined as “the relation between nouns or pronouns and objects [--referent--] that are named by them” (Saeed, 2003, p. 12). Eco explained that reference is made through “directly pointing a state of the world ... [without] connecting or correlating with cultural unit or concept” (p. 160).

Sahlins (1975) also pointed out such a problem in color research. He argued that color is a cultural matter, and color meaning often falls into the “referential fallacies” that refer to the assumption that the meaning of a sign lies in its referent, which is a material object in the world. Such referential fallacies of color meaning have affected the design industry that has generalized color associations across all cultures, e.g., white means purity, innocence, and truth (Feisner, 2006; Malkin, 2002); black means death, filth, and evil (Feisner, 2006; Malkin, 2002; Sharpe, 1982); red means hurting, blood, truth, and anger (Malkin, 2002; Shore, 1965); and blue means tranquility, soothing, introversion, and depression (Feisner, 2006; Malkin, 2002). These associations are not culturally universal, yet they have misinformed designers about color meaning, causing it to be overly generalized and arbitrarily defined by a few individuals. In such a manner, color referents, without relation to cultural context, often connect color directly with features of tangible objects or a certain state of emotion.

It is controversial that studies misinterpret ‘color reference’ as ‘color meaning’ because a referent itself neither includes process nor means an outcome of mental process, and meaning is not about objects but an outcome of mental process (Talbot,

1982). For example, people may have difficulties describing the philosophical meaning of a color in a few words because the meaning does not exist in material objects. In this case, looking for a referent to explain the meaning is pointless. Such referential fallacies become more problematic when the color study is cross-cultural and involves subjects using different languages because not all concepts exist globally. Therefore, color referents cannot replace the term ‘color meaning’ due to the difference of conceptual depth.

Since color does not have global meaning, color meaning needs to be examined in relation to the cultural context and in respect to the perceivers’ backgrounds and experiences. However, in spite of the link between color meaning and cultural context, color research in healthcare environments has seldom investigated cultural influences on color meaning and has alarmingly generalized color-reference associations for global application. As a consequence, design practitioners still lack reliable data for color planning in healthcare facilities, and many guidelines referred to by color consultants and designers are biased and unsubstantiated (Tofle et al., 2004).

### **Color in Healthcare**

Studies have shown that color can positively and negatively affect occupants’ stress in interior environments (Meerwein et al., 2007; Ulrich, 1991; Ulrich et al., 2006). Healing properties of color have long been recognized, and much research has been conducted on physiological, neurological, and psychological effects of color (Fredman, 2003; Lev-Wiesel & Daphna-Tekoha, 2000; Meerwein et al., 2007; Ulrich et al., 2006; Withrow, 2004).

Lev-Wiesel and Daphna-Tekoha (2000) found that color has therapeutic value because it carries emotional content related to life events. From a different perspective, Graham (1998) presented the human body's chemical reaction to physical properties of color to explain what produces depression. This study may have explained effects of color on depression, yet may not prove emotional effects of certain colors associated with traumatic events.

Graham (2000) also found that colors of longer wavelengths such as red and yellow are more stimulating to the nervous system than shorter wavelengths such as green and blue. Goldstein (1995) also reported that green or blue clothing is more effective at restoring patients' sense of balance than red clothing. These two studies seem to show that there is a significant relationship between color and neurological outcomes.

While studies have shown that there is a significant relationship between physical color stimuli and stress (Bremner et al., 2004; Koch et al., 2000), the argument that symbolic color meaning can affect stress of healthcare occupants has been less emphasized. Especially if healthcare occupants in a culture associate certain interior color schemes with negative meanings, the color can affect the occupants as a stressor and slow patients' recovery (Meerwein et al., 2007; Ulrich et al., 2006).

People perceive color and interpret the meaning differently in various types of interior environments. Among the occupants in various types of interiors, healthcare users are generally more sensitive to environmental conditions in the setting because people with illness experience physical, mental, and emotional unbalance. Researchers have argued the need to investigate color meaning in interior settings (Park & Guerin, 2002; Tofle et al., 2004) since color is informative and a means of communication in the

relationship between humans and their environments (Mahnke, 1996; Meerwein, 2007). However, color research has lacked a theoretical framework to uncover color meaning perceived by the occupants in an environmental setting. Recently, studies (Arneill & Devlin, 2002; Dilani, 2001; Evans, 2003; Kaya & Crosby, 2006; Nadler-Moodie & Gold, 2005; Schweitzer et al., 2004; Tivorsak et al., 2004; Zeisel et al, 2003) have tried to define healthcare users' physiological, psychological, and social reactions to color in healthcare settings and to make suggestions for design practice. However, the findings of these studies were often less reliable because the projects lacked an approach that considered the cultural context that included the occupants' cultural backgrounds.

Additionally, much of the color research focusing on cultural contexts was conducted by scholars in non-design disciplines and the findings lacked relevance to the design perspective, so that interior design practitioners find it difficult to apply the findings to design projects. Therefore, there is significant need to investigate cultural meaning of color from the design perspective. In light of such a need, this study explores color meaning by focusing on the interior design perspective, so that the findings of this study can contribute to quality healthcare design.

Moreover, difficulties exist in using an inductive scientific technique for research on color meaning because researchers in many disciplines such as art, design, and psychology elaborate on the qualitative aspects of color as it is a phenomenon, not a tangible object (Kuehni, 1983). Considering such nature of color, it is reasonable to investigate properties of color in a comprehensive approach that includes not only its physical properties but also its abstract and social aspects. In the framework of symbolic interaction, even though color can be viewed as an *object* in Mead-Blumer's term, this

concept embraces abstract, social, and physical aspects that contribute to meaning of color. Therefore, it is appropriate to investigate color meaning based on the framework of symbolic interaction.

Another problem in seeking meaning in environments exists in the methodological stance. Meaning, the outcome of mental process that occurs in human societies, can be studied through direct examination or probe of the actual empirical social world rather than by using simulations or preset models (Blumer, 1969). Although simulation instruments can be used to define certain factors that influence constructing meaning, it is important to include direct examinations such as interviews, observations, and narratives to collect data related to culturally lived experiences.

In the same vein, the methodological implication of symbolic interactionism involves an empirical stance that “researchers, to understand the action of people, need to see objects as they see them” (Blumer, 1969, p. 50). As such, to investigate color meaning in relation to social interaction, research needs to be conducted through direct examination of the real world, not simulation or preset models. Sahlins (1975) suggested that such referential fallacies can be solved by reading from the cultural meaning to the empirical tests of color discrimination, not the other way around. Therefore, this study particularly examined lived experiences of Koreans living in the Twin Cities, MN. In the following section, symbolic color meanings in the Korean culture will be described to see how people have assigned color meanings in the specific socio-cultural context.

### **Basic Color Meaning in Korean Tradition**

There are several factors that have influenced color meaning for the Korean













culture: philosophical tradition, economic influence, and socio-political factors. In the Korean tradition, these factors played a role to constitute ritual usage and symbolic meaning of color.

The concept of color in Korea includes that of light, as the terms *saec* (color) and *bit-gal* (bit means “light”) are interchangeably used to mean color (Kang et al, 2004; Kwon, 2001). The traditional color system based on the philosophical tradition *Eum-yang-o-hang* consists of ten basic colors: *o-jeong-saec* (five primary colors) and *o-gahn-saec* (five secondary colors). The five primary colors, *o-jeong-saec* are *hwang* (yellow, the center), *cheong* (dark blue, east), *jeok* (vermilion, south), *baek* (white, west), and *heuk* (black, north); the five secondary colors, *o-gahn-saec* are *byuk* (royal blue, east-west), *nok* (green, northwest), *hong* (magenta, southwest), *ja* (violet, north-south), and *yuhwang* (sulfur, north- the center). *O-jeong-saec* symbolize the four points of the compass and the center and *o-gahn-saec* represent the five in-between points—northeast, northwest, southeast, southwest, and the direction between north and the center (see Table 2.1) (Han et al., 2004; Kang et al., 2004; Kwon, 2001).

In people’s lives, *o-jeong-saec*—five primary colors—were more related to symbolism than *o-gahn-saec*—five secondary colors—because *o-jeong-saec* were often used for special purposes in rituals, ceremonies, and celebrations. The symbolic meanings of *o-jeong-saec* include *o-hang* that are five elements of nature: earth for the center, wood for east, metal for west, fire for south, and water for north (see Table 2.1) (Han et al., 2004).

Table 2.1. *Korean traditional color system* (Kang et al., 2004; Kwon, 2001; National Museum of Contemporary Art, Korea, 1992)

Color	Color Name	Points of the Compass	Elements ( <i>o-hang</i> )	Symbolic meanings	Munsell values
	<i>Hwang-saec</i>	center	earth	emperor, authority	6.4Y 8.4/10.3
	<i>Cheong-saec</i>	east	wood	birth, youth, protection from evil spirit, low class	6.8PB 3.3/9.2
	<i>Baek-saec</i>	west	metal	sun, divinity, propitiousness	N 9
	<i>Heuk-saec</i>	north	water	Divinity	N 1
	<i>Jeok-saec</i>	south	fire	brightness, dignity, protection from evil spirit	7.5R 4.8/12.8
	<i>Nok-saec</i>	east – center			0.1G 5.2/6.2
	<i>Byuk-saec</i>	east – west			2.7PB 5.7/10.7
	<i>Ja-saec</i>	north – south			6.7RP 3.3/8.2
	<i>Yuhwang-saec</i>	north – the center			1.2Y 7.7/7.3
	<i>Hong-saec</i>	south – west			0.2R 5.2/15.0

Color samples in Table 2.1 are from the *90 standard traditional colors and color names* developed by the National Museum of Contemporary Art, Korea (1992). Munsell Color Standards adopted in the KS (Korean Standards) Color System were used to measure the colors. The traditional color names are based on the records of the *Chosŏn* dynasty, the last dynasty of Korea.

Historically, color usage in Korea was an issue of the prohibition ordinances. The earliest record appears in *Sahm-kuk-sa-gi: Ok-sa-jo* (1573) originally published in 1145. It says that only the noble class was allowed to use *o-cha* (the five basic colors), gold, silver, brass, lime mortar, and embroidered indoor screens. As such, color usage seems to

have represented the social priority in the era.

*Kyung-kuk-dae-jeon* (1397), a body of law of the *Chosŏn* dynasty (1392-1897), shows more strict restrictions: *Jin-chaek* (coloring) was only allowed for temples, and people who used embroidered silk cushions and containers finished with red lacquer were punished with 80 flogs. Red seems to have had symbolic priority over other colors in this era, as the use of red was specifically limited. These restrictions changed over time yet the restriction of *dahn-cheong*—color painting on building structures such as ceilings, pillars, rafters, and eaves—lasted until the late *Chosŏn*.

*Jung-jong-shil-lok* (1555), one of the chronicles published in the *Chosŏn* dynasty, shows that the economic situation can influence color usage in a culture. The chronicle shows anecdotes of law enforcement that prohibited the use of vermilion dye because of its scarcity and the high cost of production. In consequence, most people came to use primarily natural material colors such as beige, black, grey, and white.

Such restricted use of color in each era seems to represent the value system of the society. According to Hutchings (2004), there are three major driving forces that influence the use of color in folklore and symbolism: economic, historical, and social forces. As seen in historic documents, these three driving forces seem to play a role in developing color symbolism in Korean traditional society. Representing certain social groups or cultural concepts, color meaning reflected people's experiences or understandings in the society.

### **Interior Color in Korean Tradition**

This literature review is based on interiors built in the 15<sup>th</sup>-18<sup>th</sup> centuries, the

*Chosŏn* dynasty. The abovementioned historical background influenced color use in interiors in Korean traditional society. Colors that appeared in interiors were mostly colors of natural materials or finishes and shades of processed materials, such as natural beige, brown, black, and white. Interior color in traditional buildings consisted of material/structure color, ornamental/furniture color, and finish color. Material color is the natural color of materials such as wood and stone; ornamental color is the pigment color of bricks or roofing tiles; and finish color called “*o-chae*,” “*jin-chae*,” or “*ju-chil*” was different depending on the era (Kang et al., 2004; Kwon, 2001). Although the colors that were not allowed for middle and lower class use were slightly different in dynasties of ancient Korea, the general rule was that the higher social class used more colors for interiors and exteriors.

Material color in interiors is mostly the shade of processed wood. Ceilings, wood floors, pillars, rafters, and eaves were made of pine wood finished with lacquer or scorched and then rubbed off. The wood flooring of *Dae-cheong*, the main hall, was processed using lye, finished with red clay, or waxed with ground beans to make the color even (Kang et al., 2004; Kwon, 2001). Finish color varied depending on the owners’ social status. Palaces and temples were finished using 23 colors, and this color finish on building structures was called *dahn-cheong* (Han et al., 2004). However, most buildings were finished with natural colors, black, and white. Clay floors were finished with floor paper waxed with ground beans; walls were finished with white clay, white lime mortar, or white or yellowish wall paper, and screen doors were covered with white paper. Red was only used to paint the great gates of palaces. Ornamental colors were from the finishes of furniture, such as black, red, and transparent lacquer, white horn, and

mother-of-pearl. In the noble class, furniture covered with embroidered silk was also used.

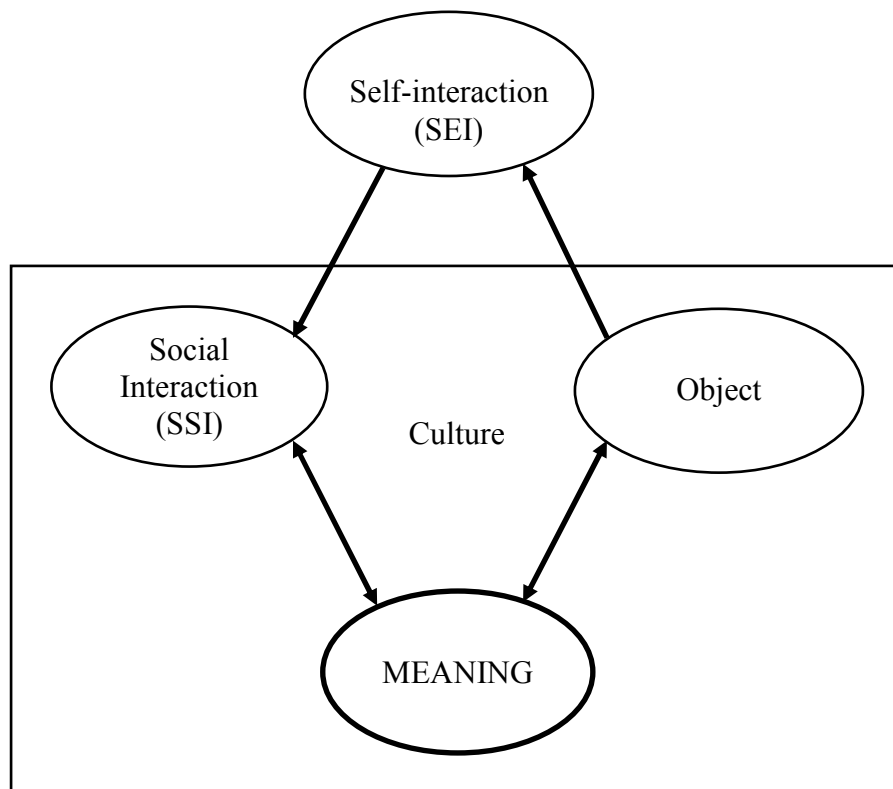
Based on the interior color use in the Korean tradition, Park and Shin (1999) proposed 16 traditional interior color palettes. They found: 1) monochromatic colors—yellow tints and shades—were most used for the structures of the traditional interiors; 2) additional colors in analogous, complementary, and analogous-complementary color schemes were used for furniture, fabrics, and ornaments; 3) the additional colors used in each room showed clear differences depending on the occupant's gender and social position. Part of such tradition seems to remain in today's residential buildings, representing color preference in interior environments which is based on social history in Korea. In many condominium buildings, color schemes with low chroma—i.e., beige, brown, white—are used on structures such as ceilings, floors, and walls; colors schemes with high chroma are used as accent structure for furniture and decorative objects (Yoon & Jeong, 2002).

As shown in the literature, color meaning and the usage in the Korean tradition have been studied in close relation to the socio-cultural matters. However, the literature mostly focused on the residential environments, and how people assign color meanings to other types of designed environments has not been much examined. Moreover, most culturally-specified color studies have focused only on the group features of cultures, not accounting for the individuals' life experiences within the cultures. Considering the premise that color meanings can vary within a culture and among cultures (Park & Guerin, 2002), this study investigates the role social interaction and self-interaction play in a person's establishment of color meaning.

In terms of the self-interaction, a person might be more affected in a healthcare setting than in other types of settings because the person may focus on himself or herself more due to his or her specific situation or physical condition. If the person has a very serious health condition, his or her feelings may be unchanged by social interaction. The person may interpret all surroundings in self-reflexive ways and want to keep his or her own boundary from other people's interference or input. Healthcare environments are the opposite of residential space—the most studied building type in color research—in terms of the occupants' potential stress level. While residential space is the most comfortable setting for many people, hospitals are stressful environments for patients, families, and staff (Malkin, 2002; Ulrich et al. 2006). Studies have shown that color in healthcare environments can increase or decrease stress (Arneill & Devlin, 2002; Birchard, 2007; Naughton, 2003). In some cases, color can be a stressor that delays patients' recovery and affects staff's work performance and occupants' psychological well-being (Birchard, 2007; Edvardsson, Sandman, & Rasmussen, 2006; Strike et al., 2006; Treharne, Lyons, Booth, & Kitas, 2007). Since people in healthcare environments could be in an isolated situation from their regular routine, they might establish color meanings primarily based on their personal interpretation, which can be different from the cultural meanings that permeate the society.

Based on the theoretical framework of symbolic interaction, this study presupposes that the two most important contributors to color meaning in healthcare environments are *self-interaction* and *social interaction*. Although Blumer (1969; 2004) stressed that all objects are social products and social interaction is essential to meaning, the self seems to be as important as social interaction when a person establishes meaning

of an object. Depending on the nature of the object the person encounters, self-interaction and social interaction may play roles independently, interactively, or both to establish meaning of the object. Therefore, the relationship between meaning and the main contributors can be simplified as Figure 2.3. Although there are more components involved in the process of meaning establishment, this study focuses on the two contributors, self-interaction and social interaction, to explore how color meaning to Koreans is established in healthcare environments in relation to their socio-cultural background.



*Figure 2.3.* Contributors to meaning establishment

## **Research Question**

Based on the rationale of this study and the literature review, the research question is: what is the relationship between color meaning in healthcare environments and influences of self-interaction and social interaction for Korean healthcare users?

To determine the way people perceive color from a cultural perspective, this study investigates: whether Koreans consider color as an abstract, physical, or social object (SEI) in healthcare environments; how significantly self-reflexive (SEI) color meaning in healthcare is; how significant socio-cultural influence (SSI) on people's assignment of meaning to color in healthcare settings is. Lastly, analysis will follow to determine whether the color meaning people assigned affects people's later action or decision making, that is constructed meaning of color.

There is need to probe how self-interaction and social interaction play a role in establishing meaning because designed environments are often interpreted and judged from very personal points of view due to the aesthetic and utilitarian natures. It is also important to investigate whether people's color meaning influenced by the cultural matters is positive or negative in healthcare environments, so that designers can make a choice that better works for each building type. For example, if the cultural meaning of a certain color is positive, designers may want to apply the color to create welcoming, comfortable, or exiting interior settings while they may use colors with negative cultural meanings to signify hazardous or harmful environments where children's access should be prohibited. As such, the findings can potentially be applied to culturally-specified design projects.



## **CHAPTER THREE: METHOD**

The purpose of this exploratory qualitative study is to investigate how a person's self-interaction and social interaction influence his or her meaning of color.

### **Research Question**

The research question is: what is the relationship between color meaning in healthcare environments and influences of self-interaction and social interaction for Korean healthcare users?

### **Method**

To explore the theoretical framework proposed in Chapter Two, this study used a semi-structured interview strategy that involves a color palette instrument. Since the framework of this study is based on symbolic interaction theory, the focus of the interviews was on the subjects' lived experiences and social interactions related to their perceptions and interpretations of color in healthcare environments. The assumption underlying this study is that color in healthcare environments is memorable and important to occupants.

This qualitative study is exploratory and its method is different from typical methods used in phenomenological research, which is often used in studies based on symbolic interaction theory. Although this study is based on subjects' lived experiences, as is phenomenological research, the method will be modified and involve color palettes for improved outcomes. While phenomenological research uses open-ended questionnaires, the interview questionnaire is semi-structured because this strategy allows

flexibility of interview questions yet minimizes the risk of fragmentation and decontextualization, which can be caused when qualitative researchers attempt to break narrative data into small segments in the analysis process (Punch, 1998).

While phenomenological research does not use leading questions so as not to direct subjects toward certain answers that researchers expect, the role of probing questions is significant in this study because the subjects' answers may vary in detail and depth of content. In this study, questions will be modified based on each subject's answers to previous questions; the questions modified will be probing questions to lead the subjects' answers so as not to deviate from the purposes of this study.

### **Sample Description**

A convenience sampling was used to identify the participants from the Korean population of the University of Minnesota. Twenty five subjects—13 females and 12 males—were interviewed, restricted to native speakers who have spoken Korean as their first language for over 20 years, and range in age from 25 to 39.

To simulate the Korean population in the U.S., the sample selection was based on the U.S. Population Census 2000. According to the Census 2000, the median age of the Korean population in the U.S. is 32.4 years, and 44.72% of the population is distributed in age from 20 to 44. In terms of the sex ratio in this age group, females were 51.74% and males were 48.26%. The university population was used to reflect the high education level of U.S.-born Koreans. The education level of U.S.-born Koreans is twice as high as the general population in the U.S.: 55% of the U.S.-born Korean population 25 years of age and over possesses at least a bachelor's degree, compared to 27% of the U.S. (Yu,

Choe, & Han, 2002). Therefore, by using the Korean population of the University Minnesota for sampling, this study attempts to simulate the Korean population in the U.S. To avoid potential bias, the subjects do not include any current patients or healthcare employees.

### Interview Questionnaire

A semi-structured questionnaire that consists of two phases was developed based on the theoretical framework. Phase 1 is to ask about interviewees' past experiences of color in healthcare environments and Phase 2 is to ask questions about five specific color palettes. The order of interview questions of Phase 1 can vary depending on the subjects' responses. Two pilot interviews were conducted to assure that the interview questions and the color palettes were clear.

The interview questions (IQ) are based on the theoretical constructs and two main contributors to people's meaning establishment, which were proposed in Chapter Two (see Table 3.1).

Table 3.1. *Research model*

Theoretical Construct	Contributors to Meaning Establishment	Theoretical Definition (TD)	Interview Questions (IQ)
The Self (S)	<p><b>Self-interaction (SEI)</b></p> <p>Operational concepts: self-indication and determination</p>	Self-indication = an individual's feelings about herself/himself in a past experience	<p>IQ1.1. Let's talk about the healthcare facility that you visited in the past and best remember the color. What type of healthcare was it?</p> <p>* Probing Qs: Who was the patient (e.g., I, child, parent, friend, etc.); was it a well-patient visit (i.e., annual check-up) or ill-patient visit?</p>

		<p>Self-determination = an individual's memories of a healthcare setting in relation to her/his feelings about herself/himself</p>	<p>IQ1.2. How did you feel physically and emotionally?</p> <p>IQ1.4. You remember nothing about the color. Why? Are there any healthcare facilities that you have visited and remember the color? What feelings do you remember having when you think about the color? What was/were the color(s)?</p>
<p>Objects (O)</p>	<p><b>Self-interaction (SEI) &amp; Object (O)</b></p> <p>Operational concepts: abstract, physical, &amp; social objects</p>	<p>Abstract Object = color as a source of an individual's interpretation of his/her feelings and associations</p> <p>Physical Object = color as a visual stimulus in a physical setting</p> <p>Social Object = color as an object in a situation that includes other individuals</p>	<p>IQ1.3. What space/room do you best remember? (e.g., reception area, waiting room, doctor's office, etc.) How long did you stay there? Please describe your experience in the space/room.</p> <p>* Probing Qs: Where did you sit or stand? How much do you remember of the color? What do you remember about it? Was there anything else the color of which caught your attention? (e.g., magazines, TV shows, clothes, signage, etc.)</p> <p>** If the interviewee remembers nothing, ask IQ1.4.</p> <p>IQ1.5. What personal experiences or memories do you have associated with the colors that you just described or any other colors? Are there any links between the color(s) and healthcare?</p> <p>IQ2.1. If you were hospitalized, which color palette do you think would be emotionally healing and what would be stressful? Why?</p>

<p>Social Interaction (SSI)</p>	<p><b>[Symbolic] Social Interaction (SSI)</b></p> <p>Operational concepts: communication—verbal language, gesture, &amp; facial expression</p>	<p>Symbolic Interaction (SSI) = an individual’s determination or adjustment of color meanings based on other people’s responses</p>	<p>IQ1.6. What do you remember about colors of healthcare facilities you have seen in any media? What media? What type of facility?</p> <p>* Probing Qs: Have you talked to other people about the interior color of the healthcare facility or heard/read other people’s opinions—including TV shows, magazines, etc.—about the color? Did you feel different about the interior color after that?</p> <p>IQ1.7. Does color in healthcare environments matter to you? Are there specific colors you prefer to see in healthcare facilities? Is there any reason for your preference? Where do you think this preference comes from?</p> <p>IQ1.8. If you grew up learning that certain colors were appropriate for certain spaces (e.g., bedrooms, classrooms, etc.), please describe.</p> <p>IQ2.2. In this photo, what do the colors in the whole room remind you of? What specific part makes you remember? Is there any reason that you think that way? Please describe if any of these colors symbolize anything to you.</p>
<p>Joint Action (JA)</p>	<p><b>[Symbolic] Social Interaction (SSI) within a Culture</b></p> <p>Operational concepts: culture, values, norms, institutions, social structure, social roles, etc.</p>	<p>Joint Action (JA) = color meaning influenced by traditional or present culture, or social structure, social roles, or values</p>	<p>IQ2.2. In this photo, what do the colors in the whole room remind you of? What specific part makes you remember? Is there any reason that you think that way? Please describe if any of these colors symbolize anything to you.</p>

## Questions about Past Experiences in Healthcare Environments

The following questions were formulated to explore subjects' past experiences:

IQ 1.1. Let's talk about a healthcare facility that you visited in the past and best remember the color. What type of healthcare was it? Who was the patient (e.g., I, child, parent, friend, etc.); was it a well-patient visit (i.e., annual check-up) or ill-patient visit?

IQ 1.2. How did you feel physically and emotionally?

IQ 1.3. What space/room do you best remember? (e.g., reception area, waiting room, doctor's office, etc.) How long did you stay there? Please describe your experience in the space/room.

- If needed, rephrase the second question as follows: Where did you sit or stand? How much do you remember of the color? What do you remember about it? Was there anything else the color of which caught your attention? (e.g. magazine, TV show, people's clothes, signage, etc.)
- If the interviewee answers this question, skip IQ 1. 4. If the interview does not remember anything, ask IQ 1. 4.

IQ 1.4. You remember nothing about the color. Why? Are there any healthcare facilities you have visited and remember the color? What feelings do you remember having when you think about the color? What was/were the color(s)?

IQ 1.5. What personal experiences or memories do you have associated with the colors that you just described or any other colors? Are there any links between the color(s) and healthcare?

IQ 1.6. What do you remember about colors of healthcare facilities that you have seen in any media? What media? What type of healthcare facility? What do you remember about the color?

- Probing Questions: Have you talked to other people about the interior color of the healthcare facility or heard/read other people's—including TV shows, magazines, etc.—opinions about the color? Did you feel different about the interior color after that?

IQ 1.7. Does color in healthcare environments matter to you? Are there specific colors you prefer to see in healthcare facilities? Is there any reason for your preference? Where do you think this preference comes from?

IQ 1.8. If you grew up learning that certain colors were appropriate for certain spaces (e.g., bedrooms, classrooms, etc.), please describe.

### **Questions about Color Palettes**

The researcher showed all the five color palettes at the same time to ask IQ 2.1; one at a time to ask IQ 2.2.

IQ 2. 1. If you will be hospitalized in the future, which color palette do you think would be emotionally healing and what would be stressful? Why?











IQ 2. 2. In this given photo, what do the colors in the whole room remind you of? What specific part makes you remember? Is there any reason that you think that way? Do any of these colors symbolize anything to you?

### **Color Palette Instrument**

A color palette instrument was used for part of each interview to investigate how

culture influences Koreans' assignment of color meaning. Five color palettes were developed based on the Korean interior color combinations proposed by Shin and Park (1999). Color combinations derived from the findings of the study and used in the color palettes are *natural*, *heuk-bae k* (black-white), *byuk-nok* (blue tint-green tint), *jeok-cheong* (red-blue), and *cheong-ja* (blue-red violet) (see Table 3.2).

Table 3.2. Interior color combinations in the Korean tradition

Color Combinations	Names of Color Palettes	Munsell Values	Color Palettes
	<i>natural</i>	2.5Y 9/1 N9.5 2.5 YR 3/1 5Y 7.5/5.5	
	<i>heuk-baek</i>	N1.5 N9.5 N2.5 N4	
	<i>byuk-nok</i>	5Y 7.5/5.5 2.5PB 5/10 2.5Y 9/1 7.5BG 5/2	
	<i>jeok-cheong</i>	5R 4/12 5PB 3/12 N9.5 2.5Y 9/1	
	<i>cheong-ja</i>	6.8PB 3.3/9.2 7.5RP 3/6 5RP 4/12 7.5RP 7/8	



These, except the natural color combination, are either primary-primary or primary-secondary color combinations of the Korean traditional color system. The color palettes were used to focus on different hues that determine symbolic meanings in the Korean tradition rather than value and chroma.

Park and Guerin (2002) suggested that the meaning of color varies within and between cultures and using color palettes is an appropriate way to identify color meaning. Especially since each primary color in the Korean traditional color system has symbolic meanings, it is appropriate to focus on hue rather than value and chroma to investigate the cultural influence on color meaning that Koreans assign to their environments. Additionally, as Meerwein, Rodeck, and Mahnke (2007) argued, interior color needs to be examined in spatial context because the “relative effect” of color is influenced by the surroundings. In other words, for environmental color research, color palettes that can present three-dimensional situations need to be used rather than two-dimensional color palettes. Therefore, a three-dimensional photo image (see Figure 3.1) was used in this study to develop the color palette instrument.



*Figure 3.1.* Color palette sample image

## **Interview Procedures**

The participants were a convenience sample and identified by associates of the researcher when she was searching for subjects. from the Korean population of the University of Minnesota. Twenty five subjects—13 females and 12 males—were interviewed, restricted to native speakers who have spoken Korean as their first language for over 20 years, and range in age from 25 to 39. Prior to each subject interview, a color deficiency test was conducted to determine the subject's eligibility for the interview. All interviews began with a consent process.

Each subject was asked to describe his/her past visit to a particular healthcare facility that he/she best remembered, talk about other experiences related to colors, and explain her/his responses to the color palette instruments.

Interviews were conducted and recorded in a quiet office setting at the University of Minnesota and transcribed afterward for data analysis. Each interview lasted approximately 30 minutes. The order of questions relied on the content of each interviewee's responses.

To maintain the exact words the interviewees use, each interview was conducted and transcribed in Korean. Color terms in Korean language are very detailed; they often include negative or positive nuance and convey certain levels of value and chroma. For example, over 30 adjectives meaning “redish”—excluding colors in the pink category—are found in a Korean dictionary (Essence Korean Dictionary, 2002), and those adjectives describe different conditions of red. Since many color terms are commonly used in Koreans' lives, and the subjects were also expected to use various color terms during the interviews to better describe subtle nuance of their senses, it was appropriate to interview

the subjects in their first language, Korean.

Polkinghorn (1989) described dialogical texts as “data from self-reflection” because people represent themselves in conversations based on their life experiences. To understand meaning in such conversations, the interplay between narrators and interpreters via language is crucial. According to Gadamer’s (1985) notion of interplay between the researcher and the “frames of reference,” research on a certain cultural group must be best conducted by researchers who are knowledgeable of the subjects’ backgrounds and languages and thus understand the frame of reference. Therefore, the researcher’s knowledge and understanding of Korean culture and the language contributed to leading this study to quality outcomes.

Five color palettes were shown on a computer monitor during the interviews to provide each participant with most similar color conditions to what other participants saw. Each participant was asked to speak Korean during the interview to accurately describe her/his responses. No exemplary word specifically describing color conditions was given because, as Park and Guerin (2002) noted, the given descriptor words may have forced the researcher’s opinion on the subjects and limit their responses.

### **Data Analysis**

Recorded interview data were transcribed and analyzed 1) by the researcher and 2) using *QSR NVivo 8* Korean version, because limitations exist both in using computer software in analysis and in narrative analysis by one researcher. Especially in using computer software in qualitative data analysis, it is often found to be difficult to categorize certain cultural features, metaphoric expressions, and jargon, without input of

the researcher's knowledge and understanding of the research and cultural context; therefore, applying computer software is not always appropriate (Dean & Sharp, 2006; Punch, 1998). For this reason, two sets of outcomes drawn by the researcher and computer software were compared to obtain the best result.

Data analysis procedure by the researcher was: 1) each answer was divided into theme units; 2) one sentence per each theme unit was selected; and 3) themes shared among the subjects' answers were summarized and paraphrased to define the main theme.

The main themes were shared contents found in a majority of the subjects' answers. Based on these main themes, interpretation followed to determine main contributors (see Figure 2. 3) to the Korean's establishment of color meaning. These main themes were interpreted on the basis of the research model (see Table 3.1) to tie the findings to the model of contributors to building meaning (see Figure 2.3). Finally, the researcher's interpretation was reviewed by a qualitative researcher who is a Korean-first-language speaker and not a designer to verify the quality of interpretation and avoid any bias caused by familiarity to the topic, respectively. After verification, the main themes drawn through the data analysis and the final interpretation were translated into English by the researcher.

Collected data were analyzed in comparison to subjects' genders since color researchers have argued: 1) traditional gender roles seem closely related to aesthetics in design; and 2) gender difference may exist in color perception (Kopec, 2006).

## CHAPTER FOUR: RESULTS AND DISCUSSIONS

This chapter consists of: 1) descriptions of the sample; 2) healing versus stressful color palettes in healthcare environments; 3) subjects' associations with the color palettes; and 4) concepts of healthcare color. Descriptive statistics provided in this chapter describe characteristics of the sample and frequency of shared answers among the sample. The section 'associations to the color palettes' presents the interviewee's general associations to the five color palettes, for example, certain events or objects that the interviewees have experienced. The researcher's interpretation included in the section 'concepts of healthcare color' was mainly based on the interviewee's stories about their personal experiences. In the same vein, subjects' responses were often quoted, since collected data were based on the subjects' personal experiences and therefore, the process for interpretation was phenomenological.

Collected data were categorized by the subjects' gender. As explained in the previous chapter, color studies have supported the argument that gender difference may exist in color perception (Kopeck, 2006), and it is therefore crucial to scrutinize the gender difference in perceiving color palettes and meaning behind them.

As mentioned in 'Interview Procedures' in Chapter Three, Korean is highly descriptive in color language, and the subtlety of Korean color terms can hardly be translated to other languages. For this reason, English translations of Korean color terms used in this study do not accurately present the properties— particularly value and chroma—of the original colors. Therefore, English translations of color terms used in this study are more categorical than descriptive.

### Descriptions of the Sample

Overall response rate was 100% and 96% of the collected interview data—13 of 13 (100%) female and 11 of 12 (91.7%) male interview data—were used for analysis. Interview data of one male participant were excluded from the contents analysis because the degree of the interviewee’s color blindness was so great that it seemed to cause significant limitations to his answers. Age distribution of the sample was: four—two females and two males—aged from 25 to 29; 12—seven females and five males—aged from 30 to 34; and nine—four females and five males—aged from 35 to 39 (see Table 4.1). The majority type of the sample’s healthcare visits that they best remember was self, well-patient visit. As Table 4.2 shows, well-patient visit (66.7%) dominated the types of healthcare visits of the subjects.

Table 4.1. *Age Distribution of the Sample*

<b>Age</b>	<b>Female</b>	<b>Male</b>	<b>Total</b>	<b>Percent (%)</b>
25-29	2	2	4	16.7
30-34	7	5	12	50
35-39	4	4	8	33.3
Total	13	11	24	100

Table 4.2. *Types of Healthcare Visit*

<b>Type of Healthcare Visit</b>	<b>Female</b>	<b>Male</b>	<b>Total</b>	<b>Percent (%)</b>
Self, well-patient	8	5	13	54.2
Others, well-patient	1	2	3	12.5
Self, ill-patient	2	1	3	12.5
Others, ill-patient	1	2	3	12.5
Business	1	1	2	8.3
Total	13	11	24	100

## **Color Memories in Healthcare Environments**

To investigate the tendency of the subjects' color memory in their healthcare experiences, the interviewees were asked to describe the colors of the most memorable space in their healthcare visits. As shown in Table 3.1, the interview questions were formulated in relation to the theoretical construct and definition that were the self (S) and self-identification/determination respectively. The procedures were: 1) each subject was requested to talk about one particular visit to a healthcare facility; 2) the subjects' responses were categorized into four types of areas such as reception/waiting rooms, doctor's offices, and others including recovery units; 3) all responses were analyzed in relation to the types of healthcare visits such as well-patient visit, ill-patient visit, and business visit. Although the level of detail varied, all subjects' responses included their color memories in their healthcare experiences. The following is a summary of the data, which shows areas that the subjects best remembered and described details of the interior settings.

### **Reception or Waiting Rooms**

The highest number of subjects (16/24=66.67%)—12 well-patient or business visits, and four (4) ill-patient visits—tended to remember more details of reception or waiting areas than other areas such as doctors' offices or patient rooms. All well-patient or business visitors (12) provided detail color descriptions, while one (1) of four ill-patient visitors remembered the detail colors of the reception or waiting rooms. The length of the subjects' stay in reception or waiting areas did not seem to affect the subjects' memories: the ill-patient visitors who remembered less about detail colors stayed in the waiting areas for a longer time (30-50 minutes) than did well-patient or

business visitors (5-15 minutes).

The subjects' color descriptions focused most on the overall atmosphere of the space, and colors of interior structures such as ceilings, floors, and walls seemed to influence the subjects' overall impressions of the facilities rather than their memories of details: six (6) subjects described ceiling and wall colors with the lighting condition in the space; five (5) subjects remembered details about floors, and their descriptions were more about the finish materials than the colors; nine (9) subjects remembered accent colors used on interior objects, e.g., reception desks, artwork, railings, and children's furniture. As such, the subjects tended to remember the interior colors as part of the overall ambience rather than as separate, accurate colors.

### **Doctors' Offices**

Of the 24 subjects, 12 (50%) remembered the colors of the doctors' offices they have visited. Of the 12, eight (8) were self-well-patient visits, and the subjects described details of their memories of the colors including interior structure, furniture, and medical devices; four (4) were ill-patient visits, and the subjects did not present any detail but the overall look of white or off-white walls. Ten (10) of the 12 respondents presented their negative impressions of white or off-white walls with white doctors' gowns. Naming the scenes 'typical doctor's office', two subjects mentioned the contrast of white walls and the doctors' black swivel chairs. One of the 12 subjects whose experience was a well-patient visit described most of the details of the doctor's office he visited. He responded that it was memorable because "there was a stained-glass window and colored glass bottles, and the colors were so vivid that the interior seemed very different from typical doctors' offices which are all white or off-white." In these findings, well-patient visitors



seemed to pay more attention to colors in doctors' offices than ill-patient visitors; the subjects tended to consider 'white' as 'typical' and colors as unexpected features in doctors' offices.

### **Others**

Outcomes provided in this section were inconclusive in the abovementioned two categories however, it is important to show the related responses that shared the following feature. Well-patient-visitors' memories of color settings seemed to be affected by the length of stay. One of 24 interviewees talked about her experience in a family visiting room in neo-natal intensive care unit. The subject seemed to remember the details because the experience was a week-long stay after her child's birth and therefore a more extended time than other types of healthcare visits. Two interviewees remembered pink-tone interiors of procedural rooms in dermatology clinics. The subjects' descriptions of the color included negative terms such as 'childish' and 'cheap-looking'; they also said the color scheme seemed too feminine and less professional. However, the subjects positively described the overall atmosphere including the lighting conditions. In general, the subjects did not seem to link feminine features to the concept of professional healthcare environments.

### **Concepts of 'Healthcare Color'**

To explore how Koreans conceptualize 'color' in healthcare environments, the following data were analyzed: 1) interviewees' personal stories of healthcare experiences and 2) the subjects' answers to the question whether healthcare color matters to them. The interview included these two open-questions to better direct the subjects to provide

quality contents for interpretation. The collected answers consisted of stories of the subjects' particular experiences rather than immediate associations in words. In such a process, the researcher attempted to see the thought process of the subjects' interpretation of the concept 'healthcare color.'

The collected answers were categorized into several themes presented in each subject's story; the themes shared in the subjects' answers were rephrased to more general phrases and the general phrases were refined to best present the shared concepts of the subjects' interpretation of 'healthcare color.' The shared concepts of 'healthcare color' were hygiene status, professionalism, characteristics of the users, stability, and vitality.

### **Hygiene Status**

Describing their memories of healthcare colors and perceptions of given color palettes, the interviewees often used words that represent hygiene status, such as "sanitized," "clean," "worn," or "filthy." In their descriptions of colors, most subjects associated white with hygiene status of healthcare environments; the degree of 'whiteness' was associated with the degree of hygiene status. For example, one interviewee responded, "It was so white and almost looked like an overly sanitized countertop...you know, something is so germless that it's not good anymore to strengthen your immune system...that sort of look. I felt even more vulnerable in that space."

Off-white, however, was often associated with wornness or dirt unless it had noticeable chroma. As such, even though subjects seemed to prefer to see bright tints of colors—e.g., tint of yellow and tint of green—in healthcare settings, they did not

appreciate lack of chroma, i.e., grey in high value. A sense of ‘cleanness’ was not only parallel to hygiene status but also related to ‘neatness’ in the subjects’ descriptions. While many interviewees considered *heuk-baek* (black-white) ‘clean and neat’ no subject used same description on *natural* and *byuk-nok* palettes.

### **Professionalism**

The subjects seemed to associate meaning of color palettes with the quality of the healthcare services. During the interview on the color palettes, the subjects tended to look for a sense of professionalism; their concept of professionalism was closely related to the service quality. Interestingly, professionalism of the healthcare staff, especially doctors, seemed to include a sense of authority while, at the same time, the subjects presented negative impressions against a sense of authority in other types of institutional settings with which they associated *heuk-baek* (black-white). As such, when it comes to a particular type of interior setting, people’s associations and expectations seemed to change.

The subjects also seemed to associate chromatic colors with professionalism less than achromatic colors, often using particular words such as feminine, childish, and homey. Although these words did not always reflect negative implications, the subjects preferred to see colors that reflect a sense of professionalism, particularly in their ill-patient visits. However, their descriptions of the concept of authority were more varied and therefore less clear to determine.

### **Characteristics of Users**

Interviewees’ seemed to remember healthcare colors by linking them to the characteristics of the user group such as age, gender, and educational level. For example,

the subjects described their memories and given color palettes as follows: “that blue and green furniture reminded me of the kindergarten my kid is going to;” “the *byuk-nok* (blue tint-green tint) looks like the elderly;” “the lobby seemed very sophisticated and luxurious...like a social clubhouse for rich people.” Interviewees also showed their desire to see in healthcare environments certain color schemes that reflect their own characteristics: “I want to see clean and sophisticated color schemes, not too dull...it is just how I am. I want to feel educated and professional even at a hospital. I don’t want to remind myself that I’m ill.” As such, users’ characteristics in the subjects’ concept of healthcare colors seemed to reflect not only who they are but also who they want to be or how they want to be treated.

### **Stability**

In response to the questions on five color palettes, subjects tended to present their expectations of ‘stability.’ For example, one interviewee’s response on *jeok-cheong* (red-blue) included, “It is too active. I might feel unstable if a hospital has these colors.” Another interviewee said, “I have heard that purple (violet) implies some...sort of... emotional or mental disorder, and [the color palette] looks like it to me.” Opposite to this, many subjects’ responses on *natural* color palette implied ‘extreme stability’ in various words such as “boring,” “inactive,” “lazy,” and “lifeless.” In these outcomes, it seemed that the subjects expect to see colors that can reflect not only stability but also vitality in healthcare environments.

### **Vitality**

As mentioned above, it appeared that the subjects associate healthcare colors with the concept of vitality. The subjects especially tended to associate light green and

light blue with vitality. In their responses, many subjects mentioned young buds, sky, and spring. However, the interviewees' responses did not have direct connection to the concept of cure or healing. Although the interview questionnaire included a question 'Which color palette do you think would be emotionally healing?', most interviewees rephrased the word to 'comfortable' in their responses; during the interview, only one interviewee used the term 'healing.' The subjects instead tended to have conceptual connection of healthcare colors to 'revitalization' rather than cure or healing; they seemed to have less clear associations of healthcare with the term 'healing' than vitality or comfort.

### **Comfort from Familiarity**

The subjects seemed to perceive healthcare color as a feature of comfort in relation to familiarity. Familiarity was often presented in the subjects' descriptions of 'comfortable settings' that they have strong memories of from their home country of Korea. The subjects' negative responses on color palettes were against not only the colors' unfamiliarity but also its strong visual stimuli. As stated earlier in this study, the interior color features of traditional housing still remain in a majority of contemporary residential interiors in Korea—e.g., off-yellow floor finishes, hardwood floors, and off-white walls are often used in contemporary housing. The subjects seemed to feel more comfortable with less saturated colors on the structure because they were used to being exposed to such interior settings during their experiences in Korea.

However, the subjects' expectation of familiarity and comfort did not seem to match their color preference. For example, many female subjects answered: "I like violet and buy many fashion items in violet, but it does not look comfortable in interiors;" "It is

too different and uncomfortable.” Male subjects tended to refer to what they had been informed: “It looks like women’s product stores... so not familiar to me;” “I have seen TV commercials for cosmetics...it looks like something for women.” As such, both gender groups presented their own unfamiliarity to imply discomfort.

Some interviewees seemed to consider ‘white’ as a factor of emotional discomfort. For example, one interviewee said “it was all...too white, and almost felt like I was under too-intense light. It was very strange and uncomfortable feeling.” Other interviewees responded with similar discomfort: “it felt like...I could almost smell sanitizer all over. It was screaming ‘this is a hospital.’ I don’t think you can see that white space anywhere else but in hospitals, right?”

Overall, the subjects seemed to expect comfortable color features in healthcare environments, those they have often used or seen and are thus familiar to them.

### **Care or Warmness**

When the concept of ‘care’ appeared in the subjects’ responses, it was often related to warmness. For example, a subject said, “white and light blue seems so cold to me...like a hospital whose staff would do only the mandatory work for their job, nothing more. I wouldn’t feel so cared for there.” Another interviewee responded “the family visiting room in the intensive care unit looked very warm. It had orange, maroon, and many other warm colors. I could tell that they really care about patients and their family.” However, these responses were not directly related to the quality of medical treatments or examinations.

### **Discussion**

The abovementioned concepts seemed to constitute the main contributors—self-

interaction and social interaction—to the subjects’ meaning establishment of ‘healthcare color.’ Stability, vitality, and care/warmness tended to be emotionally-oriented and can be categorized as outcomes of self-interaction; comfort, hygiene, characteristics of users, and professionalism seemed to related to the subjects’ past experience in cultural context that promotes social interaction. Overall, Koreans seemed to establish meaning of healthcare color based more on social interaction that mostly reflects the present cultural features, social roles, and social values, than self-interaction. In chapter five, these findings will be presented as a model in relation to the theoretical construct of this study.

Additionally, the subjects seemed to consider the aforementioned concepts of healthcare color as the quality criteria that they may expect to find in healthcare environments. In other words, concepts of healthcare color may reflect healthcare quality in the subjects’ consideration and therefore, these concepts can be further investigated in relation to quality healthcare design.

### **Healing versus Stressful Color Palettes**

To investigate Koreans’ self-interaction (SEI) in their perception of healthcare colors (see Table 3.1), interviewees were asked to define which color palette of the color palette instrument seemed most healing to them and which one was most stressful. In the subjects’ responses: the *natural* color palette appeared most healing and the *cheong-ja* (blue-red violet) color palette appeared least healing. On the contrary, the *jeok-cheong* (red-blue) color palette was indicated as the most stressful palette and the *natural* color palette as the least stressful. More significant gender difference was found in responses to the question on healing color palettes than stressful color palettes: positive responses on

the *byuk-nok* (blue tint-green tint) and the *heuk-baek* (black-white) color palettes showed the greatest gender difference; no significant difference was found in negative responses on the five color palettes.

### **Healing Color Palettes**

Five color palettes of a healthcare setting were shown to each subject. Comparing the color palettes, each subject was asked to select the most healing and stressful color palettes. The greatest number (41.25%) of the interviewees considered the *natural* color palette (see Figure 4.11) most healing of the five color palettes of healthcare settings (see Figure 4.1). The second greatest number (33.33%) of the interviewees responded that the *heuk-baek* (black-white) color palette (see Figure 4.9) was most healing; of the 24 subjects, five (5) interviewees (20.83%) perceived the *byuk-nok* (blue tint-green tint) color palette (see Figure 4.5) as most healing; and one (1) interviewee (4.17%) considered the *jeok-cheong* (red-blue) color palette (see Figure 4.3) as most healing. No response on the *cheong-ja* (blue-red violet) color palette (see Figure 4.7) was found in these outcomes.

As shown in Figure 4.1, the most significant gender difference in perceiving healing color palettes was found in the subjects' responses on the *heuk-baek* (black-white) (see Figure 4.9) color palette: of the eight (8) responses, six (75%) were females' and two (25%) were male subjects'. Six (6) of 13 (46.15%) female subjects—responded that the *heuk-baek* (black-white) color palette was most healing, two (2) of 11 (18.18%) male subjects indicated it as most healing. Moderate gender difference was found in the subjects' responses on the *byuk-nok* (blue tint-green tint) color palette (see Figure 4.5). No gender difference appeared in the responses on the *natural* color palette: the 10



positive responses on the *natural* color palette consisted of five (5) female subjects' responses and five (5) males'; no negative response was found in both female and male subject groups which confirms their responses to it being the most healing.

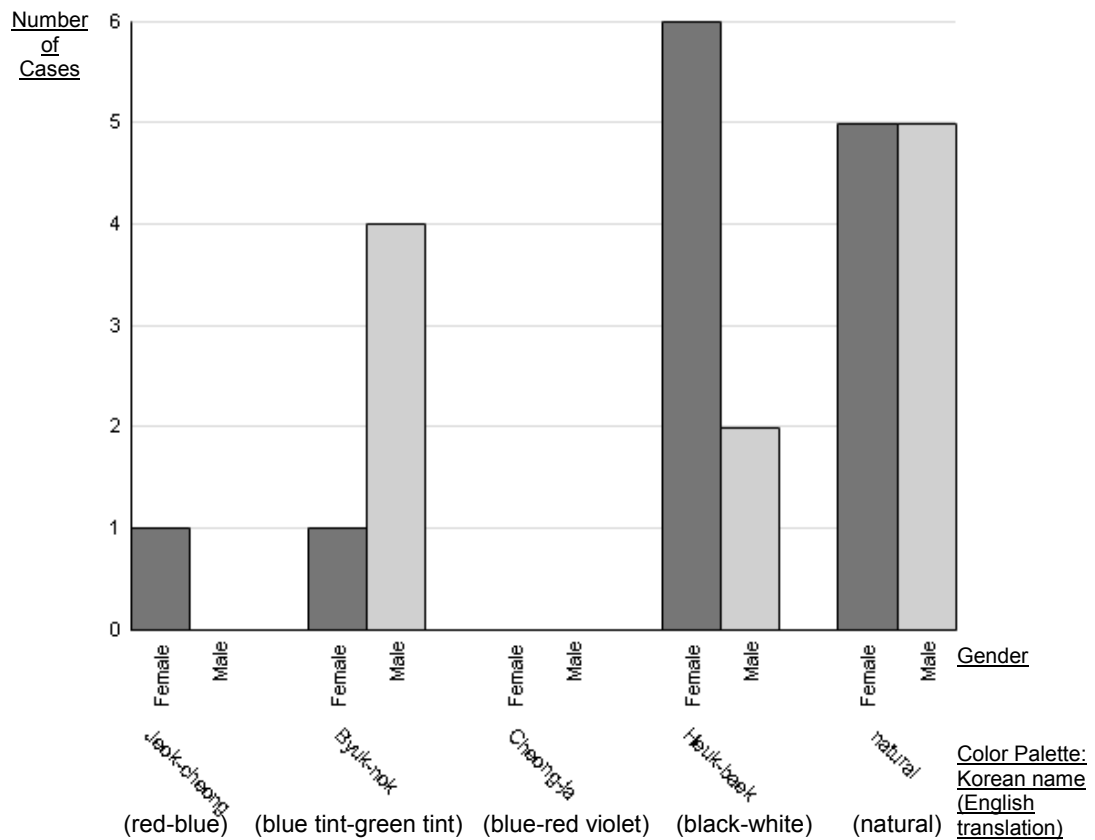


Figure 4.1. Healing Color Palette

Other color palettes that showed no or minimum gender difference were *cheong-ja* (blue-red violet) and *jeok-cheong* (red-blue): no subject indicated the *cheong-ja* (blue-red violet) color palette (see Figure 4.7) as healing; one (1) female subject (4.17%) and no male responded that the *jeok-cheong* (red-blue) color palette (see Figure 4.3) was most healing.

## Stressful Color Palettes

The majority of the subjects—18 interviewees (75%)—responded that the *jeok-cheong* (red-blue) color palette was most stressful (see Figure 4.2); and four (4) interviewees (16.67%) considered the *cheong-ja* (blue-red violet) stressful.

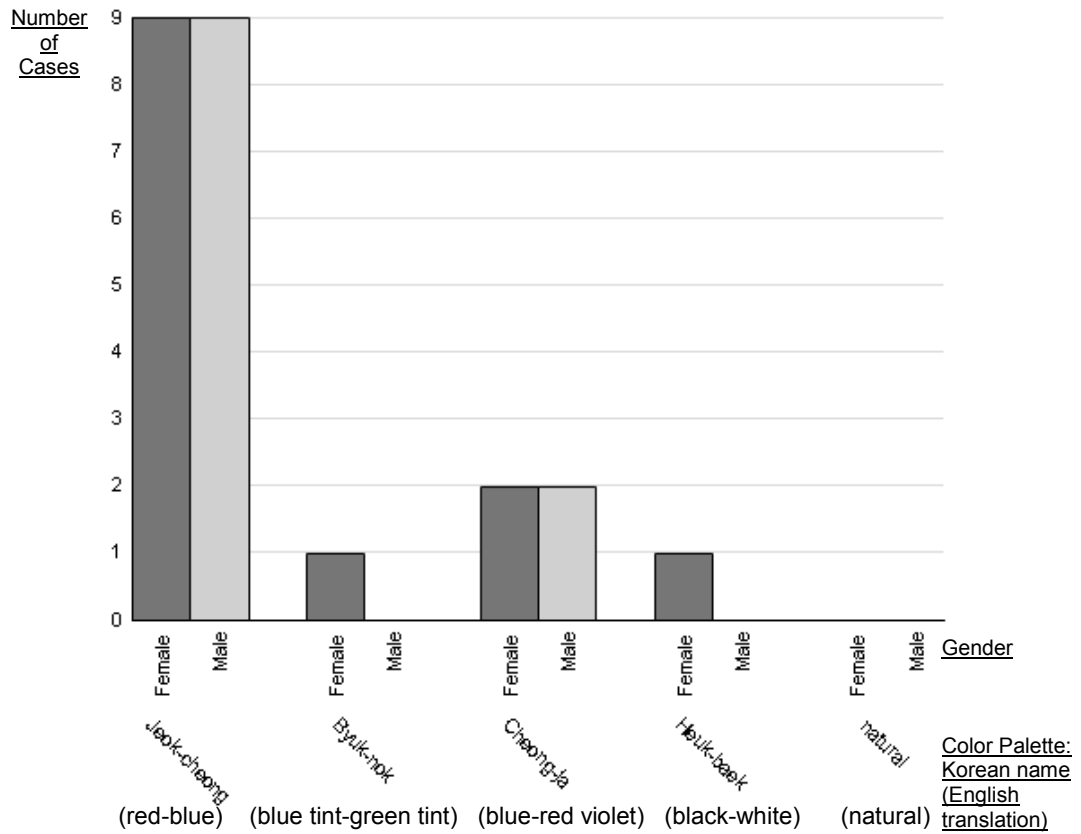


Figure 4.2. Stressful Color Palette

One (1) interviewee (4.16%) answered that the *byuk-nok* (blue tint-green tint) was most stressful; one (1) interviewee (4.16%) saw the *heuk-baek* (black-white) color palette as most stressful. No interviewee indicated the *natural* color palette as most stressful (see Figure 4.2).

As shown in Figure 4.2, no gender difference appeared in the responses on the *jeok-cheong* (red-blue), *cheong-ja* (blue-red violet) and *natural* color palettes: nine (9) female and nine (9) male subjects considered *jeok-cheong* (red-blue) as the most stressful color palette; two (2) female and two (2) male subjects indicated *cheong-ja* (blue-red violet) as the most stressful; none of either female or male subject groups considered the *natural* color palette stressful. Little gender difference was found on the *byuk-nok* (blue tint-green tint) and *heuk-baek* (black-white) color palettes: one (1) female and no male subject found *byuk-nok* (blue tint-green tint) was most stressful; one (1) female and no male subject considered *heuk-baek* (black-white) as the most stressful color palette.

## **Discussion**

Perceiving the most healing and stressful color palettes, many subjects mentioned the materials in the interiors and surface dimensions of other colors when they were asked what about the color palettes made them look healing or stressful. As interior color research has shown, people's color perception seems to be influenced by surroundings and these factors can be distractions to the subjects in color studies. In such a sense, color application on various surface dimensions and materials may result different findings. Further, the following outcomes can be investigated in the future research:

- With no gender difference found, the *natural* color palette appeared to be emotionally the most healing to the subjects, and *jeok-cheong* (red-blue) the most stressful color palette. Despite this consistency in subjects' responses, healing color palettes did not always match their positive or negative impressions on the color palettes. The disconnection was most significant in impressions on the

*natural* palette.

- The subjects seemed to determine stressful color palettes based on the levels of stimuli of the colors; the saturated colors that subjects associated with events (e.g., red, blue, and violet) appeared to be stressful colors in the subjects' responses. Therefore, the relationship between certain meanings and visual stimuli in causing stress in healthcare environments can be further investigated.
- *Heuk-baek* (black-white) and *byuk-nok* (blue tint-green tint) color palettes showed the greatest gender difference in the subjects' consideration of healing colors. This outcome seemed to be related to the values (brightness) of the colors which were related to the concept of hygiene. Further, as the highest number of subjects presented the concept of hygiene or cleanness while describing *heuk-baek* (black-white) and *byuk-nok* (blue tint-green tint), the subjects' standards of hygiene in their consideration of healing environments may be different by gender groups. Little gender difference appeared in their consideration of these color palettes as stressful.

### **Associations to and Impressions of the Color Palettes**

To determine the significance of cultural influences in Koreans' social interaction (SSI) in meaning establishment of color palettes, each subject was asked to answer three questions on the five color palettes: 1) what each color palette reminds her/him of; 2) what memories the subject has related to the color palette; and 3) what the color palette symbolizes to the subject (see Table 3.1). The subjects' answers to the first question were analyzed to identify the subjects' general associations and classified into

three categories—positive, negative, and neutral—to define the subjects’ impressions on each color palette. The second question was used to help the subjects recall their memories to better describe their associations to the color palettes. Responses to the third question were analyzed to discover the subjects’ symbolic associations to the color palettes. Since most subjects had more than one association to each color palette, the sum of the numbers of the general and symbolic associations in each of the following sections does not meet the total number of the subjects.

Table 4.3. *Impression of Color Palettes* (number of cases)

Impressions of Color Palettes Gender	Positive		Negative		Neutral	
	Male	Female	Male	Female	Male	Female
<i>jeok-cheong</i> (red-blue)	4/11	2/13	4/11	5/13	5/11	4/13
<i>byuk-nok</i> (blue tint-green tint)	6/11	3/13	2/11	3/13	5/11	5/13
<i>cheong-ja</i> (blue-red violet)	5/11	6/13	3/11	2/13	5/11	3/13
<i>heuk-baek</i> (black-white)	1/11	6/13	6/11	2/13	6/11	3/13
<i>natural</i>	1/11	1/13	4/11	4/13	8/11	6/13

As shown in Table 4.3 and explained in detail in the following section, the most significant gender difference appeared in the impressions of *heuk-baek* (black-white). Other outcomes that showed gender difference were *jeok-cheong* (red-blue) in the positive impressions, and *byuk-nok* (blue tint-green tint) in the positive responses. Otherwise, no or only very slight gender difference was found in the subjects’ impressions of most color palettes.

### ***Jeok-Cheong* (Red-Blue)**

**General associations.** First, 20 of 24 interviewees (83.3%) associated the *jeok-cheong* (red-blue) color palette (see Figure 4.3) with specific building types or interior

settings. Detailed answers are: restaurants, bars, or bowling alleys (9/24=37.5%); fire offices or emergency rooms (7/24=29.2%); design firms, entertainment agencies, art galleries, or museums (6/24=25%); manufacturing companies or brand images, i.e., Pepsi and Lego (3/24=12.5%); and Korean traditional concepts, e.g., interiors of places, a shaman's house, and Eum-Yahng (Yin-Yang) (3/24=12.5%).



Figure 4.3. *Jeok-cheong* (red-blue) Color Palette

**Impressions.** The overall impressions of the *jeok-cheong* (red-blue) color palette described by the subjects were: six positive (16.7%), nine negative (37.5%), and nine neutral (37.5%) answers (see Figure 4.3). This outcome is somewhat different from the outcomes on *jeok-cheong* as the most stressful (75%) or healing (4.2%) color palette. Since the total number of negative and neutral answers on *jeok-cheong* is the same as that of the subjects who considered this color palette most stressful, the subjects seemed to perceive this color palette as stressful unless it gives a positive impression.

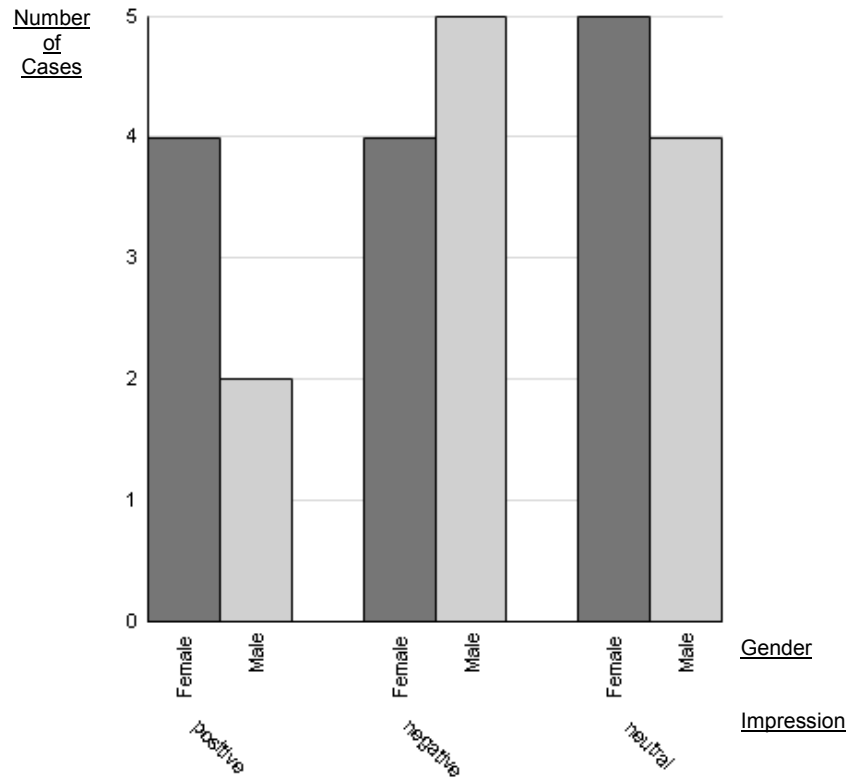


Figure 4.4. Impression of the *Jeok-cheong* (red-blue) Color Palette

**Symbolic associations.** The symbolic associations that the subjects assign to the color palettes showed more relationship to concepts in the Korean culture: 10 of 24 subjects associated the *jeok-cheong* (red-blue) color palette (see Figure 4.3) with culturally-oriented concepts such as Eum-Yahng (Ying-Yang), Tae-Geuk (Tai-Chi), the national flag of Korea, and the national cheerleading team named the “Red Devils.” Other symbolic associations presented in the interviewees’ answers were: events, cheers, joy, and excitement (5/24=20.8%); conflict, contrast, and confusion (5/24=20.8%); warning and emergency (3/24=12.5%); and fantasy or the surreal (1/24=4.2%).

#### ***Byuk-Nok* (Blue Tint-Green Tint)**

**General associations.** The general association of the *byuk-nok* (blue tint-green

tint) color palette (see Figure 4.5), which the greatest number of the subjects indicated was related to nature (13/24=54.17%): water/ocean/rain (10/24=41.67%) and sky (5/24=20.8%). The second greatest number (9/24=37.5%) appeared in the association with various interior settings such as swimming pools/saunas (3), classrooms (2), sports product showrooms (1), art galleries (1), aquarium (1), and senior housing (1). Four subjects (4/24=16.67%) associated this color palette with designed objects in Korean tradition such as traditional patterns, blue porcelains, and jade accessories. Other associations were: three (3/24=12.5%) with events/recreation and two (2/24=8.33%) with commercial images such as Korean airlines and yoga product commercials.



Figure 4.5. *Byuk-nok* (blue tint-green tint) Color Palette

**Impressions.** As the impressions of the *byuk-nok* (blue tint-green tint) color palette, the greatest number (10/24=41.67%) of subjects presented neutral responses; nine subjects' (9/24=37.5%) responses were classified as positive; and five subjects' (5/24=20.8%) answers were negative. The subjects' implications varied even in one



association. For example, of the ten (10) subjects' associations with water/ocean/rain, which were shown in the previous section, two (2) were positive, six (6) were neutral, and two (2) were negative. Outcomes in comparison of the subjects' impressions to their responses on healing and stressful color palettes were: the number of positive responses was greater than that of the subjects' perception on *byuk-nok* (blue tint-green tint) as healing ( $5/24=20.8\%$ ); the number of negative answers was also much greater, while one (1) subject (4.16%) perceived it stressful.

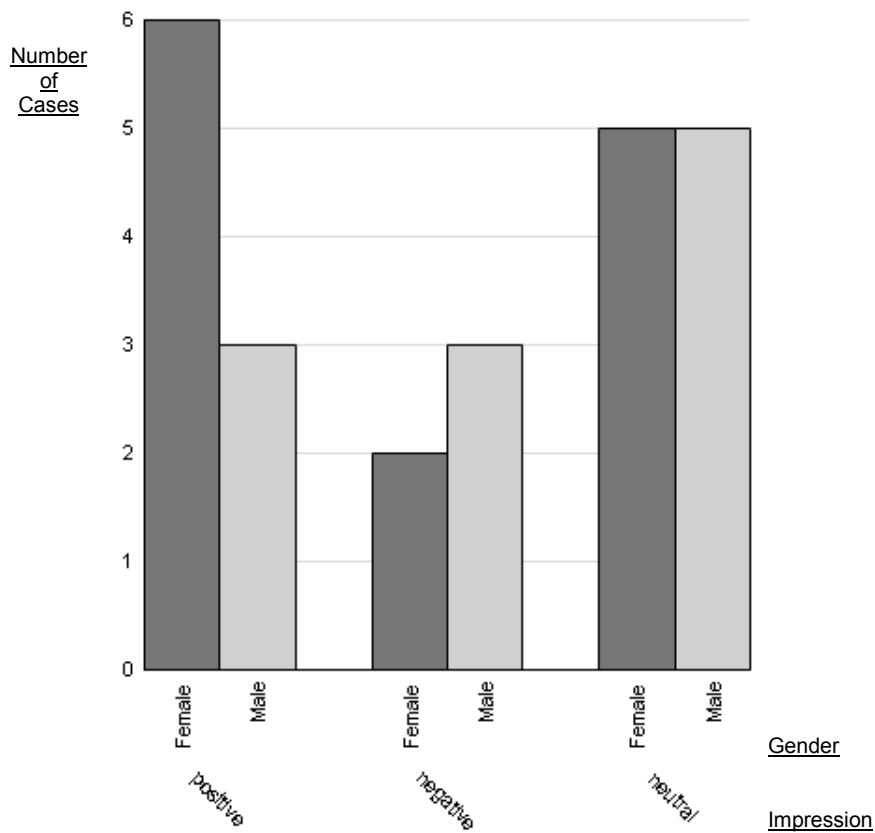


Figure 4.6. Impression of the *Byuk-nok* (blue tint-green tint) Color Palette

These outcomes seem to imply that the subjects' identification of both positive and negative impressions of the *byuk-nok* (blue tint-green tint) color palette tend to be

moderate; therefore, the subjects' perception of this color palette is less linked to the concepts of healing or stressful environments.

**Symbolic associations.** The greatest number of subjects (6/24%) answered that the *byuk-nok* (blue tint-green tint) color palette (see Figure 4.5) did not symbolize anything to them. The second greatest number of responses in the symbolic associations to this color palette were with children/naïvete (5/24=20.83%), comfort/piece (5/24=20.83%), and cool/cold (5/24=20.83%). Three subjects (3/24=12.5%) presented their symbolic associations related to healthcare such as disinfection/hygiene, healing, and soothing; all of these responses included the concept of water. Considering the fact that the flow of body fluid is considered the source of good health in Western medicine, the subjects' symbolic associations seemed to be influenced by Western culture, rather than by Korean traditional medicine that values the flow of *gi* (氣) as the source of health (The Association of Korean Oriental Medicine, n.d.).

Other symbolic associations the subjects presented were: wornness/aging (4/24=16.67%); discomfort/dislike/unfamiliarity (3/24=12.5%); concepts of honor—integrity and chastity— in Korean tradition (2/24=8.33%) such as integrity, chastity, and grace; hopefulness (2/24=8.33%) such as young hopefuls and hope in life; relief/freedom (1/24=4.17%); and continuity/sustainability (1/24=4.17%).

### ***Cheong-Ja* (Blue-Red Violet)**

**General associations.** The greatest number of the subjects presented their general association of the *cheong-ja* (blue-red-violet) color palette (see Figure 4.7) with fashion (10/24=37.5%) such as women's clothes/boutiques (5), jewelry (stores) (2),

cosmetics/perfume (2), and Korean traditional dresses (1). Eight responses (8/24=33.33%) were related to high-end interior settings such as high-end boutiques, restaurants, and social clubs. Five subjects presented no particular association and responded that they just dislike the *cheong-ja* color palette or feel uncomfortable or unfamiliar with it. Other associations included girls (3/24=12.5%), spring (3/24=12.5%), and the elderly (2/24=8.33%). The majority of the subjects (16/24=66.67%) indicated *ja* (red-violet tint) as the cause of their associations; no subject presented significant perception of *cheong* (blue).



Figure 4.7. *Cheong-ja* (blue-red violet) Color Palette

**Impressions.** The subjects' impressions of the *cheong-ja* (blue-red violet) color palette were 11 positive (11/24=45.83%), eight neutral (8/24=33.33%), and five negative (5/24=20.83%). Eight of 11 positive responses (9/11=81.81%) implied fashion or fashionable interior settings. Two subjects of the neutral responders (2/8=25%) had no general association, and both were male subjects. Of the five negative responses: three (3/5=60%) were related to weakness, wavering, or immaturity; two (2/5=40%) were

related to decadence. Of the eight aforementioned associations with high-end interior settings, four positive (4/8=50%), three neutral (3/8=37.5%), and one positive (1/8=12.5%) responses were found.

Little gender difference was found in all three categories, and the most significant gender difference was in their negative impressions: five females and six males in positive, three females and two males in neutral, and five females and three males in negative (see Figure 4.8).

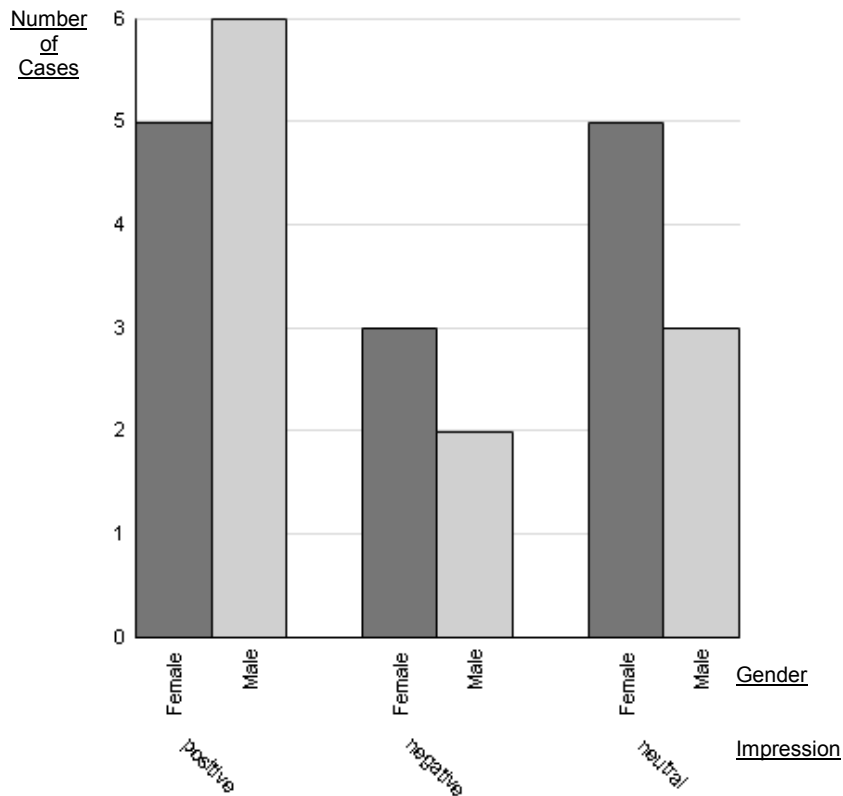


Figure 4.8. Impression of the *Cheong-ja* (blue-red violet) Color Palette

**Symbolic associations.** The greatest number of the subjects (7/24=29.17%) responded that *chong-ja* (blue-red violet) (see Figure 4.7) does not symbolizes anything to them. The subjects' symbolic associations of *cheong-ja* were: feminineness

(3/24=12.5%), passiveness/dependence (3/24=12.5%), unstable emotional/mental status (3/24=12.5%), decadence (2/24=8.33%), and mystery (2/24=8.33%). Other answers included carelessness, the elderly, love, luxury, purity, sophistication, uniqueness. Of 17 subjects that presented specific responses, five (5/17=29.41%) had positive symbolic associations, three (3/17= 17.65%) neutral, and nine (9/14=64.29%) negative. As such, the subjects' symbolic associations of *cheong-ja* was rather more negative than positive.

### ***Heuk-Baek* (Black-White)**

**General associations.** The greatest number of subjects (9/24=37.5%) associated the *heuk-baek* (black-white) color palette (see Figure 4.9) with office environments; five subjects' (5/24=20.83%) general associations were with institutional buildings such as hospitals (3), schools (1), and prisons (1)—particularly built in the period of Japanese rule in Korea. These outcomes seem to show that most subjects' associations of *heuk-back* were related to a sense of rules. Other associations were *baduk* (碁, the Asian board game Go), forts, marble/porcelain, and match boxes.



*Figure 4.9. Heuk-baek* (black-white) Color Palette

**Impressions.** Nine neutral (9/24=37.5%), eight negative (8/24=33.33%), and seven positive (7/24=29.17%) responses were presented in the subjects' impressions of the *heuk-baek* (black-white) color palette and significant gender difference appeared in all three categories (see Figure 4.10).

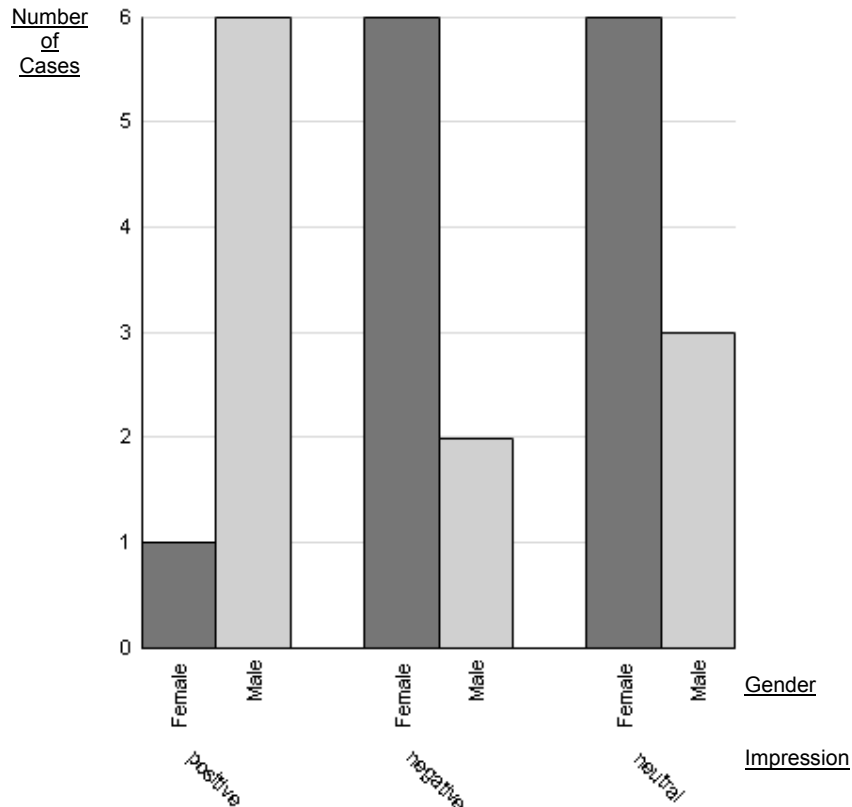


Figure 4.10. Impression of the *Heuk-baek* (black-white) Color Palette

Of the 13 total female subjects' responses, one positive (1/13=7.69%), six negative (6/13=46.15%), and six neutral (6/13=46.15%) impressions were found; of the 11 male subjects', six positive (6/11=54.55%), two negative (2/11=18.18%), and three neutral (3/11=27.27%) answers were presented (see Figure 4.10). As such, while a majority of the male subjects had positive impressions of the *heuk-baek* color palette, most female

subjects tended to have either negative or neutral impressions. All of the eight negative responses on the *heuk-baek* color palette stressed antipathies to white, such as coldness/cold-heartedness and hardness.

**Symbolic associations.** The subjects' symbolic associations of the *heuk-baek* (black-white) color palette were: contrast (7/24=29.17%), death (5/24=20.83%), professionalism (4/24=16.67%), fashionable neatness (3/24=12.5%), attention to information (2/24=8.33%), coldness (2/24=8.33%), harmony (2/24=8.33%), and modernity (2/24=8.33%). Other responses included authority, creativity, and suppression.

However, 10 of 24 subjects (10/24=41.67%) tended to more strongly present separate symbolic associations of black and white than overall symbolic associations of the black-white combination: while five of the ten subjects (5/10=50%) mentioned 'death' in describing their color association of black, one subject (1/10=10%) symbolically associated white with death. No subject clearly associated black or white with birth, even though one interviewee mentioned 'beginning' as the symbolic association of white. Six (6/10=60%) interviewees symbolically associated white with cleanness—four of the six responses implied cleanness that can be easily stained; two (2/10=20%) symbolic associations of white were with weakness or worsening condition of health; one (1/10=10%) was with wedding.

## **Natural**

**General associations.** The subjects associated the *natural* color palette with a reception area in a public building (7/24=29.17%), office (5/24=20.83%), woodshop (4/24=16.67%), restaurant or hotel lobby (3/24=12.5%), and home (2/24=8.33%). Three subjects (3/24=12.5%) presented no association of this color palette. Most interviewees

seemed to take more time to think of color associations for the natural color palette than the other four color palettes; the subjects first mentioned certain materials such as wood and brick, being unable able to focus on the color.



*Figure 4.11. Natural Color Palette*

**Impressions.** The highest number (14/24=58.33%) of responses presented neutral impressions of the *natural* color palette. Eight (8/24=33.33%) subjects' answers were negative and two subjects (2/24=8.33%) presented positive impressions. In the previous analysis phase, the highest number of subjects (10/24=41.67%) considered *natural* as the most healing color palette, and no subject found it to be stressful; however, the number of positive answers was the lowest in this phase. These outcomes seemed to imply that the subjects' perception of healing and stressful color palettes may not directly reflect the subjects' color associations.

Little gender difference was found in the overall impressions of the natural color palette: no gender difference was found in the positive and neutral impressions; little



gender difference (8 female and 6 male subjects) occurred in the neutral impression.

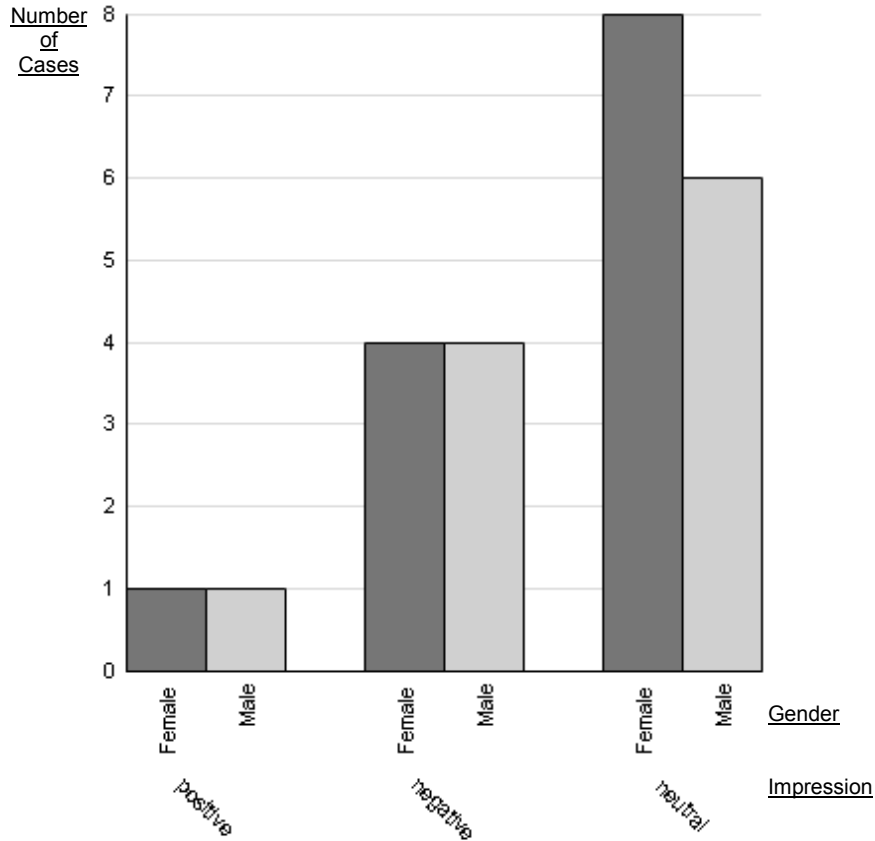


Figure 4.12. Impression of *Natural* Color Palette

**Symbolic associations.** The highest number, 17 subjects, presented no symbolic association ( $17/24=70.83\%$ ) to the *natural* color palette. The subjects responded that they had often seen similar settings, but there was no symbolic association of this color palette because it had no significant color; such descriptions by the subjects seemed to imply that many subjects may not consider the colors used in the *natural* palette as ‘colors.’ Other symbolic associations were comfort from familiarity ( $3/24=12.5\%$ ), adaptation ( $2/24=8.33\%$ ), and lack of characteristics ( $2/24=8.33\%$ ). The symbolic association with

‘comfort from familiarity’ was related to Korean houses, and one interviewee included the term ‘Asian’ to describe the association.

## **Discussions**

Concepts of healing color palettes and positive color palettes did not seem parallel. Although the *natural* color palette was considered the most healing color palette, its impressions in the subjects’ responses were often negative or neutral. This shows that people may have different concepts of ‘healing colors,’ their impressions of interior colors may change over time, and interior objects may interfere these processes.

Saturated colors such as *jeok* (red), *cheong* (blue), and *ja* (red violet) seemed to be considered ‘event colors’ rather than healing colors. Although many subjects had positive impressions of *jeok-cheong* (red-blue) and *cheong-ja* (blue-red violet) as active and fashionable color palettes, no subject considered these healing.

In addition, even though blue is often used in healthcare environments, the value (lightness) may be an important factor in determining positive or negative impressions. While the subjects presented negative reactions to *cheong* (blue), a majority (79.17%) of the subjects had positive or neutral impressions of *byuk* (blue tint). Such a tendency might be related to the significant gender difference in the subjects’ impressions of the *heuk-baek* (black-white) color palette: female subjects showed significantly higher negative impressions than did male subjects. As the high value of white walls was often described negatively in the subjects’ description, degrees of color value may influence people’s color meaning in healthcare environments.

The subjects’ general associations of color palettes tended to be primarily related to their personal experiences; symbolic associations seemed to reflect color meanings and

symbolism in Korean culture, which the subjects had been informed in the cultural context. While subjects answered “I have seen something similar to this...” to the interview question about general associations of color palettes, their symbolic associations were mostly abstract and often included what they had heard or read about the colors.

The subjects’ responses to color palettes reflected associations originating from Korean tradition or history. The greatest number (12/24=50%) of cultural associations was found in responses on *jeok-cheong* (red-blue) and the second greatest number (7/24=29.17%) in *byuk-nok* (blue tint-green tint); no subject associated *natural* color palette with Korean culture. Considering the fact that most subjects considered *natural* color palette as non-characteristic or non-color, the subjects in general seemed to have color associations with cultural meaning and symbolism.

## **CHAPTER FIVE: CONCLUSION**

Compliant to the theoretical construct and definitions provided in Chapter Three, this chapter summarizes and interprets the outcomes of this study. The interpretation includes the finalized model of ‘concepts of healthcare color in meaning establishment’ that shows the concepts of healthcare color of which the subjects’ self-interaction and social interaction consist in their meaning establishment of healthcare environments. Finally, limitations and implications of this study are discussed in relation to the interior design education, practice, and research.

### **Summary and Conclusion**

The following points were mentioned in chapter two and may have been proved in outcomes of this study: 1) Color can be a positive distraction or a stressor depending on the individual’s experience or status; 2) people construct meaning of healthcare environments through color-in-context; 3) people’s symbolic associations of color reflects cultural factors such as norms, values, social structure, and social roles. A model, concepts of healthcare color in meaning establishment will be provided to conclude findings based on the theoretical construct of symbolic interaction and the theoretical definitions in relation to the abovementioned points.

### **Self-Indication in Healthcare Environments**

In the research model (see Table 3.1), self-indication was defined as an individual’s feelings about herself/himself in her/his past experience. Subjects indicated themselves mostly based on their own health condition and relationship with the person whom they accompanied in their healthcare visits. Female subjects tended to empathize

more with the situations or patients they accompanied, therefore their color perception seemed to be more affected by these factors.

### **Self-Determination in Healthcare Environments**

Self-determination referred to an individual's memories of a healthcare setting in relation to her/his feelings about herself/himself. The subjects tended to better remember the colors of healthcare settings when they were well-patient visitors. In ill-patient visits, they tended to be more self-conscious than sensitive to the surroundings. The subjects also seemed to better remember the interior settings of healthcare environments in the following order: lighting conditions, interior structures, overall color impressions, and the detail colors. The subjects often seemed to have different color preference in healthcare environments from their general color preference.

### **Color as Abstract, Physical, and Social Objects**

The concepts of healthcare color found in this study were hygiene status, comfort, professionalism, users' characteristics, care, stability, and vitality. Based on the theoretical framework of symbolic interaction, these concepts were categorized as follows:

- 1) Care, stability, and vitality as concepts of color as an abstract object that was defined as a source of an individual's interpretation of associations,
- 2) hygiene status as a concept of color as a physical object—a visual stimulus in a physical setting, and
- 3) professionalism, comfort from familiarity, and users' characteristics as concepts of color as a social object in a situation that involves other individual(s).

As such, the subjects seemed to determine color as three different categories of ‘object’ based on their experiences and the present circumstances. Providing different implications in healthcare settings, ‘cleanness’ and ‘comfort’ often seemed to be interpreted as concepts opposite each other in the public’s consideration of colors. Moreover, the concept of ‘healing colors’ did not seem to be much considered by the subjects; healthcare color was more directly related to the concept of vitality rather than ‘healing’ that the subjects often referred to the trends of commercial products.

### **Color Meaning in Healthcare Environments**

In self-interaction that involves self-indication and self-determination, color can play a role as a positive distraction or a stressor in healthcare environments depending on the individual’s feelings or experiences. In other words, the subjects seemed to determine color in healthcare environments either as a positive distraction or as a stressor based on how they felt about themselves in the settings.

In the subjects’ consideration, color meaning was directly related to their color associations that consisted of general and symbolic associations. The subjects’ general associations to the color palettes were mostly based on their personal experiences; symbolic associations were based on what the subjects had informed. In other words, general associations seemed to reflect self-interaction and social interaction; symbolic interaction tended to be based on social interaction.

Healing was not found as one of those main concepts of ‘healthcare color’ even when the subjects were asked to choose the most healing color palette in IQ 2.1 (see Table 3.1) during the interview. The subjects tended to determine healthcare color in relation to ‘vitality’ in their personal stories based on their past experiences; the concept

of healing was presented in relation to commercial advertisements—e.g., yoga products—in media, not directly related to the quality of healthcare. This outcome may show that the subjects’ understanding of the subjective expression ‘healing color’ were from social interaction yet its impact on the subjects’ meaning establishment of healthcare color was not significant.

### **Cultural Influences on Color Meaning**

As mentioned in Chapter Two, color in healthcare environments can be a positive distraction or a stressor depending on the perceiver’s personal experiences or cultural background (Ulrich, Zimring, Quan, & Joseph, 2006). The subjects of this study seemed to establish meanings of ‘healthcare color’ in relation to concepts such as authority, comfort/familiarity, hygiene, professionalism, users’ characteristics, stability, vitality, and care/warmness; the colors implying these criteria varied in the subjects’ responses.

In Chapter Three, a model of contributors to meaning establishment was proposed which consisted of object, self-interaction, social interaction, and meaning. Based on the findings of this study, the model was finalized including the subjects’ concepts of healthcare color (see Figure 5.1). Self-interaction seemed to contribute to the subjects’ meaning establishment of emotionally-oriented concepts such as stability, vitality, and care/warmness. Social interaction seemed to have more influence than self-interaction on Koreans’ meaning establishment of healthcare color. The concepts in self-interaction such as stability, vitality, and care/warmness were more personal and varied than those in social interaction such as comfort, hygiene, characteristics of users, and professionalism. Overall, Koreans seemed to establish meaning of healthcare color based

more on social interaction that mostly reflects the present cultural features, social roles, and social values.

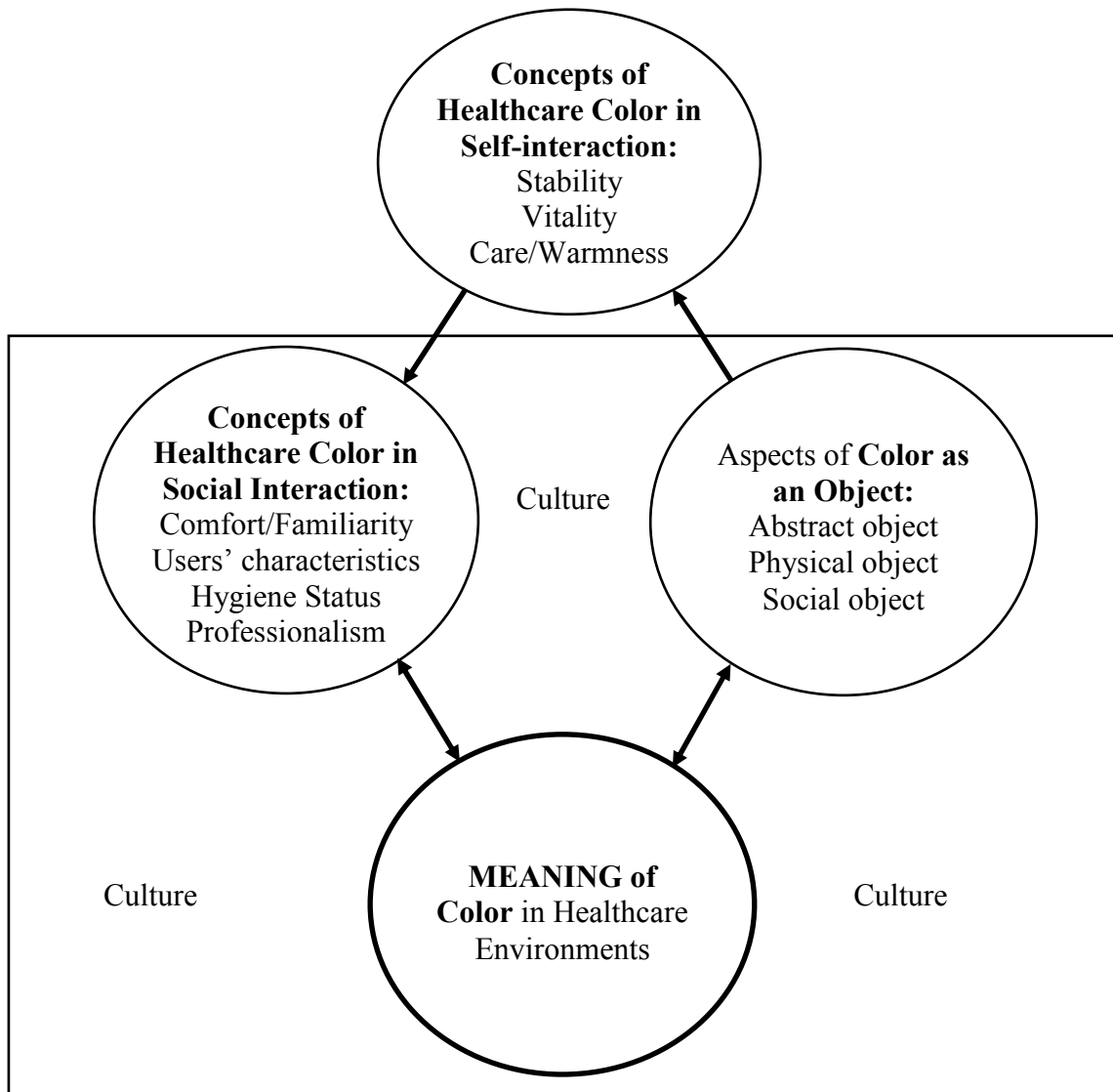


Figure 5.1. Concepts of Healthcare Color in the Meaning Establishment



### **Limitation of the Study**

In this study, the interview method had a limitation on the sampling. Although the age and gender ratio simulates the census data, the sample group may not represent the entire population of Korea. Some interview subjects might not have clear memories of color in healthcare environments where they visited in the past; the memories may have varied depending on their physical conditions, and therefore, leading questions were used during the interviews to probe the subjects' answers. Finally, color acuity varied among people. The individual difference may have caused discrepancies especially in subtle distinction of colors.

Limitations in use of the color palette instrument are: 1) the color palettes do not show various applications of surface dimension; 2) the color palettes do not reflect a wide range of variations of values and chroma of colors. This limitation can be considered in color palette development in further research.

There were two limitations related to language. First, there was one researcher in the multiple roles of the rater, translator, and interpreter because the sample consists of Korean-first-language speakers. More than one peer verification could be conducted by other Korean-English bilinguals to obtain more objective interpretation. Second, the computer software could be used only for organizing the subjects' responses, not for advanced analysis such as coding or finding themes because Korean is a highly descriptive language in color terms and the computer software used in the data analysis, NVivo® is not fully compliant to Korean text, particularly regarding color language.

Interviewees' answers to interview questions were often subjective, and the researcher had to modify several responses to accurately reflect their intent. For example,

while one subject responded color does not matter to him in healthcare experience, the implication of his answers was apparently the opposite. Since modifying interview data is often prohibited in interpretive research, the questionnaire needs to be refined for further research to avoid such an error.

Another limitation was that the interviewees' often had difficulty separating their memories of colors from those of the entire interior settings. They tended to describe interior colors after skimming through lighting conditions, structural features, and overall atmosphere. To avoid such distraction, the questionnaire could have several phases of questions to gradually focus from the overall space to color features.

### **Implications**

This study has significance in finding healthcare colors need to be carefully planned since: diverse occupants of today's healthcare establish various color meanings based on their backgrounds; color in healthcare environments affect the occupants' emotional conditions and stress based on the meaning that they establish; occupants' meaning of healthcare color reflects their expectations of 'quality.'

Research has recognized the significance of interior color as a means of support for healing: a relationship exists between healing treatments and the patients' mental and emotional attitudes that are closely linked to their perceptions of color. The findings of this study showed that, even though individuals' color associations can vary, people establish meaning of color based on several concepts as the quality criteria of healthcare environments. However, color planning in interior design projects has often been based on generalized color associations suggested by particular individuals such as the

designers and color consultants. As such, designers lack framework for color planning, especially culturally-specified design projects.

### **Design Practice**

The findings of this study can be used to inform interior designers' decisions about color palette selection to reduce stress from fear, anxiety, or discomfort of occupants in healthcare environments. When it comes to sensitive environments like healthcare settings, color planning can be a designers' challenge due to occupants' diverse backgrounds and experiences with which designers may not be always familiar. Moreover, individuals can establish different meanings of colors even in the same setting and culture, and thus color palettes based on generalized color associations often fail to meet people's expectations and interpretations. In this regard, by reflecting concepts and criteria that people establish meanings upon, the findings of this study provide design practitioners with a framework that they can use to develop color palettes in their projects for various user groups.

### **Education**

As mentioned in the findings, 'concepts of color' can be approached as quality criteria of interior environments. Educators can develop their teaching methods to integrate color meaning and quality criteria for culturally-diverse user groups into the interior design curricula. While visual properties of color and people's color preference have been emphasized in design education, approaches to color meaning are still vague and often influenced by commercial trends. Considering the fact that students' often follow commercial color trends for color palette selection in their design process, there is an urge to provide proper instructions so that students can reflect users' meanings and

characteristics to their projects, as well as the designers' respect for the users' diverse cultural backgrounds.

Moreover, educators can also adopt the theoretical framework provided in this study to stress the importance of concepts that influence meaning of interior environments as established by the occupants. Socio-cultural context has become a crucial content in design approaches as health, safety, and welfare issues have been increasingly emphasized in interior design education. These concepts are often defined individually and thus can be properly approached mainly by understanding who the users are and how they establish meaning of environments. Such understanding of concepts and meanings that interior occupants establish can further prepare students to pursue design practice in this diverse social context.

### **Further Research**

The findings of this exploratory study are meaningful: in finding that an interpretive research approach is effective to investigate color meaning; in providing new criteria for future research on healthcare color. Since the findings showed that self-interaction and social interaction influenced Koreans' meaning establishment of healthcare color in relation to the quality of healthcare environments and to the users' emotional comfort respectively, these two criteria of concepts can be used to develop a research instrument for comparative cultural studies to further investigate differences of concepts of healthcare color among cultures. These concepts can also be used to develop a quantitative research instrument to identify color palettes for culturally-sensitive or -specified design projects for particular user groups.

Additionally, the relationship between healing and stressful color palettes can be

further scrutinized. In this study, the subjects showed strong tendencies toward particular color palettes in perceiving healing and stressful color palettes. Further research can be conducted with various samples to identify optimal color palettes in various cultural groups. Moreover, as color studies in the interior design discipline have shown, color is perceived differently in space than on two-dimensional surfaces. Therefore, further research can be conducted in experimental settings rather than using color palette images.

The theoretical framework can be also used for further research to investigate people's concept of color as the quality criteria of different types of interior environments. Although it has been known that people perceive color before shape or wording (Write, 1998), findings of this study showed that people may remember the interior layout more than the colors in healthcare environments. It seems to imply that people may perceive interior settings differently based on the building types. Therefore, further research needs to be conducted to investigate people's color meaning in various types of interior settings such as residential, commercial, institutional, and office environments.

Another possibility is related to continuous quality development of healthcare. In relation to the management aspect, research can be conducted on continuous quality development of healthcare as work environments. Since healthcare occupants include the staff and quality work environments directly influence their productivity, color planning for each area within a healthcare setting needs be based on the quality criteria on which its user group values. Therefore, further color research can be conducted with these various user groups to provide findings that can contribute to creating optimal healthcare settings not only as care-giving but also work environments.

Most importantly, color in designed environments needs to be considered in the cultural context because people construct meaning reflecting their cultural norms, values, and roles. The researcher hopes that this study can trigger researchers' active involvement in interior design research that can contribute to the diverse public's welfare in this multicultural society.

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