

**ART PREFERENCE OF HEALTHCARE STAFF  
IN BREAK ROOM ENVIRONMENTS**

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**ABSTRACT**

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There is a growing body of evidence supporting the value of art as a vital element of patient-focus design in healthcare environments. However, little research exists on the effect of the inclusion of specific types of art within the healthcare staff areas in regards to their wellbeing. The purpose of this study was to examine the art preference of healthcare staff to determine what type of art should be considered when choosing appropriate art for their break rooms. Eighteen staff members in a nursing home were surveyed. They rated images on quality (content, color and style), emotional impact and location appropriateness. Overall, healthcare staff preferred soothing art over challenging art and there was a high correlation between art quality, emotional impact and location appropriateness rating of the soothing art category. The findings of the study established style as the most influential component governing staff art preference. These findings led to design recommendations regarding the selection of art for staff break rooms and infers a correlation between art preference and staff wellbeing.

## TABLE OF CONTENTS

	Page
ACKNOWLEDGMENT.....	iii
ABSTRACT.....	iv
LIST OF TABLES .....	vii
LIST OF FIGURES .....	viii
 CHAPTER ONE	
INTRODUCTION .....	1
Purpose and Objective .....	5
Summary .....	6
Definition of Key Terms .....	6
 CHAPTER TWO	
LITERATURE REVIEW.....	9
A Healthy Environment: Humanizing Hospital Space through Art.....	9
A Stressful Environment: Care for the Caregivers .....	12
Art Preference of Healthcare Provider.....	14
Summary .....	24
 CHAPTER THREE	
RESEARCH DESIGN AND METHODS .....	25
Introduction.....	25
Phase I: Pilot Study.....	25
Phase II: Thesis Study.....	30
Art Categories .....	31
Survey Development.....	34
Analysis.....	35

## CHAPTER FOUR

RESULTS.....	41
Image Rankings .....	41
Correlation between Quality of Art and Emotional Impact and Location Appropriateness .....	47
Comparing Content, Style and Color.....	48

## CHAPTER FIVE

DISCUSSION .....	51
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## CHAPTER SIX

CONCLUSIONS.....	54
Summary of the Research .....	54
Summary of Findings.....	56
Limitations .....	58
Future Research .....	59
Conclusions.....	60

REFERENCES .....	62
------------------	----

APPENDIX 1.....	70
-----------------	----

APPENDIX 2.....	74
-----------------	----

APPENDIX 3.....	75
-----------------	----

APPENDIX 4.....	76
-----------------	----

APPENDIX 5.....	84
-----------------	----

APPENDIX 6.....	85
-----------------	----

**LIST OF TABLES**

Table 1: Stress Outcomes and Liking Rates .....	29
Table 2: Survey Image, Description and Response Summary .....	37-40
Table 3: Ranking of Images .....	41-43
Table 4: Paired Image Difference .....	48-49

**LIST OF FIGURES**

Figure 1: Art Examples Showing How Color Effects Emotion.....	23
Figure 2: Images of the Break Rooms with the Art .....	23
Figure 3: Art Categories.....	31
Figure 4: Selected Images.....	34
Figure 5: Analysis of Mean Across Q, E, L.....	45
Figure 6: Analysis of Mean of Q.....	46
Figure 7: Analysis of Mean Across Content, Color, Style .....	47



## **CHAPTER ONE**

### **INTRODUCTION**

Patient wellbeing is a function of caregiver wellbeing. While considerable attention in healthcare interior design and research has focused on improving patient wellbeing, research focusing on the wellbeing of the staff is limited. Previous studies focusing on staff have examined job satisfaction, stress management, work performance, and physical wellbeing (Williamson, 1999; Shaver, 2003). Wellbeing, in this study, refers to a state of complete physical, mental and social wellbeing, and not merely the absence of disease or infirmity.

Hospital design often compromises the needs of one user group to serve the another group. However, traditional patient-centered-design strategies may not be the most effective way to improve the environment for all user groups. Shumaker and Pequegnat (1989) suggested taking the emphasis away from patients and focusing on healthcare staff. They proposed that healthcare staff are an ideal target for hospital-design-related strategies:

1. Staff fit the profile of a user group that is vulnerable to the effects of stress, that is, persons with low control and high responsibility. Extensive literature on occupational stress documents the negative effects of these characteristics in work settings (House, 1981; Karacek, 1979; Stokols, 1986).
2. Hospital staff work in a variety of physical settings. Knowing the relationship between patients and caregivers in different care delivery settings.
3. Hospital staff are the most important user-group from the patients' perspective. Because of

their advocacy roles, their more holistic views of patients, and the fact that nurses often carry out and experience the effects of medical decisions “at the point of impact”(Theis,1986), the aspects of hospital environment that impact nurses have major implications for patients’ wellbeing.

Based on the evidence of environmental stressor and the importance of humanizing the hospital environment, it may be worthwhile to introduce art to healthcare staff in order to improve hospital environment. Lacking is a study on the art preference of the staff, which is the main focus of this study.

Since the physical and psychological wellbeing of staff in healthcare settings is extremely important, it is imperative to identify elements in the environment that support staff stress reduction. Healthcare facility design traditionally has emphasized the functional delivery of healthcare. This emphasis has often produced facilities that are functionally effective but psychologically “hard”-lacking sensory stimulation, limited movement opportunities, and little control over oneself or one’s environment. Hard design works against the physical wellbeing and can have a negative effect on the psychological indicators of wellness. One method of reducing stress among staff is by providing quality exterior views (Pati, Harvey, and Barach, 2008). In the healthcare environment, art is often used to improve the quality of a space. Because art can potentially provide a substitute for high quality views for the staff, it is important to understand what type of art healthcare staff prefer and what type of art contribute to stress reduction.

Staff may benefit physiologically and psychologically when certain types of art are provided in their break area. In an exploratory study of the relationship between views and nurses’ stress

(Pati, Harvey, and Barach, 2008), results reflected the need for architects/interior designers to focus on the need for visual relief for healthcare staff. In this study, thirty-two nurses were evaluated for acute stress, chronic stress, and alertness before and after twelve-hour shifts. Views in their work area varied from the urban (e.g., buildings, streets, and parking) to the natural (e.g., trees, greenery). Results suggested a need for restorative breaks away from their work environment if natural views are unavailable. This study emphasizes the importance of understanding staff needs (visual relief) as a basis for providing and planning a place that meets human and environmental requirements for staff wellbeing (stress reduction).

In a hospital it is not always possible to have windows looking into nature views. However, we are capable of imagining ourselves functioning in virtual worlds. “Restorative environments can be either real or imagined places, whereas restorative experiences can happen either in a physical or an illusionary world, or a combination of both.” (Kaplan, Kaplan, & Ryan, 1998). This is illustrated by the increasingly common use of art in hospital environment with some nature content as a positive distraction to reduce stress. Positive distraction is an environmental feature that elicits positive feelings and holds attention without stressing the individual, thereby blocking worrisome thoughts (Ulrich, Simons, Losito, Fiorito, Miles, Zelson, 1991). For example, viewing nature scenery on the ceiling at Johns Hopkins Hospital resulted in a significant decrease in reported pain intensity and anxiety during bronchoscopy of patients (Diette, Lechtzin, Haponik, Devrotes, and Rubin, 2003). Literature like this documenting the effect of positive distraction establishes the role of art in patient care but adds little to the knowledge of appropriate art image content for the staff. Nature images have been used successfully as a positive distraction (Ulrich, 1981; Pati, Harvey, and Barach, 2008), but they have not been tested against other kinds of

images.

Evidence-based art is based upon the principles of Evidence-Based Design and makes a commitment to basing design decisions on the best available research evidence. There is a small but significant body of research evidence today on the impact of art on clinical and behavioral outcomes of patients in hospital settings. Viewing artwork with appropriate nature content has been seen to reduce stress and pain perception, as measured by physiological outcomes such as blood pressure, heart-rate, and skin conductance, in addition to self-reported measures such as pain-rating scales and surveys. For example, in a study conducted in Sweden by Roger Ulrich (1993), heart surgery patients in an ICU who were shown nature scenes with water, trees and high depth of field, showed lesser anxiety, suffered less intense pain, and required lower strength pain medication, than those shown abstract scenes or no image at all. Economic benefits of lower cost of pain medication, reduced length of stay, and increased patient and staff satisfaction, can be extrapolated from such studies and strengthen the case for taking an evidence-based approach.

Evidence-based art has had successful stress reducing effects. According to Ulrich and Gilpin (2003), the stress-reducing effect of viewing art, especially nature art, can be explained by the evolutionary theory and emotional congruence theory. On the basis of these two theories and previous research on the positive effect of nature art on patients, they developed evidence-based guidelines intended to increase the likelihood that the health-care art selected will decrease patient stress. It is recommended that art displayed in healthcare facilities have unambiguously positive subject matter and convey a sense of security or safety. For example, positive nature content in representational style art is preferred while negative nature content in abstract style art

is not.

Understanding the art preference of the individual is the key element in determining the appropriate art displayed in staff break areas. Emotional state is a crucial reference in determining art preference. *Emotional congruence theory* (Bower, 1981) suggests a person perceives environmental surroundings in a manner congruent with their current emotional state. It implies that the art perceptions/preferences are influenced by an individual's current emotional state. The color of the art is another factor that might affect the emotional wellbeing of staff. Red has been associated with vigor, anger, tension (Levy, 1984), excitement, stimulation, and happiness (Plack and Shick, 1974). Blue or blue-green has been related to relaxation (Levy, 1984), comfort, security, peace, and calm (Plack and Shick, 1974).

Therefore, defining art categories is important because art varies one from another. Different art components like style, content and color work together to affect staff art preference. Furthermore, art should also enhance staff's environmental experience in order to achieve humanizing healthcare environment through art. Therefore the emotional impact and location appropriateness are the secondary concern in this study.

### **Purpose and Objective**

The purpose of this study is to investigate the art preferences of healthcare staff in their break rooms based on (1) the quality of art, (2) the emotional experience of art and (3) environmental experience of art. The inference is that art that is preferred by the staff will consequently decrease stress which will enhance patient care. Quality of art is determined by colors, style and content. Emotional experience of art is determined by the emotional impact of art on the staff

population. Environmental experience of art is determined by the location appropriateness of art. What types of art do healthcare staff prefer? What important components affect their preferences? What is the emotional impact of art on staff? What should be considered when choosing art for hospital staff in their break area?

The objective of this investigation is to provide information to interior designers that will help designers choose appropriate art for staff break areas. Art that is preferred by the staff may consequently decrease stress which may enhance the care of the patient. This study demonstrates the importance of attention to the provision of art in staff break areas.

### **Summary**

Healthcare staff work in a high-stress environment. Staff stress and fatigue have proven to be detrimental to patient care. Environmental elements, such as art, can promote stress reduction and contribute to the wellbeing of the healthcare staff. The investigation of the effect of art on stress reduction forms the argument for the healing effect of art and indicates that art can have a positive impact on the wellbeing of the staff. This is not true for all art styles, content and color. In this study, the researcher will investigate this issue further by analyzing staff responses to quality of art, emotional impact and location appropriateness.

### **Definition of Key Terms**

Art: original paintings, photographs and prints.

Content: refers to the subject of the art piece (e.g., landscape, human figure).

Color: involves the combination of hue, brightness and dullness of the color.

Style: defined as the mode of expression by an artist. Artistic style can vary from extreme

realism to extreme abstract-representation of an artist's subject (Mayer, 1969).

Representational style: is an artist's idea of the subject, one which conforms as nearly as possible to the subject in its true form and contains considerable detail and facts about the object (Mayer, 1969).

Abstract style: seeks to break away from traditional representation of physical objects. It explores the relationships of forms and colors (Mayer, 1969).

Nature art: a type of art that captures images of scenery, human or animal figures.

Positive nature: features and subject matter that include natural elements and situations that can signal safety or security, for example, positive facial/ emotional expressions and caring or friendly body language, calm or non-turbulent water, savannah landscapes, verdant vegetation, and healthy and fresh flowers.

Negative nature: features and subject matter that include natural elements and situations that can signal threats or danger, for example, snakes and spiders, large mammals staring directly at the viewer, pointed or piercing forms, shadowy enclosed spaces, dead trees, wilted plants, and angry or fearful human faces.

Soothing art: is characterized by positive nature images (including scenery, human or animal figures), cool colors and representative style which produce peace and calm.

Challenging art: is characterized by negative nature content (including scenery, human or animal figures) with warm colors and abstract- representational style.

Soothing art components: includes positive nature content (coded as A), cool colors (coded as B) and representative style (coded as C).

Challenging art components: includes negative nature content (coded as D), warm colors (coded

as E) and abstract-representative style (coded as F).



## CHAPTER TWO

### LITERATURE REVIEW

This study focused on the impact of art on staff wellbeing in healthcare environments. While the impact of art can be informed by art preference and art preference indicates impact of art, this study investigated the art preference by looking into the relationship between art, staff, and their working environment. A research of literature drew on qualitative and quantitative evidence relating to the impact of art in the hospital environment, on the healthcare user. The literature review began with an electronic research of databases such as SAGE, PsycINFO, Avery Index to Architectural Periodicals, Web of Science, and JSTOR. In total more than fifty articles and journals were analyzed. Further research was done on key investigators in this field. The literature review identified three main concerns: humanizing hospital space through art, care for the caregivers, and art preference of the healthcare provider.

#### **A Healthy Environment: Humanizing Hospital Space through Art**

The hospital is a place to heal, yet, in some instances, the hospital environment, is the antithesis of healing. Hospital environments tend to focus on the technical and functional level of healthcare delivery, be devoid of sensory stimulation, have limited movement opportunities, and offer little control over oneself or one's environment. The physical setting is confusing, intimidating and thus stressful for patients, visitors and even the staff. As Veitch and Arkkelin (1995) described the healthcare environment as,

...long sterile hallways, stainless steel utensils, banks of life-monitoring equipment, people in white uniforms rushing to and fro, specialized rooms for specialized functions,

wheelchairs lined up at elevators, and the smell of rubbing alcohol and disinfectant (pp. 291-292).

There is a growing concern that hospitals should extend beyond functional efficiency to also provide a psychological supportive environment that promotes overall wellness. Carver (1990) points out that the design of hospitals needs to portray “a nurturing, non-threatening environment...to help put people at ease” (p.90). Evidence suggests that people respond positively to attractive environments that imply caring intent (Campbell, 1979). The value of an attractive environment is thought to lie in its ability to distract attention with natural environments (Baum and Davis, 1976), allowing recovery from mental fatigue (Kaplan and Kaplan, 1989).

The concept of a supportive environment implies certain environmental features that enhance people’s wellbeing and contribute to the generation of a healthy environment. The inclusion of nature views in the workplace has proven to promote productivity and physical and mental wellbeing (Kaplan, Talbot, and Kaplan, 1988; Heerwagen, Johnson, Brothers, Little, Rosenfeld, 1998; Clay, 2001). Changes in decor, furnishings, and furniture arrangement have been found to decrease anxiety in hospital settings (Bobrow and Van Gelder, 1980). A three-month experiment of color change on the walls and ceiling of the hydrotherapy room in Chelsea and Westminster hospital elicited a positive response from patients with 68% of the patients reporting that the color improved the environment (Duncan, 2003).

Use of art in the hospital environment has a long history, but not until recently have there been any scientific studies on the impact of art in healthcare environments (Baron, 1995).

Researchers have traced the presence of art in hospitals as far back as the 14<sup>th</sup> century, when hospitals were operated by the church. Dying parishioners were shown paintings depicting salvation as a way of offering sinners a last chance of salvation. In the 1970s and 1980s, hospitals in the United States began to decorate with art but with no particular consideration to the healing benefit of art.

In the early 1990s, art gained value as a mechanism to improve medical outcomes. Studies have shown that exposure to visual art promotes positive patient outcomes. For example, one study found that burn patients reported a reduction of pain intensity when exposed to murals (Miller, Hickman, and Lamasters, 1992). In a study with postoperative heart patients in Sweden (Ulrich, Lunden and Eltinge, 1993), researchers found that exposing heart-surgery patients in intensive care units to nature pictures reduced the length of stay in the hospital. Art was also found to reduce stress. Evidence from heart-rate recordings and questionnaires showed that stress in a dental clinic decreased on days when a large nature mural was hung at the back of a waiting room (Heerwagen and Orians, 1990). In another study, images of serene nature scenes mounted to the ceiling and viewed by pre-surgical patients on gurneys resulted in lowered blood pressure of the patients (Coss, 1990).

In recent years, there has been a trend toward more evidence-based design. This is design informed by research with an emphasis on rigorous evaluation and detailed knowledge. As Staricoff (2006) declared, "...it (arts in healthcare) should not only aim to produce nice, pleasing environments. The integration of the arts into the healthcare environment requires a deep understanding of the concept underpinning this approach." She also evaluated two

major studies proven to provide evidence of the effectiveness of using art in healthcare environments: 1) art preference study (gathering subjective feedback related to attitudes, feelings and responses of individuals to a particular art piece). 2) art impact study (evaluating the effects of art based on objective measurements of the physical, psychological and clinical state of individuals) (Staricoff, 2006). Both types of research provide scientific evidence of the affect of art in healthcare environments as meaningful information when designing hospital environments.

Most studies target the wellbeing of patients rather than staff or visitors. This patient-centered care may prevent the healthcare environment from being humanized (Shumaker and Pequegnat, 1989). Patients are vulnerable at the time of hospitalization. The average length of stay in a hospital during one's lifetime is only a short period of time (USDHSS, 2004). Thus the impact of the environment on patients is short-lived. In contrast, the hospitals are the primary workplace for most health professionals. An unsupportive hospital environment can impair the ability of the healthcare provider to give efficient treatment, which has an indirect impact on a patient's health (Shumaker, S., Pequegnat, W., 1989). Consequently, the hospital environment is critical when considering the wellbeing of the staff.

### **A Stressful Environment: Care for the Caregivers**

Studies discussing the high-stress work environment in which healthcare staff provide care is not new, with scientific publications as far back as the 1980s addressing the issue (Hinshaw and Atwood, 1984). More recent studies have focused on nursing empowerment, staff burnout, and staff satisfaction (Greco, Laschinger, and Wong, 2006) and underscore the prevalence and

acuteness of the problem. The results of a 2001 nationwide survey of 4,826 nurses revealed that over 70% of the respondents reported stress as one of their top three concerns (Houle, 2001).

Stress and fatigue could impact critical aspects of performance such as reaction time or alertness, irritability, attention to detail, problem solving ability, energy level, and decision-making ability; all of which could contribute to serious errors in providing effective healthcare (Barach and Weinger, 2007; Page, 2004). Moreover, reduced motivation and work performance are typical for tired workers in the workplace, which equally apply to stressed and tired caregivers in healthcare settings (Tabone, 2004).

The physical environment as a stressor has been well documented in the literature. Noise (the most studied aspect of healthcare physical settings) in the environment has been shown to be a significant environment stressor with potentially unsafe consequences for the staff. The detrimental impact of noise on communication, concentration, and cognitive performance, leading to stress and fatigue, has been reported by the World Health Organization (Agency for Healthcare Research and Quality, 2005). Occupational Stress originating from high noise levels (e.g., telephones, alarms, and beepers) relates positively to nurse burnout (Topf and Dillon, 1988).

Other environmental factors in the literature suggest negative consequences. Inappropriate lighting and thermal environments can induce stress in users (Boff and Lincoln, 1988). Improper ergonomics in the work environment can also result in physical strain in healthcare settings (Bashir, 2002). Studies on visual environments have focused on diverse issues, ranging from style to positive distraction. In one study, the style of interiors (traditional versus nouveau by

changing design features such as lighting, colors, windows) was shown to have an influence on mood and reported satisfaction (Leather, et al., 2003). Healthcare staff working in windowless spaces report lower levels of wellbeing compared to those who have exterior views (Verderber and Reuman, 1987). As noted in these studies, the influence of a hospital's environment on the performance of staff can be powerful.

### **Art Preference of Healthcare Provider**

This study focuses on art content, style, and color. The intent is to identify the points at which these elements may influence the preference of healthcare staff.

#### Subject matter of art

*Attention restoration* is recovery from attention fatigue. Attention fatigue is caused by an ever increasing amount of information demanding attention (Kaplan, 1995). The result of attention fatigue may be irritability, inability to focus, reduced motivation, and a general reduction in performance. There is a small but growing amount of evidence linking restoration with nature experience. For example, participants who walk in a regional wilderness park after forty minutes of fast-paced, intentionally demanding tasks have higher posttest levels of self-reported positive affects, less anger and aggression, and better proof-reading performance than those who either walk in an urban area or sit in a laboratory reading magazines and listening to music (Hartig, Mang, and Evans, 1991). An exploratory study about the relationship between the exterior view and nurses' stress reveals that visual relief can positively affect caregivers. It can, in the short term, sharpen focus in an intense environment (Pati, Harvey, and Barach, 2008). On a long term basis, it might enhance job satisfaction and retention. The study also indicates that the quality of

the view (natural elements) is a significant factor in a caregiver's focus on their subjects (patients) and their tasks (care-giving). In conclusion, the researchers suggest embracing the importance of view or visual relief (nature-based art) in the staff break rooms and work environment.

*Restoration from stress* is thought to stem from positive distraction. A positive distraction is an environmental feature or elemental feature that elicits positive feelings, holds attention and interest without taxing or stressing the individual, and therefore may block or reduce worrisome thoughts (Ulrich, 1981). Natural elements as a positive distraction have been found to reduce stress—especially on patients. For instance, patients who watched photographic simulations of natural settings showed faster physiological recovery (measured through skin conductance, muscle tension, and pulse transit time) than those who viewed simulated urban settings (Ulrich et al., 1991).

Nature elements have a stress-recovery effect on people in stressful situations (such as patients and healthcare providers, all in a stressful environment). Heart rate measurements collected in a dental clinic suggests that patients experience lower stress on days when a large mural depicting a natural scene is hung on the waiting room wall compared with days when the wall is left blank (Heerwagen and Orians, 1990). Findings on non-patient groups, such as nurses, indicates a significant relationship between the acute stress of nurses and the content of exterior views. From the data collected on stress levels before and after twelve-hour shifts, results showed that of all the nurses whose acute stress condition remained the same or reduced, 64% had exposure to views (71% of that 64% were exposed to a nature view); of nurses whose acute stress levels increased, 56% had no view or only a non-nature view (Pati, Harvey, and Barach, 2008).

There are two primary explanations for the restorative potentials of natural elements, evolutionary theory and attention restoration theory. *Evolutionary theory* suggests that over a long period the human species has existed in a natural environment that they relied on for survival skills as well as aesthetic pleasure (Appleton, 1996). Evolutionary theory maintains that settings containing nature are consistently preferred to settings that do not contain nature (Sullivan, 1994). Ulrich claimed that “the experience of visually pleasant physical surroundings is thought to reduce stress by eliciting positive emotions, sustaining no vigilant attention, restricting negative thoughts, and returning physiological arousal to more moderate level” (Ulrich et al., 1991). While evolutionary theory explains why nature environments have a restorative effect on humans, another important theory emphasizes the effect of human performance by directing attention. *Attention restoration theory* suggests that nature images, as positive distraction, help direct the attention of the individual, enabling a pleasurable and contemplative state of mind by involving four components (Kaplan, 1995):

1. Being away- nature image can make an individual feel as if they are distant from the world of pressure.
2. Extent or Coherence- a sense of connectedness and being a part of some large setting.
3. Fascination- engaged in the process of making sense of the image.
4. Compatibility- resonance between the natural setting and human inclination.

(p. 189-195)

A 1991 investigation by Clearwater and Coss focused on scientists who work in isolated and



confined environments. They found that landscape pictures, both with or without water features, were more effective than other types of subject matter in sustaining interest, preference, and relaxation through the year of isolated work. Spatially open nature landscapes were superior to art featuring humans in action or wild animals. In a second study, the investigators displayed a collection of ninety-five pictures of sixteenth- to twentieth- century paintings to volunteers confined in a realistic mock-up module of the International Space Station. Types of subject matter included nature settings, close-up pictures of human artifacts, and people engaged in athletic and recreational activities. Results showed that in the confined setting of the space station mock-up, people responded most positively to paintings of natural landscapes with high depth of field.

More recently, Ulrich and Gilpin (2003) developed guidelines for appropriate art in the healthcare environment. The guidelines were based on an increasing body of evidence on the therapeutic benefits of nature views, thus called “evidence-based art.”

The specific nature views included:

1. Waterscapes, with calm or non-turbulent water
2. Landscapes with visual depth or openness in the foreground, verdant vegetation, positive cultural artifacts, low hills and distant mountains
3. Flowers/ Gardens, healthy fresh flower- garden scenes with openness in the foreground.
4. Figurative Art, including emotional positive facial expressions, leisurely, generational and cultural diversity.

In summation, based on a robust body of evidence on the restorative effect of nature views, nature has proven to be the most preferred subject matter for reducing stress. In hospital settings, stress and attention restoration are needed by both patients and staff and yet little research addresses the preferences of the staff. But not everyone is affected equally when deprived of the same important needs. For example, physiological needs may be more important for the patients in hospitals than for staff in offices. Psychosocial needs may be more important for staff than for patients. Patients need restoration in order to recover from sickness, while staff need it as a means to increase the efficiency and quality of their work. Also, the investigation of preferred types of subject matter (Clearwater and Coss, 1991) indicates an important relationship between physical environment and art preference. For example, nature-base art may have lower value in a room with outdoor views than in a windowless room.

### Style

Previous art preference studies address the issue of style. Studies show that the majority of the public prefer artwork featuring unambiguously (representational) positive subject matter that conveys a sense of security or safety, while ambiguous or abstract art have unintended negative effects (Carpman and Grant, 1993; Ulrich, Lunden, and Eltinge, 1993; Ulrich, 1999).

A study at a university hospital in Sweden investigated whether displaying different types of art, including abstracts and realistic nature scenes, improved outcomes after heart surgery (Ulrich, Lunden, and Eltinge, 1993). One hundred and sixty heart surgery patients in intensive care units were each assigned to one of six picture interventions: two representational nature scenes (one dominated by water and trees, the other a forest), two abstract pictures (one with straight or

rectilinear contours, the other with curvilinear forms), or two control conditions (either no picture or a white panel). Art was mounted above the foot of each patient's bed and in their vision line. Results suggested that patients exposed to the realistic nature scene dominated by water and trees experienced less anxiety and suffered less pain than patients assigned to any of the other five art subject scenarios. The abstract picture dominated by rectilinear forms worsened outcomes, compared with having no picture at all. Several patients reported distinctly negative reactions when looking at this rectilinear, abstract art piece.

One theory that could potentially explain the dislike and some frightened reactions to the straight-edged abstract art is emotional congruence theory. Emotional congruence theory is the notion that people's emotional states bias their perception of environmental stimuli and information in ways that match their feelings (Ulrich, Lunden, and Eltinge, 1993). This theory implies that in a stressful situation (such as being a patient in a hospital), negative emotions are likely to be projected on to the surrounding environment. In the hospital settings where both patients and staff are under emotional stress, ambiguous visual elements (including art) may have emotionally, and even physiologically, harmful effects. In the context of healthcare environments, the popular use of abstract or ambiguous art is a possible threat to the wellbeing of both patients and staff.

A small scale study investigating emotional congruency theory investigated psychiatric patients in a Swedish hospital and found that patients responded positively to representational nature paintings and prints but reacted negatively to several abstract artworks (Ulrich, 1986, 1991, 1999). Several individuals expressed negative reactions to abstract artworks in which the content

was ambiguous and could be interpreted in multiple ways. Moreover, archival data from the previous fifteen years revealed that patients had physically attacked seven of the paintings. Most of the art pieces portrayed disordered, comparatively chaotic arrays of abstract elements.

More recently, Nanda and her associates (2008) administered an art survey to patients, visitors, and staff members at a university hospital to determine appropriateness of art content for patients and staff in a hospital. Certain guidelines were developed from the evidenced-based art from previously completed studies. Feedback revealed that patients, visitors, and staff members responded quite possibly to the art collection as a whole. But there were criticisms from both patients and staff indicating that the art was not inspiring enough (too serene) and should be challenging instead of soothing for patients who needed motivation. However, they did not provide further explanation about the characteristics of challenging art.

Overall, there is a growing body of evidence substantiating the therapeutic benefit of art on patient and staff populations. However, studies also show that not all art is appropriate for the healthcare environment. While nature images and positively reinforcing figurative art has been seen to have restorative effects, abstract or ambiguous content has been seen to increase patient stress. The effects of evidence-based art warrants further exploration. Two main components of art that draw researchers' attention are art content and art style. The focus population is patients.

### Color

Color of the art is another factor that might affect the staff's emotional wellbeing. Red has been associated with vigor, anger, tension (Levy, 1984), excitement, stimulation, and happiness (Plack

and Shick, 1974). Blue or blue–green has been related to relaxation (Levy, 1984), comfort, security, peace, and calm (Plack and Shick, 1974).

In the 1930s, Flagg, an expert on lecturer in anesthesia at Fordham University Medical School (1939), proposed one of the first strictly functional colors—blue- green—for the operating suite. Green is the complementary color of red—the color of human blood and tissue. This color contrast helps keep the surgeon’s eyes acute to the red color in the operating field. Today, blue-green is a universally recognized hospital color not only because of its functional characteristics, but also because it induces a psychological effect by reducing one’s blood pressure, pulse rate and brain waves. Brown (1974) reported that pulse rate changed in response to different colors thereby substantiating the claim that color can induce emotional states. Birren (1979) concluded that, “...brain electrical response to red is one of alerting or arousal, where as the brain electrical response to blue is one of relaxation.” As such, cool colors like blue and green have a positive effect on both functional and emotional states while warm colors such as red have a negative impact.

There are other colors as environmental factors that might affect people’s emotion. White color in patients’ room in hospitals may cause distress. White is an emotionally negative color and rates last or near-last in any color preference test. White is bland, stark, and vapid and among the mentally disturbed, may be desirable for examining rooms, clinics, and laboratories, but glare can be a problem if occupancy is prolonged (Birren, 1979). Aqua, turquoise, and blue-green are hospital colors because of their complementary relationship to fresh tone. “Blue-green should be maintained for the surgical suite. The recovery room could be gentler aqua. The accent color could be a medium turquoise. Pale cool greens are traditional and good. The accent color could

be a medium green (Birren, 1979).” Pink colors have been demonstrated to have a calming effect. Schuass (1979) attributed a tension-relieving effect to a specific shade of pink-which he referred to as “drunk-tank pink”. Exposure to this pink color reduced aggression and caused muscular relaxation in a study done with accomplished athletes in the martial arts and yoga. The calming effect occurred on the average within 2.7 seconds. However, this effect only occurred during the initial exposure to the color.

Birren’s (1979) conclusion supports a basic principle regarding cool and warm colors.

Where there is high brightness and with warm colors (red, pink, orange, yellow), there is a tendency for human beings to be physically aroused and to direct their attention outward into the environment; Where there is less brightness and cooler colors (green, aqua, blue), there is a tendency for human beings to be more relaxed (pp. 96).

Similarly, Wineman (1979) suggested that warm colors (e.g., red) focus people outward, increasing their awareness of their surroundings and alertness to the environment whereas cool colors (e.g., blue, green) focus people inward, allowing them to focus on visual and mental tasks. The former condition might be quite suitable for convalescent patients, maternity patients, or anyone on the way to recovery. The latter environment would be good for those who are likely to be exposed for longer periods, such as hospital staff.

According to Nanda (2008), there are more than one hundred published art preference studies, but few of these studies meet the standard of rigorous scientific investigation. Often the exact images used in previous studies were not published with the study results. The ability to examine these images allows further exploration of the role of other art elements, such as color. This is

essential for the understanding of the effect of color on art perception. This consideration was addressed in her art preference study comparing art preferences of patients with design students (Nanda, Sarajane, and Baladandayuthapani, 2008). In this study the selection of the images was especially emphasized, as preference is based on self-report. Image selection covered a wide range: pure abstract, non-representational forms, representational forms, and realistic nature images. Each of these images was paired based on comparable thematic content. Images were paired with descriptions in the study. According to the research summary, paintings or photographs utilizing blue-green color were rated higher in patient's emotional scale than those with sepia tone or no verdant vegetation background (See Figure 1).

**Figure 1**  
**Art Examples Showing How Color Effects Emotion**



PAIR 1: Realistic: "Solitude" by Lorenz Winston and "The Orchard" by Andy Styler

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## **Summary**

In conclusion, the reviewed studies indicates that stress may be a health issue for hospital personnel and poses a threat not only to their own wellbeing but also to the wellbeing of their patients. The conclusion is that art and its visual components (subject, style, and color) influence the health and wellbeing of everyone within the environment. As illustrated by previous studies, guidelines for appropriate art in the hospital environment have been developed from the point of view of the patient's preference and medical benefit. Art preference of staff has not been studied to any great extent. However, based on previous studies focusing on other users of healthcare facilities, the implication is that there is a need for art or nature view in staff areas to provide visual and mental respite (Pati, Harvey, and Barach, 2008).



## **CHAPTER THREE**

### **RESEARCH DESIGN AND METHODS**

#### **Introduction**

The literature review led to the development of a pilot study where art preference was correlated with stress reducing affect. The evaluation of this method and other considerations led to the final survey. The final survey investigates the art preference of healthcare staff in one break area, as a function on the interaction of art, staff and space. Previous researches of art preference (Nanda, Eisen and Baladandayuthapani, 2008; Ulrich, Lunden, and Eltinge, 1993) have not considered the quality of art as a combination of content, color and style, thereby creating a bias toward art preference inherent in the art selection. The present study differs in that it included three variables: quality of art, emotional response and location appropriateness. Quality of art relates to liking score based on the content, color and style of the art. Emotional response refers to the staff's feeling to specific art examples. Location appropriateness examines staff preferences for break room space. Quality of art is an independent variable. Emotional impact and location appropriateness are dependent variables.

#### **Phase I: Pilot Study**

The pilot study was undertaken in November 2008 to test the methods of investigating art preference by comparing the stress level in two phases- before and after viewing art. In the first phase, the stress level of participants was determined. Participants completed the Index of Clinical Stress form to determine the stress level of participants taking a break in their break rooms. For the second phase of the study, three art pieces are printed and hung on the wall of the

break room (refer to Figure 2 ) for two weeks so as to make sure the participants had an opportunity to be familiar with the artwork in place. Participants repeated the stress test and the art survey. The art survey was administered to find out the liking rate and art perception of each participant while the stress test measured the stress level of participants after viewing displayed artwork for two weeks.

**Figure 2**  
**Images of the Break Rooms with the Art**



Orthopedics



TBI- Traumatic Brain Injury



CVA- Cerebral Vascular Accident



General Break Room

### Index of Clinical Stress

The Index of Clinical Stress was used to determine how the participants felt about the amount of personal stress they were currently experiencing and to provide scientific outcomes of stress measurement. ICS is a 25 item scale, with each item using a 7-point response format self report

stress assessment. This measure includes general descriptor questions about clinical stress (e.g., “I feel extremely tense,” “I feel overwhelmed,” and “I feel that I am near a breaking point”). A summation of the answers provides the researcher with an overall clinical stress score for each participant. The ICS has a documented reliability of  $\alpha = .90$ . The ICS captures information about a client’s perceptions of an imbalance between the demands of daily living and their ability to respond to those demands.

Because of the lack of documented measures relating to the stress level of staff, a compilation of art surveys with open-ended questions was developed by the author to gain a more comprehensive understanding of the staff’s perception of the art.

#### Art survey

The art survey was used to determine preferences and justifications for participant selections from the art pieces displayed in the staff break rooms. In the survey, three pieces of art were shown in the questionnaires and displayed in their break rooms. Participants were asked to choose their favorite art piece and state how much they liked the piece by giving the art piece a rating between 1 to 7 (terrible to very good). The questions included: “Does the picture you prefer hold your attention or interest? What do you like about the picture?”, “Does the picture you prefer elicit any positive feelings? What are they?”

#### Art Samples

The artwork displayed consisted of three images representing three art styles: (A) a realistic photograph, (B) a representative painting, and (C) an abstract painting. The representative and

abstract paintings were developed from a realistic photograph by using Adobe Photoshop (a graphics editing program). The validity of the various styles was confirmed by an artist.

### Participants

The ICS assessment and art survey were completed by twenty employees who worked in a rehabilitation center in Spokane. Participants were identified by their employee number to insure that the same group of people participated in both phases. Of the thirteen respondents, two were male, eleven were female. The study was conducted over a consecutive 30 day period during which participants voluntarily completed the surveys during their shift.

### Settings

The survey was conducted in several staff break rooms. The break rooms were of various sizes and construction: the general break room in the pharmacy department, CVA (Cerebral Vascular Accident) break room, orthopedic break room and TBI (Traumatic Brain Injury) report room. Participants were asked to take the survey in their usual break room. Each art piece measured 11"x17".

**Table 1**  
**Stress Outcomes and Liking Rates**

Room & Settings	Job title	Gender	Stress outcome	Preference & Liking rate
Orthopedics	CRRN	F	-8.35	Realistic photo 7
	HUC	F	-13.34	Realistic photo 7
	RN	F	-13.73	Realistic photo 7
	RN	F	-4.98	Realistic photo 5
General Break Room	MGR	M	-26	Realistic photo 7
	HIM	M	-5.34	Realistic photo 6
	HUC	F	-10	Realistic photo 5
CVA (Cerebral Vascular Accident)	CNA	F	-8	Realistic photo 6
TBI (Traumatic Brain Injury)	NAC	F	3.33	Realistic photo 5
	HCAC	F	8.63	Realistic photo 7
	RN	F	20	Realistic photo 6
	NAC	F	-28	Realistic photo 6
	RN	F	-3.06	Realistic photo 4

Notes: Stress outcomes with negative value stand for a decrease of stress. Stress outcomes with positive value indicate an increase of stress. Liking rate ranges from 1(terrible) to 7(very good).

### Results from the Pilot Study

Based on the ICS assessment, ten out of thirteen healthcare staff had stress reducing outcomes. All of them selected the realistic photograph as their favorite. Comparing the stress reducing outcomes with the ratings given the realistic photograph, no clear relationship was shown. It is not known that the art was responsible for lowering stress level because stress level is impacted by not only environmental factors but also life. For staff, stress mainly comes from daily tasks which vary from time to time. The stress level test in the pilot study did not ensure nor accurately reflect the stress level change influenced by art. There was no guarantee that staff were not being exposed to other factors on the two days compared by the study. As a result, the stress measurement did not reflect the art impact on the individuals nor the art preference on staff. On the other hand, the art survey did generate significant information on what type of art staff

preferred and how it made them feel. Art preference can be impacted by many things, such as the quality of art, the personal perception, and the appropriateness to the environment. The pilot study did not ask why they preferred specific art. These results suggested removing the stress measuring approach and focusing on the art survey by looking into the aspects that affect the art preference.

### **Phase II: Thesis Study**

Results from the pilot study did not provide evidence for the research questions: what art components affect staff preference and what emotional impact of the preferred art. The stress measurement in the pilot study did not show stress-reducing influence (emotional response) of art. To answer these questions, the researcher covered these three aspects in the art survey- the quality of art, the emotional response, and the location appropriateness. Unlike the pilot study, in which the art survey was only to find out the preference of art style, the art survey was reformed to cover more aspects in terms of quality of art (content, style, and color) in order to find out what art components affect staff preference.

Following the pilot study, an art preference study was conducted at Sisters of the Holy Names of Jesus and Mary, with data collection initiated on July 1, 2009, and completed on July 9, 2009. The healthcare facility is a nursing home for retired nuns. Approximately fifty staff work in the facility. Fifty percent of the staff are nurses or nursing assistants. The researcher introduced the project to the nursing director, obtained approval from the Institutional Review Board (IRB) Spokane (refer to Appendix 3, both of the pilot study and the thesis study are approved by Spokane IRB), and received permission to conduct the survey. Although there is no particular break room for the staff,

the report room located adjacent to the public library serves as a break room for staff. Two survey baskets were placed in the report room for the staff to obtain and deposit the paper survey.

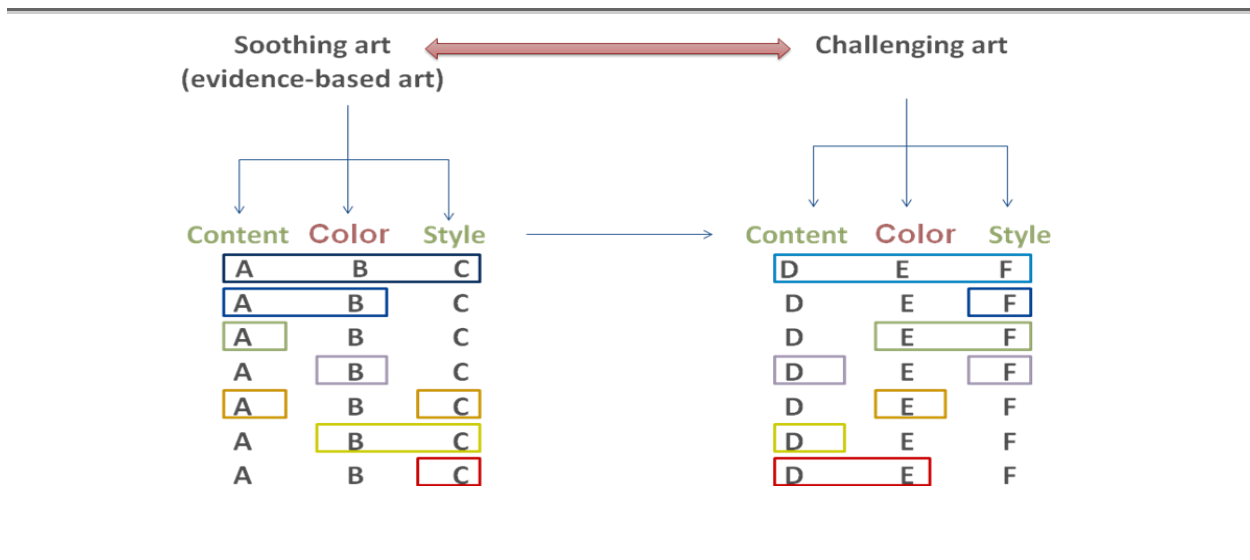
Instructions were attached to each survey, clarifying special terms and research description (refer to appendix 4). The survey of the nursing home yielded eighteen completed responses (sixteen nursing assistants or certified nurses, two nursing coordinators).

### **Art Categories**

For this study, the researcher develops eight art categories which are illustrated in Figure 3. They are coded as ABC, ABF, DBC, AEF, AEF, DBF, DEC and DEF. The coding sequence of each category is based on the art components of content, color and style. Under each component are two soothing components and two challenging components. For example, A and D represent soothing content (positive nature content) and challenging content (negative nature content). B and E represent soothing color (cool color) and challenging color (warm color). C and F represent soothing style (representational style) and challenging style (abstract- representative style).

The art categories range from soothing art to challenging art. Soothing art, based on evidence-based guidelines of appropriate art for hospital patients (discussed in the previous section), is characterized by positive nature images (including scenery, human or animal figures), cool colors and representative style which produce peace and calm. Whereas challenging art is characterized by negative nature content (including scenery, human or animal figures) with warm colors and abstract- representational style.

**Figure 3**  
**Art Categories**



The definition of each category is as followed:

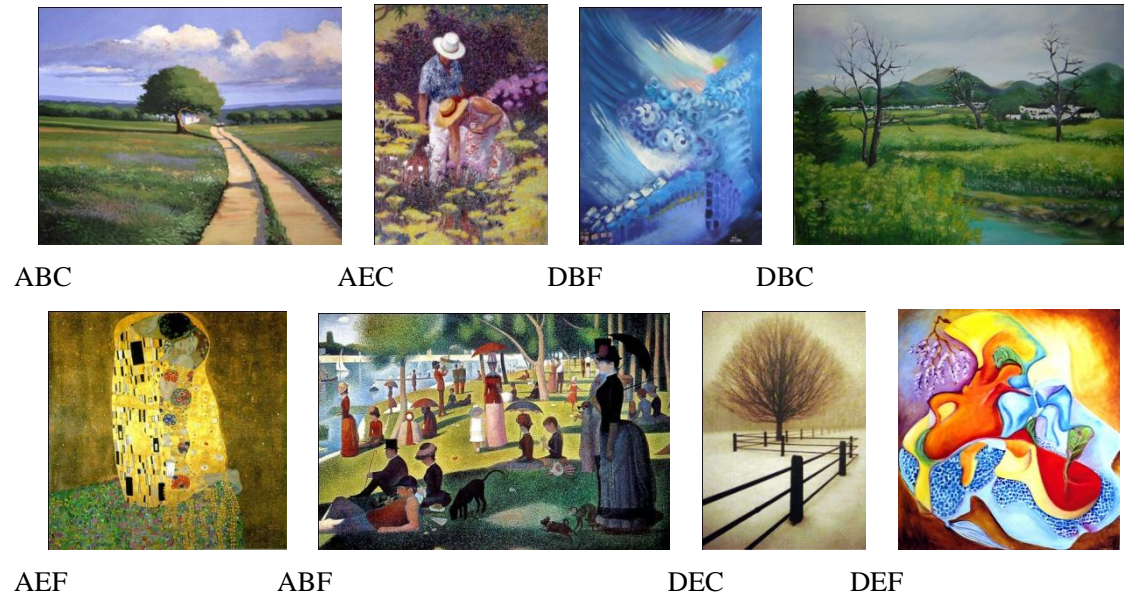
1. ABC: evidence-based art. This category is considered to reduce stress, effect wellbeing and health. Images should be selected based on the guidelines developed by Ulrich and Gilpin in 2003, which are characterized here by positive nature images with calm and soft color and realistic representational style.
2. ABF: Positive nature image with predominantly blue-green color in abstract representational style.
3. DBC: Realistic negative nature content in calming blue or green background.
4. AEC: Realistic positive nature content in unsaturated colors of more black, white and grey or aggressive and bold colors of more red.
5. AEF: Positive nature images with either dull or bold color in abstract representational style.
6. DBF: Unrealistic representational negative nature image in soothing colors more blue-green.



7. DEC: Realistic negative nature image in sepia tone or in bold and aggressive color.
8. DEF: Challenging art. This category is thought to be the opposite of evidence-based art.  
Abstract representational negative nature image in sepia tone or in bold and aggressive color.

American Art Resources (AAR) is a professional art consulting firm working exclusively with the healthcare industry. A recognized leader in the field of therapeutic environments, AAR has created healing art programs for healthcare facilities since 1982. Its art researching program has a collection of thousands of images that are considered to be appropriate art for healthcare environments. Consequently, the art selection for this study started with AAR collection. In addition, this researcher searched online for art that was confluent with the art categories established by the researcher. Fifty-six art images were selected and classified according to the eight categories discussed previously in this chapter. To ensure that researcher bias did not influence image categorization, six students (refer to appendix 2) categorized the fifty-six images. This process narrowed the final selection group to eight images that meet the maximum agreement of the classification. Figure 4 illustrates the final eight images that represent eight art categories. Five of the eight images were from the AAR collection. They were listed below as ABC, AEC, AEF, ABF, and DEC. The other three were selected through research by this researcher. Table 1 lists the titles, classification, content, and response summary.

**Figure 4**  
**Selected Images**  
**Based on the Maximum Agreement**



Note: Clockwise from top left: “The Orchard” by Andy Styler, “Hatted Man and Women in Garden”: Image © Pauline Howard, courtesy of Harris Gallery. “Blue Rhythm” by Zhen Lian, “Yellow Fields” by Zhen Lian, “Spring Hope” by Irene Nowicki, “Solitude”: Image © David Lorenz Winston, courtesy of The McGaw Group, LLC., “Sunday Afternoon on the Island of La Grande Jatte” by George Seurat, “The Kiss” by Gustav Klimt, courtesy of The McGaw Group, LLC.

### Survey Development

For the survey, the sequence of images was randomized. It was not possible for the researcher to stay on site and show the images to every staff member. The lack of computer availability to staff made it impossible to conduct an online survey. Therefore, a paper survey was developed with one image per page and the following questions were printed under each art illustration. Participants rated each art piece on a five- point rating scale:

Q1 (Quality of art): What do you think of this picture?

Very good      Good      Ok      Not good      Terrible

Q2 (Emotional impact): How does this picture make you feel?

Much better      Better      No different      Worse      Much worse

Q3 (Location appropriateness): Would you hang this picture in your break area?

Definitely      Probably      Not sure      Probably not      Definitely not

Question 1 investigated the liking rate based on personal perception of art quality. Question 2 investigated if respondents perceive a certain stress relief effect in viewing art and report on whether art can make them feel better, worse or no emotional impact. Question 3 investigated if respondents think the art is appropriate to present in their break area (i.e., if they would choose this particular art piece to put in this break room).

Three sub-questions were also given related to the quality of art, in an attempt to examine what art components affect liking rate:

Do you like the following components of the picture?

Q1-a Content      Yes      Not sure      No

Q1-b Color      Yes      Not sure      No

Q1-c Style      Yes      Not sure      No

### **Analysis**

The ratings for the five-point scale questions were converted to a numerical scale from -2 to +2.

The analyses were conducted in SPSS (Statistical Package for Social Sciences) and Microsoft Office Excel. All  $p$  values were two-tailed and were compared with 10% ( $p < 0.1$ ) to test for



significance.

The first step of the analysis was using descriptive statistics to describe the basic features of the data collection, such as the percentage of distribution of positive responses (shown in table 1 with image description) and the ranking of image based on mean (shown in table 2 with median, mode and standard deviation). The median is the score found at the exact middle of the set of values when listed in numerical order. The mode is the most frequently occurring value in the set of scores. The standard deviation measures the variability of the data's distribution. A low standard deviation indicates that the data points tend to be very close to the mean, while high standard deviation indicates that the data are spread out over a large range of values. This information simply describes what the data shows, giving the reader an overall sense of the data being analyzed, rather than trying to reach conclusions that extend beyond the immediate data alone (Sternstain, 1984). Therefore, this part of the analyses answered the question, "what type of art do healthcare staff prefer in their break room?"

The second step was to find out why the healthcare staff prefer one specific image over others. A paired-sample *t* test on the quality of art (three art components) was conducted to analyze if there was significant difference between content (A and D), color (B and E), and style (C and F). All the images were paired up three times in order to compare only one variable (content, color or style) for each time. The paired Image and the mean differences were listed in table 3.



Finally, a content analysis of the qualitative data received from staff was undertaken, with comments placed into Appendix 5. The content analysis of comments gives an in-depth look into the ratings of emotional impact and location appropriateness.

**Table 2**  
**Survey Image, Description and Response Summary**

Art Title and Artist	Classification	Image Description	Response Summary Across Three Ratings
<p>“The Orchard” by Andy Styler</p> 	ABC	Realistic nature landscape, painting of a field with a path leading to a broad canopy tree amidst rich green fields	<p>78% of staff thought the artwork was good (39%) or very good (39%).</p> <p>77% of staff thought the artwork made them feel better (44%) or much better (33%).</p> <p>78% of staff would probably (22%) or definitely (56%) hang the artwork in their break area.</p>
<p>“Hatted Man and Women in Garden” by Pauline Howard</p> 	AEC	Realistic nature with human figures, painting of man and woman in the garden, in pastel shades.	<p>71% of staff thought the artwork was good (47%) or very good (24%).</p> <p>47% of staff thought the artwork made them feel better (41%) or much better (6%).</p> <p>55% of staff would probably (44%) or definitely (11%) hang the artwork in their break area.</p>

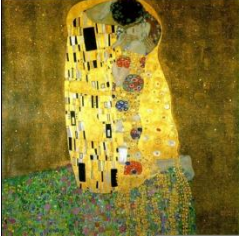
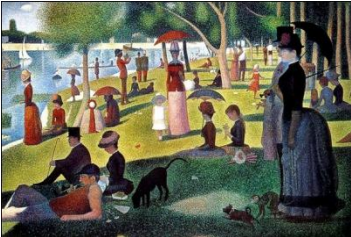
(continued)

Table 2 (continued)

Art Title and Artist	Classification	Image Description	Response Summary Across Three Ratings
<p data-bbox="178 456 562 488">“Blue Rhythm” by Zhen Lian</p> 	DBF	<p data-bbox="785 456 1220 634">Abstract representational, painting of turbulent water in clear blue with bold brush strokes.</p>	<p data-bbox="1226 456 1919 537">56% of staff thought the artwork was good (39%) or very good (17%).</p> <p data-bbox="1226 553 1919 634">44% of staff thought the artwork made them feel better (33%) or much better (11%).</p> <p data-bbox="1226 651 1919 732">44% of staff would probably (11%) or definitely (33%) hang the artwork in their break area.</p>
<p data-bbox="178 818 562 850">“Yellow Fields” by Zhen Lian</p> 	DBC	<p data-bbox="785 818 1220 997">Realistic nature with artifact, painting of three wilted trees with a background of green field and old houses.</p>	<p data-bbox="1226 818 1919 899">65% of staff thought the artwork was good (41%) or very good (24%).</p> <p data-bbox="1226 915 1919 997">44% of staff thought the artwork made them feel better (25%) or much better (19%).</p> <p data-bbox="1226 1013 1919 1094">48% of staff would probably (24%) or definitely (24%) hang the artwork in their break area.</p>



(continued)

Table 2 (continued)

Art Title and Artist	Classification	Image Description	Response Summary Across Three Ratings
<p data-bbox="205 459 541 488">“The Kiss” by Gustav Klimt</p> 	AEF	<p data-bbox="825 459 1213 690">Abstract representational, painting of a couple shrouded in gold and symbols sharing a kiss against a bland background.</p>	<p data-bbox="1255 459 1911 690">39% of staff thought the artwork was good (28%) or very good (11%). 18% of staff thought the artwork made them feel better. 11% of staff would probably hang the artwork in their break area.</p>
<p data-bbox="191 824 554 954">“Sunday Afternoon on the Island of La Grande Jatte” by George Seurat</p> 	ABF	<p data-bbox="825 824 1213 1055">Abstract representational nature scene with human figures, painting of a lush green picnic scene with a background of water.</p>	<p data-bbox="1255 824 1911 1109">67% of staff thought the artwork was good (39%) or very good (28%). 50% of staff thought the artwork made them feel better (39%) or much better (11%). 50% of staff would probably (39%) or definitely (11%) hang the artwork in their break area.</p>

(continued)

Table 2 (continued)

Art Title and Artist	Classification	Image Description	Response Summary Across Three Ratings
<p>“Solitude” by David Lorenz Winston</p> 	DEC	Realistic nature landscape, photograph of a solitary tree in sepia tone. The tree is leafless and stands in a field of snow.	<p>61% of staff thought the artwork was good (22%) or very good (39%).</p> <p>53% of staff thought the artwork made them feel better (29%) or much better (24%).</p> <p>45% of staff would probably (28%) or definitely (17%) hang the artwork in their break area.</p>
<p>“Spring Hope” by Irene Nowicki</p> 	DEF	Abstract representational nature landscape, painting of symbolized shape of spring-an upside down cherry blossom tree in bright red background.	<p>58% of staff thought the artwork was good (29%) or very good (29%).</p> <p>47% of staff thought the artwork made them feel better (41%) or much better (6%).</p> <p>28% of staff would probably (17%) or definitely (11%) hang the artwork in their break area.</p>



## CHAPTER FOUR

### RESULTS

#### Image Rankings

**Table 3-1**  
**Ranking of Images as Per Mean Value of Ratings**  
**Quality of Art**

Ranking	Category	Mean	Standard Deviation	Mode	Median
Rank 1	ABC	1.17	0.786	1	1
Rank 2	AEC	0.94	0.748	1	1
Rank 3	DEC	0.89	1.079	2	1
Rank 4	ABF	0.83	0.985	1	1
Rank 5	DBC	0.76	0.970	1	1
Rank 6	DBF	0.67	1.085	1	1
Rank 7	DEF	0.47	1.463	2	1
Rank 8	AEF	-0.11	1.367	1	0

In rating of quality of art, “The Orchard” (ABC) was the most highly rated image (78%) with a significant percentage of staff rating the artwork as good (39%) or very good (39%). “The Kiss” (AEF) was ranked as the lowest quality of art with only 39% of staff rating the artwork as either good (28%) or very good (11%) (Table 1).

Comments (Appendix 5) of ABC regarding to the quality of art varies: “Content and style draw me into the scene”, but “no colors to attract attention”. Comments of AEF included: “don’t like the content”, “don’t like the abstract people”. These indicate a lower impact of color related to staff preference.

Comparing the top four and bottom four art categories, overall, the quality of art with positive nature content in representative style (ABC, AEC) was ranked higher than those with negative nature content and abstract-representative style (DBF, DEF).

**Table 3-2**  
**Ranking of Images as Per Mean Value of Ratings**  
**Emotional Impact**

Ranking	Category	Mean	Standard Deviation	Mode	Median
Rank 1	ABC	1.11	0.758	1	1
Rank 2	ABF	0.50	0.857	0	0.5
Rank 3	AEC	0.47	0.717	0	0
Rank 4	DEC	0.35	1.272	-1	1
Rank 5	DBC	0.31	1.250	0	0
Rank 6	DBF	0.22	1.114	1	0
Rank 7	DEF	0.09	1.202	1	0
Rank 8	AEF	-0.35	1.057	0	0

As for emotional impact, “The Orchard” (ABC) was the most highly rated image, 77% of staff thought the artwork made them feel better (44%) or much better (33%). While “The Kiss” (AEF) was ranked as the lowest quality of art with 18% of staff responding that the artwork made them feel better (Table 1). Comments (Appendix 5) reflected that ABC produced positive feelings such as “calming”, “relaxing”, “restful”, and “peaceful”, whereas AEF was “confusing”, “not sure”, and “too sensual”. The ranking of emotional impact overall is only slightly different from ranking of quality of art. However, comparing the top four and bottom four art categories, the art with positive nature content in representative style made staff feel better than those with negative nature content in abstract-representative style.

**Table 3-3**  
**Ranking of Images as Per Mean Value of Ratings**  
**Location Appropriateness**

Ranking	Category	Mean	Standard Deviation	Mode	Median
Rank 1	ABC	1.22	1.060	2	2
Rank 2	ABF	0.28	1.127	1	0.5
Rank 3	AEC	0.22	1.309	1	1
Rank 4	DEC	0.17	1.249	-1	0
Rank 5	DBC	0.11	1.231	-2	0
Rank 6	DBF	0.00	1.620	1	0
Rank 7	DEF	-0.11	1.323	0	0
Rank 8	AEF	-0.83	0.985	-1	-1

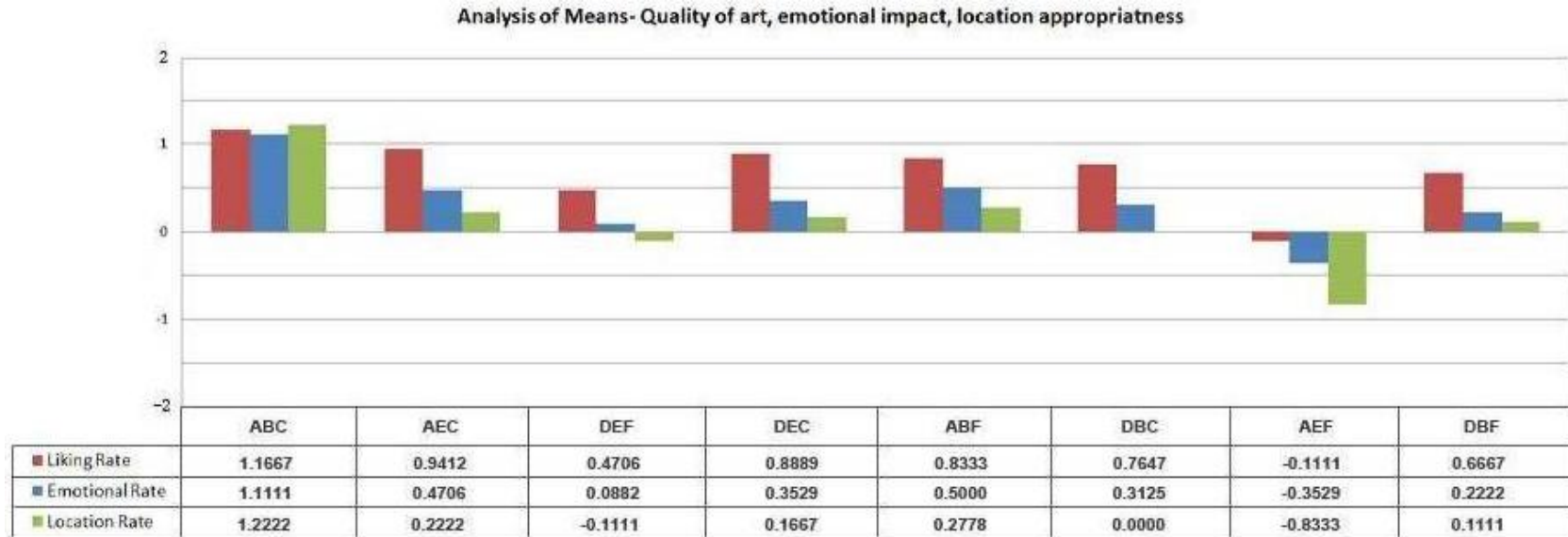
Location rating was similar to the emotion rating. “The Orchard” (ABC) was the most highly rated image with 78% of staff stating they would probably (22%) or definitely (56%) hang the artwork in their break area. “The Kiss” (AEF) was ranked at the bottom for location appropriateness with 11% of staff responding they would probably hang the artwork in their break area (Table 1). Comments (Appendix 5) reflected that ABC was considered very appropriate in their break room because they would “prefer a break room to invoke feelings of calm and relaxation, also to include elements of nature” whereas AEF was generally not appropriate because the subject was “too sensual” and “uncomfortable to look at”. It is probably because the staff are the care givers of the retired nuns where sensual content is considered inappropriate in their working environment. Comparing the top four and bottom four in this category, the art with positive nature content in representative style was considered proper art for displaying in the staff break area and those with negative nature content in abstract-representative style were considered inappropriate for display in the staff

break room.

In an overall rating analysis across eight art categories, art categories with more soothing components (positive nature content, cool colors or representative style) were consistently rated higher than categories that had more challenging components (negative nature content, warm colors or abstract-representational style). An exception was the DEC (“Solitude” by David Lorenz Winston) in sepia tone which actually rated higher across three ratings than DBC (“Yellow Fields” by Zhen Lian) in green colors. This may have occurred because the tree in DBC looks dead due to the lack of leaves but are surrounded by greenery, whereas the tree in DEC appears dormant in winter with the promise of blossoms in the spring.

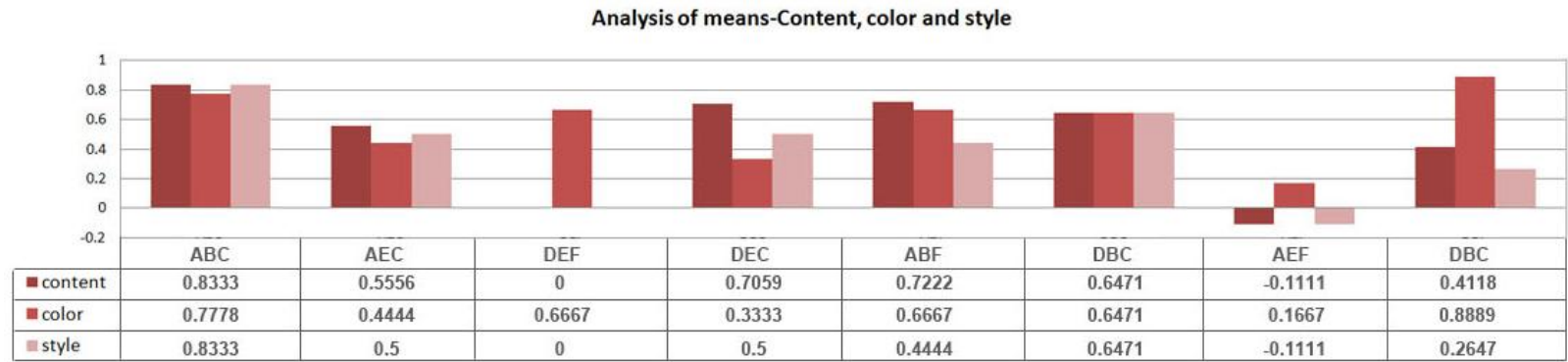
Figure 5 graphically represents the analysis of means of the ratings by histogram showing the statistically significant mean values for the three rating scales: quality of art (What do you think of this picture?), emotional impact (How does this picture make you feel?) and location appropriateness (Would you hang this picture in your break area?). Conspicuously, the ABC category is rated the highest in all three areas. Emotional rating and location appropriateness are significantly higher than other art categories, which indicates that the ABC art category (evidence-based art) is most preferred by the healthcare staff for their break room.

**Figure 5**  
**Analysis of Mean across the Rating of**  
**Quality of Art, Emotional Impact and Location Appropriateness**



Note: 2= very good (quality), much better (emotion), definitely (location); 1= good (quality), better (emotion), probably (location); 0= ok (quality), no difference (emotion), not sure (location); -1= not good (quality), worse (emotion), probably not (location); -2= terrible (quality), much worse (emotion), definitely not (location)

**Figure 6**  
**Analysis of Mean of Quality of Art**

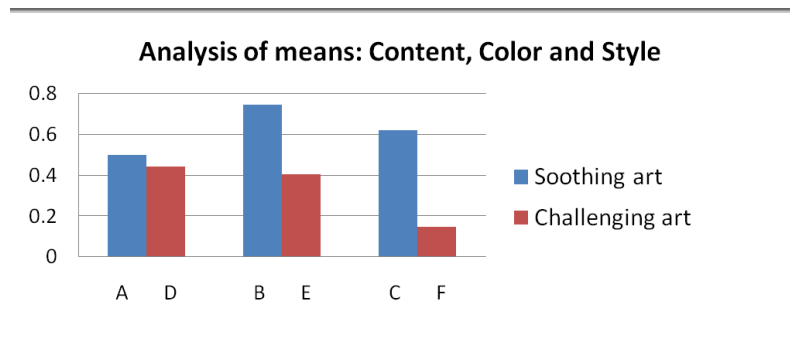


### **Correlation between Quality of Art and Emotional Impact and Location Appropriateness**

Figure 5 illustrates that the ratings across three questions of all the art categories (except for ABC) has a degressive tendency. The decrease of the location appropriateness is accompanied by a progressive decrease in emotional impact; the decrease of the emotional impact is accompanied by a progressive decrease in perceived quality of art. This indicates that quality of art is the most important independent variable in testing staff art preference. The higher the quality of art rating, the better the art makes staff feel and the more appropriate they think it is in the break room.

Figure 6 shows more detail of the mean of the quality of art-liking rate of the content, color and style across each category. Corresponding to the quality of art rating in Figure 5, the quality of art is related to the quality of the content and style. The implication is that the quality of the art is highly dependent on content and style. There is a positive correlation between content and style that impacts staff's emotion and selection.

**Figure 7**  
**Analysis of Means: Content, Color and Style**



Note: A= positive nature content, B=cool color, C= representational style  
 D= negative nature content, E= warm color, F= abstract representational style

### Comparing Content, Style and Color

In the comparison between positive nature content “A” and negative nature content “D” based on the mean, there is no significant difference in Figure 7. The paired image in Table 4-1 shows no significant difference between the liking of positive and negative content.

**Table 4-1**  
**Paired Image Difference: Content**

Paired Image	Mean Difference	Std. Deviation	p-value
ABC-DBC	.176	.883	.422
AEF-DEF	.176	1.074	.508
ABF-DBF	.294*	.588	.156
AEC-DEC	.176	.951	.455

In the comparison between cool color “B” and warm color “E” based on the mean, cool colors



were preferred over warm colors. The paired image (Table 4-2) shows a significant difference between ABF and AEF in terms of color, with  $p < 0.1$ . The other paired images indicate a large difference between “B” and “E”, but the results were not significant.

**Table 4-2**  
**Paired Image Difference: Color**

Paired Image	Mean Difference	Std. Deviation	p- value
ABC-AEC	.333	.970	.163
ABF-AEF	.500 *	.707	.008
DBC-DEC	.353	1.057	.188
DBF-DEF	.222	.548	.104

\*shows a significant difference at  $p < 0.1$

Representative “C” images were highly rated in the comparison to the abstract- representational “F” images (Figure 7). All the paired images show a significant difference between the representational and abstract representational style (Table 4-3), with  $p < 0.1$ .

**Table 4-3**  
**Paired Image Difference: Style**

Paired Image	Mean Difference	Std. Deviation	p-value
ABC-ABF	.389 *	.850	.069
DEC-DEF	.500 *	1.150	.083
AEC-AEF	.611 *	.778	.004
DBC-DBF	.406 *	.758	.049

\*shows a significant difference at  $p < 0.1$

In the content analysis of comments (Appendix 5), staff comments on the

abstract-representational style indicated that the images were confusing. Comments concerning images of abstract-representational style were primarily negative. It was observed that the content and color elicited more comments than style. Responses on the positive content and cool color were significantly positive. Opinions were divided on responses of the negative content and warm color. Typical responses to warm colors included adjectives such as “lively”, “happy” and “pleasing”. Responses to the negative nature scenes such as leafless trees elicited responses such as “lonely but not in a bad way”, “quiet”. These responses indicate that even negative nature content and/or warm color can make staff feel good and that staff would like to hang such art in their break room.

## CHAPTER FIVE

### DISCUSSION

This study confirmed that the style of art (representative or abstract-representational style) has significant impact on staff art preference. However, the findings may not be appropriate for areas that staff respite is not a concern. Barbara J. Huelat (Zensius, 2008), a healing environment interior design consultant to healthcare facilities, declared that in the high-stress environment of an inner-city emergency room, staff respite was not a significant factor in designing the project. As she said, “In fact, when we talked to the staff about it, they almost became insulted; their mentality was that this is their job, and they were going to be there no matter what, even if it felt like a battleground” (Zensius, 2008). It appears from this statement that staff who choose emergency room care are not particularly concerned with staff respite. However, findings of this study may be appropriate for general break rooms when staff respite is a concern. Furthermore, the research findings are the consequence of (quality of art) art, (user group) people and (location) place. This study focused on the general break room in a nursing care facility. Other healthcare populations or locations may have different findings, but the framework of art, people and place can be applied to any kind of art preference study.

Based on the comments of staff across eight art categories, the evidence-based art ABC constantly generated comments related to stress reduction (peace, calm and relax). This proved consistent with the hypothesis that healthcare staff prefer to see evidence-based art in their break

area because of the soothing art components. On the other hand, staff responses on the other art categories were ambivalent. There were negative and positive responses to the challenging art pieces. Negative comments related to depression while positive comments related to arousal. For example, art category DEF elicited negative comments such as “confused” and “upset” whereas positive comments included “happy” and “energetic”. Typically, art that is considered evocative and which generates discussion is not necessarily preferred or perceived as stress reducing by patients (Nanda, Sarajane, and Baladandayuthapani, 2008).

Unlike the patient population, healthcare staff rated challenging art positively (except for ‘The Kiss’ discussed later) and there was a balance of positive and negative comments. Based on the literature on staff wellbeing, stress and fatigue of staff members are two main concerns (Page, 2004; Barach and Weinger, 2007). It is possible that art that is evocative and generates discussion is perceived as energizing and novel by staff. This explains why challenging art received positive comments from healthcare staff.

Based on the rating across eight art categories, the challenging art of AEF, which contains two challenging components and one soothing component, was rated the lowest in terms of all three aspects (quality of art, emotional impact and location appropriateness). This proved inconsistent with the hypothesis that the least favorite art would be the most challenging art (DEF). Based on the comments of staff, the subject of art elicits feelings like romance and passion but deemed inappropriate for their break room. This indicates that although there might be a positive

emotional rating for some artwork, this would not necessarily reflect their decision to place it in a room. Art selection seems to be more dependent on their emotional need rather than the aesthetic value of art. For healthcare staff, their primary need is stress-relief and empowerment. ‘The Kiss’ was perceived as sensual and emotional, this explains why although ‘The Kiss’ is not the most challenging art within eight categories, it was judged the least appropriate art in staff break room.

## CHAPTER SIX

### CONCLUSIONS

#### **Summary of the Research**

Previous research reflects a connection between environmental stress and the wellbeing of healthcare staff. The emotional health of staff indirectly affects the patients' wellbeing. As such, it is of vital importance to understand environmental elements that promote stress reduction and contribute to the wellbeing of the healthcare staff. Because the healthcare staff spend long periods of time in hospital settings, they may be particularly susceptible to the effects of the physical environment in the healthcare setting. Since appropriate art, as an environmental element, potentially possesses benefits of stress reduction, thus wellbeing, it is important to understand what type of art healthcare staff prefer and what contributes to their wellbeing. Healthcare staff may benefit both psychologically and physiologically if art is infused into the healthcare setting.

In the review of literature (Kaplan, Talbot, and Kaplan, 1988; Bakos, et al., 1980; Duncan, 2003) on the effect of hospital environment on staff health, it was apparent that certain design elements might affect stress-reduction and staff wellbeing. Existing research (Heerwagen, et al., 1998; Clay, 2001) confirmed that stress can be reduced through exposure to nature and natural elements (such as trees, flower, water, natural sounds). The literature review (Ulrich, Lunden, and Eltinge, 1993; Ulrich, 1986, 1991, 1999) confirmed that people in stressful environments, such as

hospital patients and staff, are negatively influenced by ambiguous visual elements (such as abstract paintings and unrecognizable images). The literature review (Birren, 1979; Schuass, 1979) also confirmed that red has been associated with vigor, anger, tension (Levy, 1984), excitement, stimulation, and happiness (Plack and Shick, 1974). Blue or blue-green has been related to relaxation (Levy, 1984), comfort, security, peace, and calm (Plack and Shick, 1974). The literature confirmed (Ulrich, 1991, 1999; Nanda et al., 2008; Heerwagen and Orians, 1990) that the content and style of art has a critical impact on the patient's health; however, art preference studies on staff have not been done. Thus, this researcher anticipated that the art intervention should serve as a positive restoration. In the literature review (Clearwater and Coss, 1991; Heerwagen and Orians, 1990 ), stress and attention restoration are needed for both patient and staff, but staff is affected differently than patients. The purpose of this study was to examine the art preference of healthcare staff, with the goal of suggesting what type of art should be considered when choosing appropriate art for staff in their break room. The staff's well-being impacts patients well-being. Stress and fatigue could impact performance in regards to reaction time or alertness, irritability, attention to detail, problem solving ability, energy level, and decision-making ability, and thus contribute to errors and a reduced quality in healthcare (Barach and Weinger, 2007; Page, 2004). Results from this study may contribute to a greater understanding by healthcare designers of the need for art that will decrease stress and enhance the care for patients.

## Summary of Findings

### Image Rankings

Healthcare staff consistently preferred images of representative art with positive nature content in cool colors over images of abstract-representational art with negative nature content in warm colors. The results of the rankings across three questions (“what do you think of this picture?”, “How does it make you feel?” and “would you hang it in your break room?”) supported the hypothesis that healthcare staff would prefer soothing art over challenging art. Overall, art categories with more soothing components were rated higher than those with more challenging components. An exception was the DEC (“Solitude” by David Lorenz Winston) in sepia tone actually rated higher across three ratings than DBC (“Yellow Fields” by Zhen Lian) in green colors. This is indicative of that color is less influential on staff’s liking.

### Correlation of Quality of Art, Emotional Impact and Selection of Images

There was a high correlation between the quality, emotion, and selection rating. However, staff rating scales to quality of art was overall higher than ratings of how an image made them feel; rating scales to emotional impact was overall higher than rating of selecting the art for their break room. There was a clear decreasing pattern of the rating scale (with quality rating higher than emotion and selection), implying that even an image with a mild challenging component could get a strong negative emotional response and even a stronger negative selection response.



Furthermore, unlike the other art categories, ABC category had the equally high scale across three ratings. This implies that art that is considered to be of the highest quality has a strong positive impact on the emotional response and is the most appropriate art for the staff's break room. Results also show that the quality of art is strongly related to the quality of content and style. A high quality rating corresponds to art that has positive nature content and is representational style.

### Comparing Content, Color and Style

In the quality of art, style is the most influential component that affects staff's art preference, as shown in the paired sample t-test. There is a significant difference between the liking of representative and abstract-representational style. Comments to the abstract-representational style were significantly negative. It was observed that the content and color elicited more comments than style. However, these comments were not necessarily negative. There were positive responses on the negative nature content and warm color. Unlike the patient population, many healthcare staff commented positively on challenging art. Based on the literature on staff wellbeing, stress and fatigue are two main concerns (Page, 2004; Barach and Weinger, 2007). It is possible that challenging art is perceived as energizing and novel by staff. This explains why negative nature content and warm color received positive comments from healthcare staff.

**Limitations:****Sample**

The study has various shortcomings that relate to validity. One is the small effect based on the small sample size (n=18) because of limited staff resources. The sample size was smaller than the recommended size of 30 or more (Bollen, 1989). To detect a real difference among the rating of the art, there should be a larger sample group. The other shortcoming is that there might be a gender bias influencing the findings on art preference.

**Method of Presentation**

Due to logistical constraints of showing full-scale art pieces, the study used paper-print art survey for the staff, requiring them to project the survey image as potential artwork and respond accordingly. It is possible that responses to the same images as artwork hanging in the room may be different. Furthermore, it should be noted that the act of asking staff to choose images for artwork in their room may provide them with a sense of control, which could factor into their response. Several researchers have demonstrated that access to control reduces the amount of stress people experience in stressful situations (Fuller, Endress and Johnson, 1987; Houston, 1972; Krantz and Schultz, 1979).

## Art Categories

The art categories were first defined by this researcher then rated by six students. Fifty-six images were reduced to eight images representing eight categories that meet the maximum agreement of the classification. Despite the small sample in rating art categories, the fact that the expected outcomes (art categories) were confirmed is notable and it develops a good foundation for this art survey. Also, because the student group who helped selecting the art samples is different than the test group in the final study, selection of the art samples may be different if asked different group of people.

## **Future Research**

This researcher hopes that this study will encourage further research in exploring the link between the environment and art preference. Clearwater and Coss (1991) found that the landscape pictures were more effective in a constrained physical environment, which implies the environment has a confounding effect on art preference. In the hospital setting, healthcare staff break rooms vary. Usually it is difficult to find a spacious room with nature-view windows. The effect of the physical environment on art preference might influence the rating of quality of art. For example, staff in small break rooms without windows might be more receptive to art than staff in a large room with ample nature views. Future studies should include different physical settings to allow a comparison of art preferences related to different environmental situations.

It is important to note that the study methodology was not designed to test the stress-reducing effect of the art but the overall art preference. Therefore, there is no assessment for blood pressure or respiratory rates. The art survey was based on self-report hence the results might be subjective. Future study should consider testing the stress reducing effect by applying perception and objective assessments correlated to stress and art work. Pati, Harvey and Barach (2008) have developed a methodology of testing the stress level of healthcare staff. The findings of such a study could have major impact on the stress-free environment design for healthcare staff in the future.

## **Conclusions**

This study expands our understanding of the link between healthcare staff and their environment. The results of this study illustrate the need to identify art preference of healthcare staff as art can affect their emotional and physical wellbeing. Since the psychological and physiological wellbeing of healthcare staff is extremely important in contributing to their work, it is vitally important to understand what type of art staff prefer. Through the infusion of appropriate art in break room environments, staff frequently experiencing stress at work will have more opportunities to feel at ease. If the wellbeing of staff can be increased, stress and fatigue can be reduced. The study results could contribute to practice and research in several ways. First, the results can provide design practitioners, facility managers, and administrator guidelines for choosing art that healthcare staff prefer. Second, design practice achieves staff restoration and,

ultimately, job satisfaction. Additionally, more effective work performance should improve patient safety. Results determined that staff prefer representational, nature art over abstract-representational art, thus this preferred art should provide positive psychological benefits to the staff and improve their focus on patients and care giving.

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## APPENDIX 1

### Category 1 (ABC)

○○○	Content	Color	Style
ABC 1 *	○○○○○	○○○○○	○○○○○
ABC 2	○○○○○	○○○○●	○○○○○
ABC 3	○○○○○	○○○○○	○○○○○
ABC 4	○○○○○	○○●●●	○○○○○
ABC 5	○○○○○	○○○○○	○○○○○
ABC 6	○○○○○	○○○○●	○○○○●
ABC 7	○○○○○	○○○○○	○○○○○

### Category 2 (ABF)

○○●	Content	Color	Style
ABF 1	○●●●●	○●●●●	●●●●●
ABF 2	○○●●●	●●●●●	●●●●●
ABF 3	○○○●●	○○●●●	○○●●●
ABF 4	○●●●●	●●●●●	●●●●●
ABF 5	○○○○●	○○○○●	○○○○○
ABF 6	○○●●●	○●●●●	●●●●●
ABF 7*	○○○○○	○○○○○	○○○○●

### Category 3 (DBC)

●○○	Content	Color	Style
DBC 1*	○●●●●●	○○○○○●	○○○○○●
DBC 2	○○○●●●	○○○○○●	○○○●●●
DBC 3	○○○○○●	○○○●●●	○○○○○○
DBC 4	○○○○●●	○○○●●●	○○○○●●
DBC 5	●●●●●●	○○○●●●	○○○○○○
DBC 6	○○○○○●	○○○○○●	○○○○○●
DBC 7	●●●●●●	○○○●●●	○○○●●●

### Category 4 (AEC)

○●○	Content	Color	Style
AEC 1	○○○●●●	○○●●●●	○○○○●●
AEC 2	○○○○●●	○○○●●●	○○○●●●
AEC 3	○○○●●●	○○●●●●	○○○○●●
AEC 4	○○○●●●	○○○●●●	○○○○●●
AEC 5	○○○○○●	●●●●●●	○○●●●●
AEC 6*	○○○○○○	○○●●●●	○○○○○●
AEC 7	○○○○○●	○○○●●●	○○○○●●

### Category 5 (AEF)

○●●	Content	Color	Style
AEF 1	○○○○●●	●●●●●●	○○○●●●
AEF 2*	○○○○●●	○●●●●●	●●●●●●
AEF 3	○○○●●●	○●●●●●	●●●●●●
AEF 4	○○○●●●	●●●●●●	○○○●●●
AEF 5	○○●●●●	○○●●●●	○○○●●●
AEF 6	○○○○●●	○○○○●●	●●●●●●
AEF 7	○○○○○●	○○●●●●	○○●●●●

### Category 6 (DBF)

●○○	Content	Color	Style
DBF 1	●●●●●●	●●●●●●	●●●●●●
DBF 2*	○○●●●●	○○○○○●	●●●●●●
DBF 3	○○○○●●	○○○●●●	○○●●●●
DBF 4	○●●●●●	○○●●●●	○●●●●●
DBF 5	○●●●●●	○●●●●●	●●●●●●
DBF 6	○○○○●●	○○●●●●	●●●●●●
DBF 7	○○○○○○	○○●●●●	●●●●●●



### Category 7 (DEC)

●●○	Content	Color	Style
DEC 1	○○○○●●	○○○○●●	○○○○●●
DEC 2	○●●●●●	○○○○○●	○○○○○○
DEC 3	○○○●●●	○○○○●●	○○○●●●
DEC 4	○○○●●●	○●●●●●	○○○●●●
DEC 5	○○○●●●	○○○●●●	○○○○○●
DEC 6	○○○●●●	○○○○○●	○○○○○○
DEC 7*	○●●●●●	○●●●●●	○○○○○●

### Category 8 (DEF)

●●●	Content	Color	Style
DEF 1	○○○○●●	○○○●●●	●●●●●●
DEF 2	●●●●●●	○●●●●●	○○●●●●
DEF 3	○●●●●●	○●●●●●	○○●●●●
DEF 4*	○●●●●●	○●●●●●	○●●●●●
DEF 5	○○○○○○	○○○●●●	●●●●●●
DEF 6	○○○○●●	○○○●●●	○○●●●●
DEF 7	○●●●●●	○●●●●●	●●●●●●

## APPENDIX 2



INSTITUTIONAL  
REVIEW BOARD  
SPOKANE

November 11, 2008

Maggie Chen  
WSU student  
Email: ccue609@hotmail.com

Re: Hospital Staffs' Stress and Art Perception

Dear Ms. Chen:

I have reviewed your "Application for Exemption from IRB Review" for the above noted project.

From the information received I have determined that this project is exempt from IRB review under 45 CFR 46.101.b2 - Research involving the use of education tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless 1) information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; 2) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability or reputation.

Thank you for your submission of this project for IRB review. If your project is significantly altered in the future, it is your responsibility to contact the Institutional Review Board - Spokane for additional review and consideration.

Sincerely,

A handwritten signature in black ink that reads 'P. Cleveland'.

Philip Cleveland, MD  
Co-Chair

cc: Sandra Albritton, Manager Clinical Research, SHMC/Holy Family  
Robert Hartman, MD, Deaconess/Valley  
Steven Goodner, R.Ph, St. Luke's Rehabilitation Institute

## APPENDIX 3

### *Lead-in instruction*

I appreciate your willingness to assist us in this survey. Below are some suggestions and clarifications for the enclosed survey form.

**\*The survey is for healthcare staff only. Please provide your JOB TITLE \_\_\_\_\_  
for your identification.**

The survey is to collect information about your art preference in terms of: the quality of art (content, style, and color), the emotional impact, and location appropriateness. This survey will take approximately 8-10 minutes to complete.

**Content** refers to the subject or scene of the picture.

**Style** means the way artist used in the drawing, examples of the art style such as: abstract, realism, etc.

**Color** involves the combination of hue (red, green, orange), and brightness of the color.

If you have any question referring to the survey, please contact:

Maggie Chen

Email: ccuechen@hotmail.com

Cell: 509-344-1874

\*By responding to the survey, participants are giving consent to combine their data with that of other respondents, all individual responses will be held in strict confidence, the survey and its methods have been reviewed by the IRB-Spokane, and there will be no identification of the participating facility.

## APPENDIX 4

### Comments of ABC on Emotion Impact and Location Appropriateness

Emotion impact	Location appropriateness
Boring, uninspired	
Peaceful, calming	Relaxing
Calming	
Does not look clever to me	
Calm, relaxed	It is a very pretty and colorful picture. Nice to look at.
Calm, relaxed and wanting to explore. Content and style draw me into the scene.	Would prefer a break room to invoke feelings of calm and relaxation, also to include elements of nature.
Relaxed, at peace, quiet.	Peaceful colors, not cluttered, sunshine.
Relaxed.	
Peaceful, feel like home, calm.	Peaceful and calming.
Makes me feel like a relaxing spring day with no worries- the road and the tree.	I feel it has a relaxing effect.
Blue sky peace, serenity, God watching over us, green is the color of hope.	Because it reminds me of the simplicity of life, and God's beauty.
Peaceful, many elements to enjoy- sky, flowers, where path goes.	Helps create leisure time, relaxing, wondering.
I feel pleasant, satisfied, calm.	It's calm and peaceful
Somewhat dull- no color to attract your attention.	The colors should be more demanding to catch the eye.
Peaceful, thoughtful, hopeful, calm, restful, refreshed.	For all the reasons above (the emotion impact).
Calm.	
Tranquil, happy.	It makes me feel good.

**Table 4 (continued)**  
**Comments of AEC on**  
**Emotion Impact and Location Appropriateness**

<b>Emotion impact</b>	<b>Location appropriateness</b>
The togetherness of subjects makes me feel warm.	It encourages cooperation.
Peaceful summer day, soothing.	Pleasant because of flowers.
Warm, intimacy and inspiring.	Because of staffs' love of flowers and gardening.
Interested.	It is nice to look at.
Creative, enjoyment. The brightness of flowers contrasting the dark areas.	
Hot!	
Peaceful	
Confusing messy. Makes me feel uncertain.	Too uneasy
It makes me feel nothing- I don't like the content, the people look awkward (style).	I don't like the people in the picture or the colors.
They are still young so they remind me rich people from Miami spending time.	It doesn't bring me good feelings, just feelings of waste and leisure.
Peaceful, relaxed, supportive relationship.	Helps create pleasant relaxed atmosphere.
I am thinking what they are looking at.	It leaves me feeling about curious.
Peacefulness- couple looking (doing) something together. Enjoyment.	This one has creativity in it to catch the eye into a second look.
Happy memories of picking flowers - a bit of apprehensive because of the look of a dark hole or cave even though it is only a lush.	Provokes thought.
None.	It just doesn't do anything for me.

**Table 4 (continued)**  
**Comments of DEF on**  
**Emotion Impact and Location Appropriateness**

<b>Emotion impact</b>	<b>Location appropriateness</b>
Its bright colors make me feel very lively.	Maybe too abstract for some people
Energetic, vibrant, colorful.	Too much intense color, too abstract.
Nothing. Upset stomach.	Too confusing.
Happy because of colors.	Bright colors.
Confused and interested.	It almost looks like food.
Energetic, contrast of warm color and cool colors, light and dark.	I think a break room would need to be relaxing and calming.
Thoughtful, pleasing color, good transitions.	
Cheerful.	
Confused up set, makes me feel mixed up.	Don't like it.
Makes me feel excited- all the colors and weird shapes.	It's interesting to look at.
Disorder, lack of virtue, absence of God and spirituality.	Reason listed above (emotion impact).
I don't understand the picture. Confusing.	If others would enjoy I wouldn't object.
Crazy, can't make sense of it.	It is unorganized.
Craziness, abstract.	Too many activities- not fond of abstract art.
Confusing, no sense, the roundness is countered by sharp paints.	I don't like it. It is too disturbing.
Happy.	Color brings out happiness.
	Just don't like the style. Color is good.

**Table 4 (continued)**  
**Comments of DEC on**  
**Emotion Impact and Location Appropriateness**

<b>Emotion impact</b>	<b>Location appropriateness</b>
It feels lonely, but beautiful use of color and shapes.	Might be seen as depressing.
Depressing, lonely, empty.	Makes to feel worse and depressing.
Solitude as title implies.	Too somber.
Sad and even kind of scared.	It is depressing to look at.
Quiet serene. Simplicity of color/ contrast.	Because its content of simple and contrast of dark and light.
I like fences but cut off, sad, never ending, yet secure, organized.	Calming, though provoking, uncluttered.
Winter all alone. Bad winter day.	I don't like winter.
Makes me feel lonely but not in a bad way- looking at the lone tree and barren ground.	Does not help in the work place. Does not promote team work.
Sadness, emptiness, dryness.	Because it reminds me bad memories.
I like the straight lines- gives sense of order, helps clear thinking.	Sense of intrigue about what isn't there.
I don't like winter. It makes me feel cold.	Too depressing.
Quiet, season of life in motion- peaceful.	Snow on the ground- coolness in the air. Fence going somewhere into the fog/ storm.
Wonder, direction, containment, symmetry	I like to look at it- it is balanced, beautiful, clear.
Rough day	Not sure.
Serenity.	The lines in the picture and solo tree are great.

**Table 4 (continued)**  
**Comments of ABF on**  
**Emotion Impact and Location Appropriateness**

<b>Emotion impact</b>	<b>Location appropriateness</b>
I don't like the style- looks too stiff	Don't like it.
Look like computer generated, not natural although natural scene.	Not calm, really rigid, stiff, not natural, robot like.
People enjoying the outdoors.	Maybe too formal. Because it looks like everyone is having a good time at the lake.
Relaxed, and interested there is a lot to look at.	It is pleasant to look at.
Playful. The content of scenery. An afternoon of leisure.	Not sure.
Too stiff, no action or movement. Relaxed.	Stale, stagnant.
Too many people, uneasy	Too many people in small area.
I feel nothing. Not enough detail in the people.	It's a boring picture.
Waste of time, waste of people.	I like that they are modest and you see children and adults interaction, but I don't like how serious they look and how shallow their life seems to be.
Glimpse of different time and culture. Soft colors, easy to look at but many interesting little details when you spend time with it.	Because it is familiar and strange. Different time. Change to dream.
Happy	It makes me happy.
Motion. Live is moving. Families.	Catches the eye more than once.
Delight, fun, interesting, curiosity- the images, lights and shadows	Energized, diverts attention to restful place, interesting to look at. Keeps mind off.
Happy.	Lots going on. Fun to look at.



**Table 4 (continued)**  
**Comments of DBC on**  
**Emotion Impact and Location Appropriateness**

<b>Emotion impact</b>	<b>Location appropriateness</b>
Very cold, sad and hopeless	Makes me sad.
Very depressing, gloomy, dark and scary.	Represent dying although green is there, the whole picture seems very cold.
Depressing. Dull color	Too depressing.
Reminds me of summer and walks in the woods.	
Sad and interesting	It is kind of depressing.
Gray, mixed feeling. Colors are muted, sharp and blended. Lines draw attention to trees.	Too dark.
Dark, sad, a little scary.	Depressing.
Alone, too far to walk.	It does not say anything.
I feel happy and calm- the trees and greens/ blues.	It has a calming feeling.
Peace, quiet, hope, God's presence	Because it is God's nature.
Mixed emotions. Effects of fire or disease on the trees. Nice growth and recovery.	Pastoral setting, lack of sunshine but good for quiet move somber mood.
It needs a horse in it.	It seems to be a serene calming picture.
Happy, spacious- the place, the light, the expanse of sky and green space.	I like places like this. Can be refreshed putting self in the place.
	Pretty calm.
Green.	Not enough contrast.

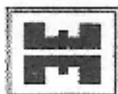
**Table 4 (continued)**  
**Comments of AEF on**  
**Emotion Impact and Location Appropriateness**

<b>Emotion impact</b>	<b>Location appropriateness</b>
Very colorful- a little unsettling- don't like the abstract people.	Don't care for it.
Gross, too sensual, not appropriate for public area.	Not enjoyable to see, uncomfortable to look at.
	No idea.
Could not make out what it was at first.	Confusing.
Confused, not sure.	Just unsure what it is supposed to be.
Emotion, adoration, shape and color, passion.	Content.
Yuck!	Subject, content, color
Romantic picture.	
Unsure, no purpose for it.	Don't like it.
I don't really feel anything. Very sensual pose. I don't like the yellow.	Too sexual.
There is always insinuation of "false love".	I don't need to see somebody else's privacy.
Not my favorite artwork, but I know others who really appreciate.	
Confusing busy.	I don't like the content.
Compassion, emotions, youthfulness, young at heart.	Depending on where (bedroom).
Tender, softer, reminded of beauty of all creation.	Seeing beyond the apparent/ the apparent reveals the cosmic.

**Table 4 (continued)**  
**Comments of DBF on**  
**Emotion Impact and Location Appropriateness**

<b>Emotion impact</b>	<b>Location appropriateness</b>
Bright and fun- I love the variations in the color and texture.	It is cheerful.
Too abstract, can't figure out what I'm looking at. Unknowing.	Color and some shape indicate water, but not calming, not natural, somewhat depressing.
Maybe taking flight.	
Bright color makes me happy.	
Interested and relaxed.	It is nice to look at.
Energized, mystical	Not sure.
Indifferent.	Something to discuss.
Happy.	
Confuse, no purpose of it.	Pretty color but don't like it.
Calm, love he blues and sweeping strokes.	For its calming effect.
Not artwork at all, disorder, rebellion, no rhythm at all.	No good feeling at all.
Not good for me. Pattern makes me dizzy.	Does not appeal to me.
Ocean-clean.	I like a story in a picture. I don't get one here.
Colorful, bright.	Makes me wonder what it is- colors are very good.
Coldness, destruction, power, overwhelming force.	Disturbing, not restful, seems destructive.
Wondering what it is.	Confusing.

## APPENDIX 5



## INDEX OF CLINICAL STRESS (ICS)

Job Title: \_\_\_\_\_ Employee #: \_\_\_\_\_ Gender: \_\_\_\_\_ Today's Date: \_\_\_\_\_

This questionnaire is designed to measure the way you feel about the amount of personal stress that you experience. It is not a test, so there are no right or wrong answers. Answer each item as carefully and as accurately as you can by placing a number beside each one as follows.

- 1 = None of the time
- 2 = Very rarely
- 3 = A little of the time
- 4 = Some of the time
- 5 = A good part of the time
- 6 = Most of the time
- 7 = All of the time

- 
1. \_\_\_ I feel extremely tense.
  2. \_\_\_ I feel very jittery.
  3. \_\_\_ I feel like I want to scream.
  4. \_\_\_ I feel overwhelmed.
  5. \_\_\_ I feel very relaxed.
  6. \_\_\_ I feel so anxious I want to cry.
  7. \_\_\_ I feel so stressed that I'd like to hit something.
  8. \_\_\_ I feel very calm and peaceful.
  9. \_\_\_ I feel like I am stretched to the breaking point.
  10. \_\_\_ It is very hard for me to relax.
  11. \_\_\_ It is very easy for me to fall asleep at night.
  12. \_\_\_ I feel an enormous sense of pressure on me.
  13. \_\_\_ I feel like my life is going very smoothly.
  14. \_\_\_ I feel very panicked.
  15. \_\_\_ I feel like I am on the verge of a total collapse.
  16. \_\_\_ I feel that I am losing control of my life.
  17. \_\_\_ I feel that I am near a breaking point.
  18. \_\_\_ I feel wound up like a coiled spring.
  19. \_\_\_ I feel that I can't keep up with all the demands on me.
  20. \_\_\_ I feel very much behind in my work.
  21. \_\_\_ I feel tense and angry with those around me.
  22. \_\_\_ I feel I must race from one task to the next.
  23. \_\_\_ I feel that I just can't keep up with everything.
  24. \_\_\_ I feel as tight as a drum.
  25. \_\_\_ I feel very much on edge.

## Appendix 6

### Art survey-Pilot study

The arts survey is designed to determine preference and justification for your selection. Answer each item as you may perceive.

- The following artworks are the same as the ones in your break room. Which one do you like best? Please indicate it by circling the letter on top of the picture.

A



B



C



- Please rate your liking to this picture from 1 to 7.

(Terrible) 1 2 3 4 5 6 7 (Very good)

- Does the picture you prefer hold your attention or interest? What do you like about the picture?
- Does the picture you prefer elicit any positive feelings? What are they?