

THE ECOLOGY OF THE PATIENT EXPERIENCE:
PHYSICAL ENVIRONMENTS, PATIENT-STAFF INTERACTIONS, STAFF
BEHAVIORS, AND QUALITY OF CARE

A Thesis

Presented to the Faculty of the Graduate School
of Cornell University

In Partial Fulfillment of the Requirements for the Degree of
Master of Science

by

Bridget Ann Sweeney

January 2008

© 2008 Bridget Ann Sweeney

ABSTRACT

Healthcare organizations are facing a complex set of challenges in the 21st century. Rising costs of healthcare, decreased government funding, expensive technological advances, shifting population demographics, nursing shortages, and increased competition between organizations are forcing healthcare institutions, especially academic health centers, to rethink every aspect of their operations from the way physicians and nurses are trained to the way care is delivered to the environments in which the care is provided.

This study examined how a large scale design intervention that significantly improved the attractiveness of the physical environment affected patients' perceptions of staff behaviors and their interactions with staff members, as well as their perceptions of quality of care. Another aim of this study was to understand how staff perceptions' of their behaviors and their work environment changed in the more attractive environment. The outpatient practice that was selected for this study was previously ranked in an earlier study as being the least attractive out of seven outpatient practices. This practice subsequently moved to a newly constructed ambulatory care center in January 2007, allowing for a pre-move and post-move comparison. The primary data collection methods used were a patient satisfaction survey, a staff retrospective work environment survey, and short focused interviews with both patients and staff members.

Results showed that patients perceived a more positive manner in which staff interacted with them, as well as improved quality of care, despite no changes in actual staff behaviors. Findings also indicate that staff members noticed some positive changes in their work environment, which could affect how they interacted with patients. The results also showed an increase in the willingness of patients to

recommend the office to others, which signifies increased patient loyalty to the practice. The findings of this study support previous research studies that emphasize the important role of healthcare facility design in influencing patient and staff perceptions of quality and satisfaction. In order to continually improve patient perceptions' of their experience, providers should focus on delivering high quality service in high quality facilities.

Based on the findings from this study, future research should explore in greater depth the relationship between employee communication patterns and the effect of these patterns on their interactions with patients. Also, more research is needed to identify specific design elements that improve patient and employee perceptions of quality, as well as satisfaction.

BIOGRAPHICAL SKETCH

Bridget Ann Sweeney was born in Rochester, New York and received her Bachelors of Science in Design and Environmental Analysis from Cornell University in 2006. She studied interior design in Copenhagen, Denmark and worked at Mancini-Duffy Architecture and Design in New York City. She has actively participated in faculty research since 2004. Her research interests have included the development of children's environmental attitudes and behaviors, as well as design interventions for people with Alzheimer's disease. She returned to Cornell in 2007 to pursue her Masters of Science in Facilities Planning and Management in the department of Design and Environmental Analysis. After completion of her degree she plans to pursue a career in facilities planning and design consulting for corporate environments.

ACKNOWLEDGMENTS

There are several people who I would like to acknowledge for their assistance and support of this research study:

My advisor, Professor Frank Becker, for his never ending support, encouragement and enthusiasm for this project and this field.

Professor Paul Eshelman, my minor advisor, for his continued support, assistance, advice, creativity and encouragement throughout this year and this project.

Richard Thomas and Nancy Ferrell of the Weill Cornell Medical College Physicians' Organization, for their continued interest and financial support of this research.

Todd Greenberg of the Weill Cornell Medical College Department of Dermatology for all of his assistance and insight throughout the project.

Laurin Frisina, for her endless encouragement, and statistical analyses assistance and technical support.

Aaron Sweeney, my brother, for his generous hospitality, support, and encouragement throughout this project and my entire college education.

And lastly my parents, Grace and Terence Sweeney, without whose endless love, encouragement, guidance, advice, and support none of this would have ever been possible.

TABLE OF CONTENTS

Biographical Sketch.....	iii
Acknowledgements.....	iv
List of Figures.....	vii
List of Tables.....	viii
Chapter 1: Introduction	
1.1 Pressures for Change.....	1
1.1.1 Rising Costs of Healthcare.....	1
1.1.2 Increasing Competition.....	2
1.1.3 Technological Advances.....	3
1.1.4 Changing Population Demographics.....	3
1.1.5 Rising Consumer Expectations.....	4
1.2 Patient Centered Care.....	5
1.3 Construction Boom.....	5
1.4 Patient-Centered Design.....	6
1.5 Evidence Based Design.....	7
1.6 Outpatient Environments.....	9
1.7 Patient Satisfaction.....	10
1.8 Staff Satisfaction.....	11
1.9 Patient and Staff Satisfaction.....	12
1.10 Quality of Care.....	12
1.11 Patient-Staff Interactions.....	13
1.12 Physical Environments & Quality.....	14
1.13 Summary of Literature.....	16
1.14 Research Questions and Hypothesis.....	17
Chapter 2: Methods	
2.1 Research Design and Site Selection.....	19
2.2 Site Descriptions.....	20
2.2.1 Weill Medical Complex/ New York Presbyterian Hospital.....	21
2.2.2 Weill Greenberg Center for Ambulatory Care and Medical Education.....	22
2.2.3 Department of Dermatology.....	23
2.2.4 Site Description of Starr 326 Dermatology.....	25
2.2.5 Site Description of Weill Greenberg Center Dermatology.....	28
2.3 Data Collection.....	32
2.3.1 Patient Satisfaction Survey Procedure.....	33
2.3.2 Staff Satisfaction Survey Procedure.....	34
2.3.3 Patient Focused Interview Procedure.....	36
2.3.4 Staff Focused Interview Procedure.....	37
2.4 Data Analysis.....	37
Chapter 3: Results	
3.1 Patient Demographic Information.....	40
3.2 Staff Demographic Information.....	41
3.3 Patients' Perceptions of Staff Interactions.....	41

3.4 Patients' Perceptions of Quality of Care.....	43
3.5 Staff Behaviors.....	44
3.6 Staff Perceptions of the Work Environment.....	48
3.7 Patient Perceptions of the Physical Environment.....	50
3.8 Summary of Key Findings.....	54
Chapter 4: Discussion & Conclusions	
4.1 Patients' Perceptions of Staff Interactions and Behaviors.....	55
4.2 Patients' Perceptions of Quality of Care.....	57
4.3 Staff Perceptions of Behaviors and Work Environment.....	59
4.4 Patients' Perceptions of the Physical Environment.....	61
4.5 Overall Conclusions.....	61
4.6 Study Limitations.....	62
4.7 Directions for Future Research.....	63
4.8 Implications for Practice.....	64

LIST OF FIGURES

Figure 1. Starr 326 Dermatology Annotated Floor Plan.....	26
Figure 2. Starr 326 Dermatology Reception Area.....	27
Figure 3. Starr 326 Dermatology Waiting Area.....	27
Figure 4. Starr 326 Dermatology Exam Room.....	28
Figure 5. Starr 326 Dermatology Main Corridor.....	28
Figure 6. Weill Greenberg Center Dermatology Annotated Floor Plan.....	30
Figure 7. Weill Greenberg Center Dermatology Exam Room.....	30
Figure 8. Weill Greenberg Center Dermatology Main Corridor.....	31
Figure 9. Weill Greenberg Center Dermatology Reception Area.....	31
Figure 10. Weill Greenberg Center Dermatology Waiting Area.....	32
Figure 11. Patient Survey Responses on Staff Experience Section.....	42
Figure 12. Patient Survey Responses on Quality Index.....	43
Figure 13. Patient Survey Responses on Staff Behaviors Section.....	45
Figure 14. Starr 326 Reception Area.....	46
Figure 15. Starr 326 Check- Out Area.....	46
Figure 16. Weill Greenberg Center Reception Area.....	47
Figure 17. Weill Greenberg Center Check- Out Area.....	47
Figure 18. Weill Greenberg Center Staff Lounge.....	49
Figure 19. Weill Greenberg Center Staff Work Area.....	50
Figure 20. Patient Survey Responses on Overall Visit Section.....	51
Figure 21. Patient Survey Responses on Waiting Experience Section.....	52
Figure 22. Patient Survey Responses on Exam Room Section.....	53

LIST OF TABLES

Table 1. Space Allocations for Starr 326 and the Weill Greenberg Center.....	21
Table 2. Annual Department of Dermatology Visits for Fiscal Year 2006.....	24
Table 3. Dermatology Employees by Job Type.....	24
Table 4. Patient to Staff Ratios.....	25
Table 5. Patient Survey Population Age Breakdown.....	40

CHAPTER 1

INTRODUCTION

1.1 Pressures for Change

The 21st century brings a new set of challenges to healthcare organizations, hospitals, and their facilities. Some of these future challenges include the rising costs of healthcare, decreased government funding, technological advances, shifting population demographics, nursing shortages, and increased competition between organizations (Cuellar & Gertler, 2005; Grimson, 2001; Guo, 2003; Watson, 2005). These challenges are forcing healthcare institutions, especially academic health centers, to rethink every aspect of their operations from the way physicians and nurses are trained and the way care is delivered to the environments in which the care is provided. More informed patients are demanding higher standards of care and service (Iglehart, 1993; Iglehart, 2005; Institute of Medicine, 2001; Neuberger, 2000), which is driving healthcare institutions to make change a priority for the approaching decades. Increasingly, these challenges are compelling healthcare executives, healthcare professionals, and patients to recognize the important role of the physical environment in the healthcare experience (Carpman & Grant, 1993; Marberry, 1995, 2006; Nelson, West, & Goodman, 2005; Nesmith, 1995).

1.1.1 Rising Costs of Healthcare

Academic health centers, due to their tripartite mission of patient care, medical education, and research are particularly sensitive to the market forces that are rapidly increasing the cost of healthcare across the United States. Challenges in the market include growing competition due to hospital mergers and consolidation of specialty services (Cuellar & Gertler, 2005), reductions in government funding, and the growth

of managed care. Academic health centers carry a heavy financial burden because they are more often larger in size and treat more specialty cases and more uninsured patients than non-teaching hospitals (Iglehart, 1993). They also rely heavily on federal, state, and local government funding for patient care and medical research. Traditionally, a visit to a teaching hospital costs 30- 40 percent more than a visit to a non-teaching hospital. About 30 percent of the population is enrolled in HMOs and another 34 percent in preferred provider organization plans (PPO). It is more difficult for academic health centers to compete in a market where managed care organizations refer patients to healthcare facilities with the lowest cost (Guo, 2003).

1.1.2 Increasing Competition

General hospitals are also facing competition from the growing number of physician-run specialty hospitals, where physicians have a financial stake in the profits of the hospital. Physicians are able to select which patients they refer to the specialty hospital and which they refer to the general hospital, which generates more revenue for the specialty hospital because they are less likely to treat Medicare or uninsured patients (Iglehart, 2005). This shift in the delivery of care is part of a larger movement across the country of treating patients in alternative settings. In the past decade there has been increasing growth in the type and amount of outpatient and ambulatory care services that are provided. Medical educators are dealing with growing pressure to create new training sites in outpatient settings (Iglehart, 1993; Marberry, 1995). This shift is due to new forms of technology, changing population demographics, and rising public expectations of quality of care.

1.1.3 Technological Advances

New advances in medical and electronic technology are changing the way in which healthcare services are delivered, managed, and housed. A major factor contributing to the growth of outpatient care centers has been improvement in surgical technologies that have resulted in a decreased need for long in-patient stays at the hospital (Williams, 2004). New diagnostic and treatment technologies have also sprouted the growth of many specialized services in the areas of cancer, cardiac, surgical, orthopedic, and women's care (Carpenter, 2004; Iglehart, 2005; Marberry, 1995). Another important developing technology is the electronic healthcare record (EHCR). EHCRs have the capability to combine and consolidate complex patient information and to make it simultaneously accessible to multiple persons from remote locations, which helps healthcare professionals provide more streamlined care in an increasingly integrated system. Additional benefits of ECHRs include reducing the number of preventable medical errors through enhanced data management, the ability to leverage workloads for nurses, as well as reduced storage space for record keeping. All of these benefits can lead to a significant reduction of costs for healthcare organizations (Grimson, 2001; Watson, 2005).

1.1.4 Changing Population Demographics

In 2000, the Center for Disease Control (CDC) identified the growing aging population as one of the ten health challenges for the 21st century (Koplan & Fleming, 2000). The elderly population in the U.S., people over the age of 65, is expected to reach 79 million by 2050, which is twice its current size. Significant advances in medical care over the past century have lead to a longer life-span, which has increased the need for specialty care related to aging and chronic diseases (Carpman & Grant, 1993; Koplan & Fleming, 2000). This has major implications for the current

healthcare system. Not only do providers have to treat older, sicker patients, but they also have to respond to an aging workforce. According to The Joint Commission on the Accreditation of Healthcare Organizations' 2002 report on the evolving nursing shortage, the average age of a working RN today is 43.3, and by 2010 that average is expected to rise to 50. It has also been estimated that by 2020 there will be at least 400,000 fewer nurses available to provide the increased amount of care needed for the aging population (Joint Commission, 2002). Education, recruitment, and retention of qualified nurses are critical to the future of the healthcare system.

1.1.5 Rising Consumer Expectations

Mass education, mass media, and mass consumerism have changed the demands of today's generation of healthcare consumers. Patients have greater access to resources, such as the World Wide Web and health plan 'report cards', which allow them to become more informed about their conditions and take a more active role in their own care. Doctors are working with a wider range of other health and non-health professionals to meet patients' needs (Neuberger, 2000). More people are recognizing health as an indicator of quality of life. They are investing in preventative health measures and taking advantage of medical technology breakthroughs (Carpman & Grant, 1993). As aging baby-boomers move into their 50's and 60's they are expected to spend up to \$1 trillion by 2010 on healthcare services (Carpenter, 2004). In order for health organizations to stay competitive in a market where there is a wider range of providers and treatment options for patients they have switched to a more patient centered model of care (Neuberger, 2000). This model strives to meet the rising consumer expectations for service and quality.

1.2 Patient Centered Care

In 2001 the Institute of Medicine recommended that for the 21st century healthcare organizations, professional groups, and private and public purchasers should pursue patient centered care as one of their six major goals (Institute of Medicine, 2001). According to the Institute for Healthcare Improvement (2007), as the healthcare system has grown increasingly complex and fragmented, and providers are under more financial and competitive pressure, care has become centered on the needs of the system itself rather than on the needs of the patients. Patient-centered care respects patients' values, cultural backgrounds, preferences, and expressed needs. It aims to integrate care and make it a collaborative process between health professionals, the patient and their family and friends. It promotes informed, shared decision-making and strives to provide the tools necessary for this to happen. In addition, patient-centered care emphasizes the importance of access and coordination of information and care (Edgman-Levitan & Cleary, 1996; Institute for Health Improvement, 2007; Institute of Medicine, 2001).

1.3 Construction Boom

The healthcare building industry is experiencing a boom. It is projected that construction spending on hospitals and nursing homes will rise to \$33.1 billion in 2010 (Carpenter, 2004). And over the course of the next decade an estimated \$200 billion will be spent on new hospital construction in the United States (Landro, 2007; Stichler, 2007). According to the federal Agency for Healthcare Research and Quality there are four major factors driving the market for hospital design and construction: competition for patient market share; technology innovation and diffusion; efficiency and cost effectiveness; and regulatory compliance (Nelson, West, & Goodman, 2005). Many of the existing hospitals and health facilities that were built in the 1960's and

1970's are now out-dated and cannot physically handle current models of care and technology (Babwin, 2002; Watson, 2005). Consumer driven healthcare has generated a demand for health facilities to cater to patient needs in order to stay competitive. In other service industries such as hotels, restaurants, retail stores, professional offices, and banks it has long been recognized that the physical environment has an ability to affect the attitudes and behaviors of customers and employees (Bitner, 1992). Increasingly, healthcare organizations are acknowledging the important role of the healthcare facility in improved patient and staff outcomes (Berry & Bendapudi, 2003; Nelson et al., 2005).

1.4 Patient-Centered Design

The rise of new construction in the healthcare industry, along with providers shifting toward patient-centered care, has created a new concept of patient-centered design. Healthcare planning and design has traditionally focused on the needs of physicians, in particular, and overlooked the needs and the experience of the patients and, to a somewhat lesser extent, staff. A study by Stern et al. (2003) found through focus groups and interviews that patients and families want a built environment that facilitates connection to staff, is conducive to well being, convenient and accessible, caring for family, confidential and private, considerate of impairments, facilitates connection to the outside world, and is safe and secure. Another study by Douglas and Douglas (2004) found through interviews with hospital inpatients that patients reported the need for personal space, a homey welcoming atmosphere, areas for visitors, access to external areas, and provision of facilities for recreation and leisure. Patient-centered design focuses on the relationship between the physical environment and the patient's overall experience.

One of the pioneers in patient-centered design has been the Planetree Organization. Planetree's approach to care is holistic and encourages healing in all dimensions—mental, emotional, spiritual, social, and physical. It recognizes the important role of education, information, social support, and the built environment in the healing process (Planetree, 2007). Several other organizations have embraced the Planetree model and the concept of supportive design and a “healing environment.” Ulrich (1997) defines “supportive” as environmental characteristics that support or facilitate coping and restoration with respect to the stress that accompanies illness and hospitalization. Healing environments are designed in specific ways to promote health and wellbeing, reduce stress, and increase perceived quality of care and satisfaction. Attributes of healing environments include places of refuge, positive distractions, views and access to nature. Design features facilitate way finding, minimize the impression of crowding, and accommodate families. These environments also convey caring and respect, as well as symbolizing competence to patients, their family and friends, and staff. Supportive patient-centered design guidelines have been generated from empirical research findings as well as practice experience (Designing for Quality, 2003; Berry & Bendapudi, 2003; Leighty, 2007; Ulrich, 1992).

1.5 Evidence Based Design

There is a growing field of research that examines the role of the built environment in patient and staff outcomes, known as evidence-based design. Evidence-based design can be described as applying the findings of credible research, conducted by academics and practitioners, to develop design concepts that, when implemented, can be assessed to determine the extent to which they helped achieve expected patient-centered outcomes (Nelson et al., 2005; Stichler, 2007). Hospitals

are among the most expensive facilities to design and build due to complex code compliance and technical requirements. Therefore, hospital administrators are increasingly recognizing and requesting evidence-based designs that have the potential to reduce costs through risk avoidance, while improving patient and staff safety and satisfaction.

Examples of Evidence-Based Research

There have been a number of studies that have linked elements of the physical environment to causing and alleviating stress for patients (Evans & McCoy, 1998; Evans, 2001). Studies conducted in the hospital setting have focused on ambient conditions such as noise, music, lighting, and crowding (Ulrich et.al., 2004). Researchers have also evaluated certain design features of patient rooms such as window versus no windows, sunny rooms, views of nature, artwork, and single versus double occupancy rooms. Results of these studies have found that supportive environmental characteristics can reduce patient stress and anxiety, improve sleep, help regulate circadian rhythms, lower rates of hospital-acquired nosocomial infection, reduce length of stay and pain medication use, and improve satisfaction (Davidson, 1994; Devlin & Arneill, 2003; Nelson et al., 2005; Ulrich & Zimring, 2004; Ulrich, 2000).

A smaller number of studies have looked at how the physical environment affects staff communication productivity, turnover, and satisfaction. Recruitment and retention of qualified nursing staff is an imperative for all health organizations. A well-designed healthcare environment can contribute to enhanced employee motivation and performance, as well as help attract and retain skilled employees (Commission for Architecture and the Built Environment, 2004). Becker and Poe (1980) modified the physical design of three nursing units in a hospital based on

patient, staff, and visitor suggestions. They examined the design modifications affect on space use patterns, mood and morale, and perceived quality of healthcare by using before and after observation and survey methods. Physical design modifications had especially positive effects on mood and morale and perceived quality of care for staff members. In a study comparing renovated Planetree hospital units to an un-renovated unit Delvin (1995) found nurses on the Planetree Units rated their care and communication more positively than their counterparts on the un-renovated unit, and concluded that the physical environment does make a difference in the delivery of care. A more recent study by Mroczek et al. (2005) surveyed 732 employees at a newly constructed Pebble Project hospital in Florida. They found that staff believed that the quality of their work life was positively impacted by certain design features such as natural light, live music, enhanced air-flow, water features, and home-like patient rooms. The majority of these studies have focused on the in-patient hospital experience.

1.6 Outpatient Environments

Outpatient and ambulatory care environments are fundamentally different from large general hospital environments. These kinds of environments have less strict building codes and regulations than acute care hospitals, which allow designers more freedom to create progressive and sensitive designs (Nesmith, 1995). With the continued growth in new constructions of ambulatory care facilities, designing these settings to provide a healing environment is an important issue facing healthcare executives (Fottler et al., 2000). There is significantly less empirical research on these kinds of settings to guide and inform decision makers.

Because the nature of the patient experience is much different at an outpatient facility, the kinds of patient outcome measures affected by the facility design have

moved from more tangible measures such as length of stay and pain medication use to more service-oriented measures such as patients' perceptions of quality and satisfaction (Edgman-Levitan & Cleary, 1996; Stern, MacRae, & Gerteis, 2003). In an increasingly competitive market, where healthcare consumers have more options for care, healthcare organizations must work hard to create environments that encourage repeat visits and increase patient satisfaction (Fottler et al., 2000).

1.7 Patient Satisfaction

Urden (2002) states, "Patient satisfaction, once considered a 'soft' indicator used primarily by marketing departments, has become an integral component of strategic organization and healthcare quality management (p.194)." Satisfaction involves the patient's cognitive evaluation and emotional reaction to components of care delivery and service. Patients have both cure expectations and care expectations by which they measure their satisfaction with a healthcare encounter. Despite increased awareness of health and medical issues, few patients possess the technical knowledge required to judge staff on their diagnostic skills or technical abilities (Leiter, Harvie, & Frizzell, 1998). Therefore, healthcare consumers rely more heavily on aspects of their visit they can see and understand, such as the physical environment and facility design, as well as customer service and staff interactions, to assess their satisfaction (Designing for quality, 2003; Berry & Bendapudi, 2003; Powers & Bendall-Lyon, 2003).

Hundreds of health organizations across the United States routinely monitor patient satisfaction using Press Ganey surveys, and each year Press Ganey publishes a national report based on the findings from these surveys. There were several key findings about patient satisfaction in the outpatient care environment in the *Press Ganey 2006 Health Care Satisfaction Report*. One of the key findings was that the

willingness of patients to recommend a facility to others is a strong signal of their loyalty. It was also reported that only those patients that responded with a '5' or 'Very Good' (the highest point on the scale) are likely to be loyal to the organization. Those that respond with less than a '5' may be content with their experience but may easily be attracted to another outpatient facility. Press Ganey Associates recommended that outpatient services looking to make improvements in patient satisfaction should focus on moving the 'Goods' to 'Very Goods.'

1.8 Staff Satisfaction

Studies have found that key elements of healthcare employee satisfaction involve both intrinsic individual needs and external job-related aspects. Key elements are co-worker and supervisor support, teamwork and communication, job demands and decision authority, organizational characteristics, patient care, compensation and benefits, workload, physical environment, and staff training and development (Krueger et al., 2002; McNeese-Smith, 1999; Paleologou, Kontodimopoulos, Stamouli, Aletras, & Niakas, 2006).

In a very old but still relevant study, Caplan and Sussman (1966) conducted a study with 400 patients and 136 staff members of outpatient departments in order to determine the rank order importance of variables that contribute to patient and staff satisfaction with outpatient services. They found that, "The staff member who considers the physical facilities and layout of the clinic to be equal or better than the private office has high morale (p.136)." It was also found that staff members' general rating of patient care given at the outpatient department was related to their judgment of the facility's quality and layout of the clinic.

1.9 Patient & Staff Satisfaction

The important role of nurses in delivery of care has motivated researchers to examine the relationship between elements of nurse satisfaction and patient satisfaction. Leiter, Harvie, and Frizzell (1998) conducted a study looking at these variables using survey data from 605 patients and 711 nurses. They found that patients on hospital units where nurses felt that their work was meaningful were more satisfied with their hospital stay. They also found that patients on units where nurses felt more tired and more frequently expressed the intention to quit were less satisfied with their care. Another study by Mallak et al. (2003) examined the relationships between patient satisfaction, staff satisfaction, organizational culture, and the built environment. They conducted a culture and satisfaction survey with 432 healthcare professionals and patients. It was found that job satisfaction and patient satisfaction were significantly and positively correlated with culture strength and ratings of the built environment.

1.10 Quality of Care

The concept of quality of care has always been important to hospitals. However, there has traditionally been a gap between how hospital administrators, physicians, staff, and patients define quality of care (Laine et al. 1996). The Joint Commission defines the quality of patient care as, “The degree to which the patient care services increase the probability of desired patient outcomes and reduce the probability of undesired outcomes, given the current state of knowledge” (Joint Commission, 1990, p.131). Koska (1989) conducted a survey of 663 hospital chief executive officers to determine what they felt were the most important factors in providing high quality care. Nursing care, clinical skills of medical staff, and employee attitudes were ranked the top three factors contributing to high quality care.

In another study with 931 healthcare professionals, Arnetz (1999) found that most important determinants of staff perceived quality of care were staff access to pertinent information concerning their daily work and organizational changes, participatory management, performance management, and job commitment. With more organizations shifting to a patient-centered care delivery model, the patient's perception of quality of care has become of increasing interest to providers and researchers.

According to Omachonu, "The patient perceives quality in the context of his or her own experience (Omanchonu, 1990, p. 45)." He also points out the important difference between what is quality in fact and what is quality in perception. Similar to how patients evaluate satisfaction, they may not be able to assess their medical treatment, but they do assess the manner in which the treatment is provided in order to determine their overall quality of care. It is clear that two key components of patients' perceptions of quality of care are their perceptions of the physical environment, and their interactions with staff members (Powers & Bendall-Lyon 2003).

1.11 Patient-Staff Interactions

An important aspect of patients' definition of quality of care in part is the amount of empathy, warmth, and friendliness that they experience as they interact with staff. Studies have found that patients' perceptions of service satisfaction have a direct impact on their perception of quality of care (Mayer & Cates, 1999).

Increasingly, healthcare organizations are offering employees customer service training. Mayer, et al. (1998) looked at the impact of a customer service training course for employees on patient satisfaction in an emergency department, and found that the training course improved patient satisfaction and ratings of physician and nurse skill.

Studies have indicated the physical environment affects staff satisfaction and perceptions of quality of care. However, it is also likely that the physical environment affects patients' perceptions of staff members. In another old but still relevant study, Maslow and Mintz (1956) placed participants in either a beautiful, average or ugly room and then asked them to judge the energy and well being of people based on the same photographs of 10 individuals. It was found that participants in the beautiful room rated energy and well being of the people in the photographs higher. Participants in the ugly room were more likely to judge the people in the photographs as fatigued or displeased. These findings support the idea that patients' perceptions of staff members can be influenced by the physical surroundings.

1.12 Physical Environments and Quality

Leather et al. (2003) compared two different styles of waiting rooms and their effects on environmental appraisals, self reported stress and arousal, satisfaction ratings, and pulse readings of 145 outpatients. The study utilized a two sample comparative design with data being gathered from patients at a pre-relocated and post-relocated neurology outpatient clinic. The pre-relocated waiting room was described as 'traditional' in design, and the post-relocated waiting room was described as 'nouveau,' meaning a deliberate attempt to create an alternative image. It was found that the 'nouveau' waiting area was associated with more positive environmental appraisals, improved mood, altered physiological state, and greater reported satisfaction (Leather et al. 2003).

Arneill and Delvin (2002) studied the effect of the physical environment of the waiting room on perceptions of quality of care. One hundred and forty-seven college students and 58 senior citizens were shown slides of 28 different waiting rooms that varied in terms of age of facility, location of facility (hospital, office, renovated

house), size, color, extent of lighting, furnishings and artwork. They were asked to rank on a visual analog scale how they perceived the quality of care to be in the office of the waiting room they were looking at. Participants were also asked to rank how comfortable they felt in that environment. It was found that perceived quality of care was greater for waiting rooms that were nicely furnished, well-lighted, contained artwork, and were warm in appearance versus waiting rooms that had outdated furnishings, were dark, contained no artwork, and were cold in appearance (Arneill & Delvin 2002).

Becker and Douglass (2006) examined the relationship between attractiveness of the physical environment and waiting times, staff interactions, and patient perceived quality of care. They selected seven outpatient practices located in six facilities within the Weill Cornell Medical Center/ New York Presbyterian Hospital in New York City. A panel of six graduate students in non-design related fields independently ranked the attractiveness of the six facilities based on photographic images. Data was collected at each site using systematic observations to track patient waiting times. Patient satisfaction surveys were also used to capture patient perceptions of waiting times, their interactions with staff members, and their overall quality of care. A total of 787 patients were observed across all practices, and a total of 205 patient surveys were collected.

It was found that the more attractive the environment the higher the perceived quality of medical care and the greater reported reduction of anxiety. Regression analysis demonstrated that the attractiveness of the physical environment influenced the patient's perception of quality, and that the perception of care quality then reduced anxiety level. Another interesting finding was that in more attractive environments, patients perceived more positive staff interactions than those in less attractive environments. It was also found that patient perceptions of staff interactions were

more strongly correlated with feeling cared for as a person, recommending the office to others, feeling welcome, and reducing patient anxiety than with the attractiveness of the physical environment (Becker & Douglass, 2006).

1.13 Summary of the Literature

In summary, with the increase in healthcare facility construction there is a growing interest in how the design of the physical environment affects patient and staff outcomes. There are a substantial number of studies that have examined the role of the physical environment in tangible patient outcomes such as length of stay, pain medication use, and infection rates in the in-patient hospital setting. Literature has demonstrated that there is a known difference between how hospital administrators, executives, staff, and patients perceived quality of care. However, there is less known about the role of the physical environment in patients' and staff members' experiences and their overall perceptions of quality and satisfaction. Studies have identified that the physical environment affects employee attitudes and reported satisfaction, but less is known about whether or not it actually affects their behaviors. It is evident that staff interactions are a crucial element of the patient's perception of quality of care, and Becker and Douglass (2006) found a positive relationship between attractiveness of the physical environment and perceived staff interactions. However it is still unclear whether or not patients just perceive their interactions with staff members to be better in more attractive environments or whether or not staff members actually behave differently. There is also increasing interest in the outpatient care environment, however there is less empirical research that has occurred in this type of setting.

This study aims to build on the current body of research by examining the impact of the attractiveness of the physical environment of a referral outpatient facility on patient perceptions of quality, staff interactions, and specific staff behaviors. It

also builds on previous research on the built environment and its relationship to employee attitudes and behaviors by exploring employee satisfaction and specific staff-patient interaction behaviors. This study adds to the current body of literature on outpatient environments by using real patients and staff members as participants. In addition, there are relatively few studies that have been able to compare patient and staff outcomes before and after a major change in the physical surroundings. It is crucial understand how the physical environment can contribute to an overall more positive experience for both patients and employees.

1.14 Research Questions and Hypothesis

This study aimed to test whether a major change in the physical attractiveness of one of the outpatient practices that Douglass (2006) studied significantly increased patients' perceived quality of care and their perceptions of their interactions with staff. It also examined whether or not staff rated that their attitudes and behaviors had changed since the change in physical environment. The four research hypotheses were:

1. Patients will perceive their interactions with staff to be more positive in the more attractive environment.
2. Patients will perceive overall higher quality of care in the move attractive environment.
3. Staff members will engage in more positive behaviors with patients in a more attractive environment.
4. Staff members will feel they are able to engage in more positive behaviors with patients in a more attractive environment.

Additional research questions aimed to explore how other patient perceptions about their experience, such as environmental appraisals of the waiting area and exam rooms had changed with regard to the new environment.

CHAPTER 2

METHODS

2.1 Research Design and Site Selection

This study is the second phase of an earlier study by Becker and Douglass (2006). Becker and Douglass had participants rank the physical attractiveness of seven clinical outpatient practices located in six facilities within the Weill Cornell Medical complex/ New York Presbyterian Hospital in New York City. These sites represented a wide range of physical attractiveness as well as clinical practice areas, including dermatology, gastroenterology, and obstetrics/gynecology.

The purpose of this study was to test whether a major change in the physical attractiveness of one of the outpatient practices that Becker and Douglass studied significantly increased patients' perceived quality of care and their perceptions of their interactions with staff members. Becker and Douglass did not study specific staff behaviors, so this study also aimed to understand if actual staff behaviors changed significantly in a more attractive environment, thus changing patients' perceptions of staff interactions.

The site selected for the current study was a dermatology practice located prior to the move to a new facility within the main hospital complex (Starr 326). It was ranked the least attractive out of the six facilities in Douglass's study. In January 2007 this practice moved into a newly constructed outpatient center, the Weill Greenberg Center for Ambulatory Care and Medical Education (Greenberg Center). The research design was a pre-post design intervention case study, with data being collected before and after the move from the older facilities of the Weill Cornell Medical complex/New York Presbyterian Hospital to a space within the newly constructed freestanding outpatient Greenberg Center. A multi-method approach with both quantitative and

qualitative data was used in order to gain a deeper understanding of the nature of patient-staff interactions and the influence of the built environment on them. The methods included patient surveys, staff surveys, and short focused interviews with both patients and staff. The physical conditions of each facility were documented using photographs and floor plans.

2.2 Site Descriptions

Approximate square footages and space allocation for the dermatology practice at both the Starr Pavilion and at the Greenberg Center are listed in Table 1. Square footage calculations are approximate and represent usable square footage, which excludes wall thickness, vertical penetrations, mechanical, and building core space. The annotated floor plans show the overall layout of the spaces and highlight waiting areas, exam rooms, staff areas, lab space, doctor's offices, academic space, storage, restrooms, corridors, elevators, as well as specialized procedure areas. The square footage calculations were completed using floor plans provided by Weill Cornell Medical College.

Table 1. Space Allocations for Starr 326 and The Weill Greenberg Center

	Starr 326	% of Space	WGC	% of Space
	Derm (SF)		Derm (SF)	
Waiting Room	450	15.4%	1,509	19.2%
Staff Space	380	13.0%	1,555	19.8%
Exam/ Treatment	1207	41.2%	1,814	23.1%
Lab	70	2.4%	174	2.2%
Doctor/ Private Office	143	4.9%	1,108	14.1%
Restroom	44	1.5%	236	3.0%
Academic	259	8.8%	860	10.9%
Storage	99	3.4%	122	1.6%
Light Therapy	276	9.4%	479	6.1%
Total	2,928	100%	7,857	100%

**SF is usable SF (excludes wall dimensions, corridors, and elevators)*

2.2.1 Weill Cornell Medical Complex/ New York Presbyterian Hospital

The Weill Cornell Medical Complex occupies three city blocks (six and one quarter acres) in New York City between York Avenue and the East river and 68th and 71st streets. The eleven building complex has facilities for treatment, medical education, and research. Cornell University and New York Hospital have had a relationship since the founding of the medical school in 1898. The New York Hospital is the second oldest hospital system in the United States. In 1927 New York Hospital and Cornell University Medical College agreed to build a large center that would have state of the art facilities for teaching, research, and treatment. The complex was completed in 1932 and won several architectural awards. It is a neo-gothic structure modeled after the Pope's palace in Avignon. The original design of

the complex incorporated many of the latest ideas of the time for providing excellent patient care, as well as luxurious facilities for staff and physicians. The complex has undergone several renovations and additions since it opened in 1932. The most recent additions include the C.V. Starr Pavilion for Ambulatory Care (1985), the Stitch Radiation Therapy Center (1986) the Helmsley Medical tower (1989), and the Greenberg Pavilion for inpatient care (1997). New York Hospital completed a full assets merger with Presbyterian Hospital to become the New York Presbyterian Hospital in late 1997. It is the university hospital of Weill Medical College of Cornell University and College of Physicians and Surgeons of Columbia University (*New York Hospital (New York- Presbyterian Hospital/ Weill Cornell Medical Center, 2007; The Joan and Sanford I. Weill Medical College,2007)*)

2.2.2 Weill Greenberg Center for Ambulatory Care and Medical Education

The Weill Cornell Medical College opened the Weill Greenberg Center for Ambulatory Care and Medical Education in January 2007. The \$230 million Greenberg Center has 13 stories that house state of the art clinical and teaching facilities for departments such as Dermatology, Gastroenterology, ENT, In Vitro Fertilization, and Cardiology. The building was designed to further the medical college's mission of excellence in research, teaching, and patient care. Many of the college's clinical departments have been consolidated and moved from other locations into one facility in order to create a more streamlined patient experience, with the convenience of "one stop shopping." There are patient amenities such as a welcome and resource center, and convenient drop off and pick up parking off of the main lobby. The center also features a new clinical skills training center for medical students where they can gain hands-on clinical experience through controlled simulations.

Polshek Partnership designed the base building and Ballinger designed the interiors (see Appendix A: Weill Greenberg Center Building Photos). The gently sloped vertical surfaces and luminous glass of the exterior are intended to reflect the gothic motif of the original 1932 complex. The concept for the interior design was to create a spa-like environment that promoted wellness, healing, and comfort for the patient. Planners wanted patients to have a more convenient, efficient experience from the time they arrived at the building, to finding the doctor's office, to the time they checked out and left. The building won an Award of Merit in the Health Care and Hospital Category for New York Construction's Best of 2006. (*New Era for Patients- an innovative Ambulatory Care and Medical Education Building*.2007; *Weill Cornell Medical College breaks ground for new ambulatory care and medical education building*.2007; Miller, 2007; Weil, 2007)

2.2.3 Department of Dermatology

The dermatology practice is primarily a referral outpatient practice. It also houses a clinic staffed by medical residents. It was previously located within the main hospital complex at the Starr Pavilion in room 326. It is currently located in the Weill Greenberg Center and occupies the entire 9th floor. Since the move the practice has expanded its general dermatology outpatient service as well as its specialized services including the Dermatologic and Mohs' Micrographic Surgery Unit, and the Cosmetic and Laser Dermatology Unit. The department has also added two new physicians to the staff. It is expected that there will be an increase in the number of annual patient visits in 2007 resulting from the additional physicians, and the enhanced specialized care units (see Appendix B: Department of Dermatology Patient Demographics for specific patient demographic information). In 2005 the Department of Dermatology and Clinique laboratories announced the establishment of the Clinique Skin Wellness

Center at Weill Cornell. Together they aim to approach skin wellness from both the clinical and the cosmetics perspective. The new Weill Greenberg Center will have a Clinique sponsored information center with computer terminals and handout materials in the waiting room of the Dermatology department (*Clinical Service*, 2007).

Table 2. Annual Department of Dermatology Visits For Fiscal Year 2006

Practice	Number of Visits
Faculty Practice	22,784
Clinic	5,088
Total	27,872

Table 3. Dermatology Employees by Job Type

Job Type	Starr 326 (2006)	Weill Greenberg Center (2007)
Doctor	7	9
Medical Staff	7	7
Admin. Staff	6	6
Total	20	22

Table 4. Patient to Staff Ratios

Ratio	Starr 326 (2006)	Weill Greenberg Center (2007)
Patient to Staff	1,393: 1	1,267: 1
Patient to Clinical Staff	1,991: 1	1,742: 1
Patient to Doctor	3,982: 1	3,097: 1

2.2.4 Site Description of Starr 326 Dermatology

The general dermatology practice was located on the third floor of the Starr Pavilion in the main hospital complex. The unit was divided into two separate, but adjacent, sections. The general dermatology practice was located in room 326. The clinic, which was staffed by medical residents and had open office hours several times a week for Medicare and Medicaid patients, was located in room 301. This study focused only on the general dermatology practice. Each section had a designated entrance, waiting room, and reception area. The entire unit had approximately 2,928 SF of usable space (see Figure 1). At the Weill Greenberg Center all services have been combined into one space. This included 15 treatment/exam rooms, ranging in size from approximately 64 SF to 126 SF. The exam rooms had a combination of light blue, light yellow, and peach walls with grey/beige patterned vinyl flooring. They had overhead fluorescent lighting (see Figures 2-3). Each exam room typically had an exam table, a computer console, storage and counter space for medical supplies, as well as any specialized equipment (see Figure 4). The unit had one central corridor for primary circulation of doctors, patients, staff, and students. It had peach walls, fluorescent lights and vinyl flooring (see Figure 5). The waiting area for Starr 326 was 212 SF and also had peach colored walls. It had two separate windows for

Legend:

- Waiting Room (450 SF)
- Staff Space (380 SF)
- Exam/ Procedure Room (1207 SF)
- Lab Space (70 SF)
- Doctor/ Private Office (143 SF)
- Restroom (44 SF)
- Academic Space (259 SF)
- Storage (99 SF)
- Light Therapy (276 SF)
- Corridor
- Elevators

Scale: 0 3 6 9 12 15 18 21 24 27 30 ft.

Note: Square footages are usable SF (excludes wall dimensions)

Room Details:

- 72 SF WAIT
- 28 SF NURSE ST
- 76 SF EXAM
- 67.5 SF EXAM
- 67.5 SF EXAM
- 67.5 SF EXAM
- 67.5 SF EXAM
- 76 SF RECEPTION
- 166 SF WAIT
- 77 SF OFFICE
- 90 SF EXAM
- 80 SF EXAM
- 80 SF OFFICE
- 70 SF LAB
- 126 SF EXAM
- 24 SF
- 259 SF CONFERENCE
- 91 SF STORAGE
- 35 SF UTILITY
- 64 SF EXAM
- 63 SF OPERATION
- 80 SF EXAM
- 80 SF EXAM
- 72 SF EXAM
- 72 SF EXAM
- 108 SF SECRETARY
- 212 SF WAIT
- 20 SF
- ST-396F MECHANICAL
- ST-396E TEL
- ST-396C DATA
- ST-396 CORR
- ST-396A CORR
- ST-396 TEL
- ST-396 ELEV
- ST-396 ELEV
- ST-396 ELEV



Figure 2. Starr 326 Dermatology Reception Area



Figure 3. Starr 326 Dermatology Waiting Area



Figure 4. Starr 326 Dermatology Exam Room

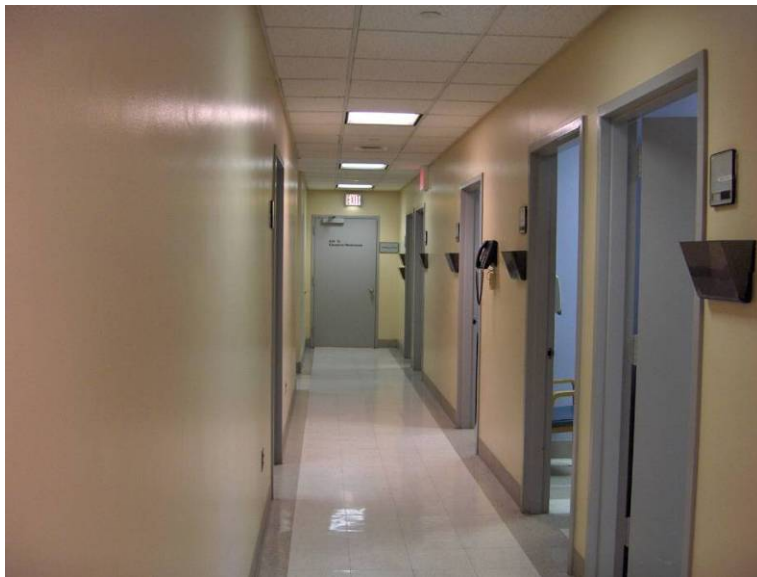


Figure 5. Starr 326 Dermatology Main Corridor

2.2.5 Site Description of Weill Greenberg Center Dermatology

The Dermatology department is currently located on the 9th floor of the Weill Greenberg Center. The clinic and the referral outpatient practice have been combined into one space. The patient arrives directly into the waiting area of the dermatology

practice upon exiting the elevator. The entire unit is approximately 7,857 SF of usable space (see Figure 6). This includes 14 exam/treatment rooms, ranging in size from 120 SF to 168 SF. Each exam room typically has an exam table, a computer console, storage and counter space for medical supplies, as well as any specialized equipment. They have white walls, and brown patterned vinyl flooring. The exam rooms primarily have overhead direct fluorescent lights, with the exception of a few that have specialized indirect wall lighting provided by Clinique (see Figure 7). The new unit has increased circulation space. There is a primary corridor for patients, doctors, and medical staff, and a secondary corridor for doctors, staff, and students only. All of the corridors are carpeted or marble, have white walls, and artwork displays (see Figure 8). There are 10 private offices, a staff lounge, and enhanced academic spaces located off of the secondary corridor.

The interior design of the Weill Greenberg Center was intended to enhance patient flow and promote a feeling of healing and wellness. The new waiting area is 1,425 SF and has an open reception desk for patient check-in (see Figure 9). The checkout area has been separated from the waiting room and is divided into individual consoles, where patients meet privately with a staff member to discuss billing and follow up appointments. The elevator lobby and part of the waiting room have marble floors. The waiting area has a combination soft seating including love seats and armchairs (see Figure 10). There is enough seating for up to 35 people. The seating is arranged in small groups that are clustered around coffee tables. There is also individual seating for more privacy. There are several square coffee tables with table lamps. The primary form of lighting in the waiting area is natural light from the wall of full windows along one side. These windows look out onto 70th Street. Throughout the unit there are many pieces of artwork on the walls. All of the walls in the unit are white, with the exception of a wall of wood behind the reception desk.



Weill Greenberg Center- 9th Floor Dermatology

Figure 6. Weill Greenberg Center Dermatology Annotated Floor Plan



Figure 7. Weill Greenberg Center Dermatology Exam Room



Figure 8. Weill Greenberg Center Dermatology Main Corridor

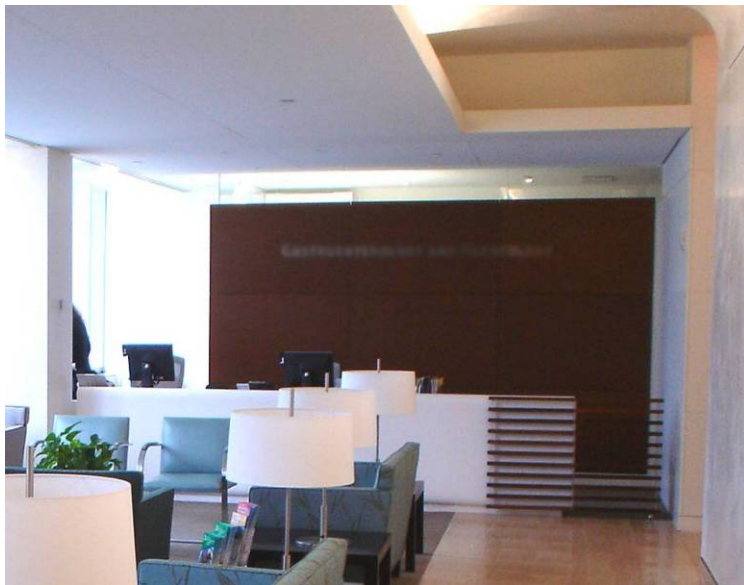


Figure 9. Weill Greenberg Center Dermatology Reception Area



Figure 10. Weill Greenberg Center Dermatology Waiting Area

2.3 Data Collection

Data was collected during two different time periods. In January 2007 a patient satisfaction survey was administered at the Starr 326 location. In April 2007 the same patient satisfaction survey was administered at the Weill Greenberg Center, as well as a retrospective staff satisfaction survey that asked staff to compare their experience in the new facility with that in the previous facility. In order to gain a deeper understanding of any differences between the new environment and the old environment short focused interviews were conducted with both patients and staff in April 2007. A total of 93 patient surveys were collected, as well as six staff retrospective surveys out of 13 total staff. Short focused interviews were conducted with six patients and six staff members.

2.3.1 Patient Satisfaction Survey Procedure

A patient satisfaction survey was used to capture patients' perceptions of the office environment, their interactions with staff members, and their perception of the overall quality of care. The survey was developed using the same patient satisfaction survey as Douglass (2006), with 16 additional questions focusing on specific staff behaviors and interactions (Appendix C: Patient Satisfaction Survey). The majority of the questions were on a 5 point strongly agree-strongly disagree Likert scale; 10 questions were in a "yes/no" format.

The researcher positioned herself in the waiting room near the exit of each practice. She approached all exiting patients, introduced herself and the study, and asked patients to fill out the patient satisfaction survey. The only patients that were not able to complete the survey were those patients that did not speak English. All patients were approached, and those that did not speak English informed the researcher. For this phase of the research the survey was only formatted in English. Patients were told that participation was completely voluntary, anonymous, and that their responses would not affect their relationship with the Weill Cornell Medical College or the dermatology practice. They were given the option to fill out the survey in the office, or to take it home and mail it back to the research team in Ithaca, NY. Patients that filled out the survey in the office placed it in a sealed envelope and returned it directly to the researcher in the waiting room. Patients that decided to take the survey and mail it back were provided with a pre-addressed, stamped envelope. Survey distribution took place during normal practice hours from 9:00 a.m. to 5:00 p.m. with a break from 12:00 p.m. to 1:00 p.m. Patients generally took between five and ten minutes to fill out the survey.

The survey asked basic demographic information such as gender and age, but no identifying information about the patient such as date of visit, physician visited, or

medical condition. It did ask about the type of appointment (check-up, consultation, procedure, or other) and the number of times that the patient had visited the office in the past year. The survey was divided into six sections: general information, waiting area, exam room, staff experience, overall visit, and overall experience. The questions addressed perceptions about the waiting area and the exam room, as well as interactions with staff members and overall satisfaction with the visit and the office.

A total of 93 patient surveys were collected. Survey distribution took place over four weeks, for a total of 40 hours of distribution and collection. Appendix D: Patient Survey Distribution and Collection, summarizes the distribution time periods and response frequencies for the patient survey data collection. Due to time constraints with the move in January, only 15 hours of survey distribution could take place at Starr 326 prior to the move to the Greenberg Center. The overall response rate was 72 percent, with 63.4 percent of the surveys filled out in the office and 36.6 percent of the surveys returned by mail. The response rate for Starr 326 was 66.1 percent, with 64.9 percent filled out in the office and 35.1 percent returned by mail. The response rate at the Weill Greenberg Center was 76.7 percent, with 62.5 percent filled out in the office and 37.5 percent returned by mail. Analysis of demographic information found the survey population to be representative of the overall practice patient population.

2.3.2 Staff Satisfaction Survey Procedure

A staff satisfaction survey was used in order to understand the employee perspective on delivery of care and job satisfaction. It also addressed both social and physical aspects of the work environment. In order to understand the complex nature of job satisfaction, questions from pre-existing surveys focusing on job stress (NIOSH; Pearlin & Schooler, 1978), physical health (Krout & Wethington, 2003;

Stansfeld, Head, & Marmot, 2000), job demands (Karasek, 1979), and job support (Krueger et al., 2002; Moos & Insel, 1974) were combined. After the initial list of questions was created, the Cornell research team identified those questions which were most applicable to the outpatient practice work environment. The original questions were also sent to several nurses in an ambulatory care facility in Oakland, CA for feedback. From the feedback, two questions were eliminated, and two questions were reformatted.

In order to understand how staff felt about delivery of care and their ability to interact with patients, sixteen additional questions were added. The survey was then sent to the department administrator at the target practice for feedback. The survey was again revised and shortened based on this feedback. Originally, the survey was intended to be distributed both before and after the move, but due to time constraints it was only possible to administer it after the move. This meant that the questions and responses had to be reformatted to be retrospective (see the original staff survey in Appendix E; the retrospective survey in Appendix F).

The survey was distributed to all practice staff, both clinical and administrative, but excluded physicians. The survey was distributed directly to staff members by the researcher. The researcher introduced herself and the study, and asked staff members to fill out the survey at their convenience and return it in a sealed envelope to a collection box located in the staff lounge. Practice employees were told that the survey was completely anonymous, confidential, and participation was voluntary. They were assured that it was not an evaluation of their job performance and that their responses would not in any way affect their relationship with the practice or the Weill Cornell Medical College. The survey asked no identifying information such as name or job title. Only basic demographic information was collected, including gender, age, and how long they had worked at the practice. In

order to preserve confidentiality, it was not possible to ask respondents if they were clinical or administrative staff. The collection box was left in the staff lounge for a week and half. Of the 13 total staff, six surveys were collected, for a 46.2 percent response rate.

2.3.3 Patient Focused Interview Procedure

Short focused interviews were conducted with patients in order to gain a deeper understanding of any differences between their experiences at the Weill Greenberg Center compared to Starr 326. The researcher approached exiting patients, introduced herself and the study, and then asked them whether or not this was their first time visiting this dermatology practice. If it was their first time they were thanked. If the patient had visited the practice before the move to the new facility, they were asked to participate in a five to ten minute focused interview. They were asked to read and sign an informed consent form (see Appendix G: Patient Focused Interview Informed Consent). The researcher then proceeded with the interview (see Appendix H: Patient Focused Interview Guide). The questions pertained to positive aspects of the visit as well as aspects that could be improved. They also addressed any differences between the two physical environments, in the waiting experiences, in anxiety or stress levels, and in interactions with staff members. The researcher asked a broad question (e.g. ‘What were some of the more positive aspects of your visit today?’) and then probed interviewees for further understanding (e.g. ‘Can you give me an example of how the staff were more polite?’). Interviews lasted between five and ten minutes. A total of six patient focused interviews were conducted.

2.3.4 Staff Focused Interview Procedure

Short focused interviews were also conducted with staff members in order to obtain a better understanding of any differences between their experiences at the Weill Greenberg Center compared to at Starr 326. When the researcher approached staff members to complete the staff survey, she also asked if they would be willing to participate in a short interview at a convenient time. If the staff member agreed, they arranged a time to sit and conduct the interview in a private location. At this time the staff member was asked to read and sign an informed consent form (see Appendix I: Staff Focused Interview Informed Consent). The researcher then proceeded with the interview (see Appendix J: Staff Focused Interview Guide). The questions addressed both positive aspects of the work environment and those that could be improved. They also covered any differences in how effectively the staff member felt they were able to work, as well as any differences in stress and anxiety levels. Staff members were also asked about their interactions with their co-workers and patients. The researcher would ask a general question and then probe interviewees for more information. The interviews typically lasted between five and ten minutes. A total of six staff focused interviews were completed.

2.4 Data Analysis

The patient and staff survey data were analyzed using descriptive as well as analytical statistics. Because of the small number of focused interviews, interview responses were used primarily to provide insight into the survey data. The patient questionnaire was divided into seven sections; general information, waiting experience, exam room experience, staff behaviors, staff experience, overall visit, and the quality index. Questions in the staff behavior section asked patients about specific staff behaviors. There were eight questions in the staff behavior section with a yes/no

answer format. A ‘yes’ response was coded as ‘1’ and a ‘no’ response was coded as ‘0.’

Questions in the waiting experience, exam room experience, staff experience, and overall visit sections all had a 5 point Likert scale response format. A ‘strongly agree’ response was coded with a ‘5’ and a ‘strongly disagree’ response was coded with a ‘1’. The nine questions in the waiting experience section aimed to capture patients’ perceptions of their waiting experience in the waiting area. There were five questions that aimed to capture patients’ perceptions of their exam room experience, and 13 questions that examined patients’ perceptions of their interactions and experience with staff members. And the seven questions in the overall visit section aimed to understand patients’ overall feelings about specific aspects of their visit.

The quality index included the last four questions on the survey and aimed to capture patients’ overall perceptions of the quality of their care. These questions were, ‘The care I received here was’, ‘The service I received here was’, ‘Overall, my interactions with the staff were’ and ‘Overall, my interactions with my doctor were.’ These questions had five response choices: excellent, good, neutral, fair, and poor. An ‘excellent’ response was coded as a ‘5’ and a ‘poor’ response was coded as ‘1’.

There were seven questions on the patient survey that were reverse coded so that a ‘5’ meant strongly disagree and a ‘1’ meant strongly agree. These questions were, ‘The waiting area felt too crowded’, ‘I was bothered by over hearing other people’s conversations in the waiting area’, ‘I had to wait too long before being called into the exam room’, ‘The exam room felt too small’, ‘I had to wait too long in the exam room before being seen by the doctor’, ‘I felt annoyed by my experiences today’ and ‘I had difficulty finding my way around the office today.’

Questions on the patient surveys were first analyzed using independent T-tests at a 95 percent confidence level to determine significant differences between the

means of the questions. The four questions in the quality index were summed together and then the means of the index were computed and analyzed using an independent T-test.

The initial T-test analyses were not sensitive enough to measure the important difference between the frequencies of patients responding with the highest response '5,' and therefore further analysis was conducted. Data in the waiting experience section, exam room experience section, staff experience section, overall visit, and quality index was re-coded so that '1-4' responses were coded as '0' and '5' was coded as '1.' Then a Pearson Chi-Square test was conducted on each question to measure the significant differences at the .05 level between the proportions of only the '5' responses.

CHAPTER 3

RESULTS

3.1 Patient Demographic Information

Ninety-three patient surveys were collected over a total of four weeks of survey distribution. Table 5 shows the breakdown of the ages of the survey populations. When compared with the practice population demographics for the fiscal year 2006, the survey population was considered representative of the overall practice population. Forty-three percent of all respondents were male, and fifty-seven percent were female. Starr 326 had a sample population size of 37, of which 50 percent of the respondents were male and 50 percent were female. One person did not report their gender. The sample population size for the Weill Greenberg Center was 56. Thirty-eight percent of respondents were male, and sixty-two percent were female. Again, one person did not report their gender.

Table 5. Patient Survey Population Age Breakdown

Age Range (Years)	Starr 326 (N=36)	Weill Greenberg Center (N=56)	Overall Population (N=93)
0-18	0%	3.6%	2.2%
19-35	35.1%	51.8%	45.2%
36-50	16.2%	14.3%	15.1%
51-65	21.6%	17.9%	19.4%
65 and over	27%	12.5%	18.3%

Other patient demographic information such as number of past visits, appointment type, and support (whether or not a patient came alone or was accompanied by someone) are shown in Appendix K.

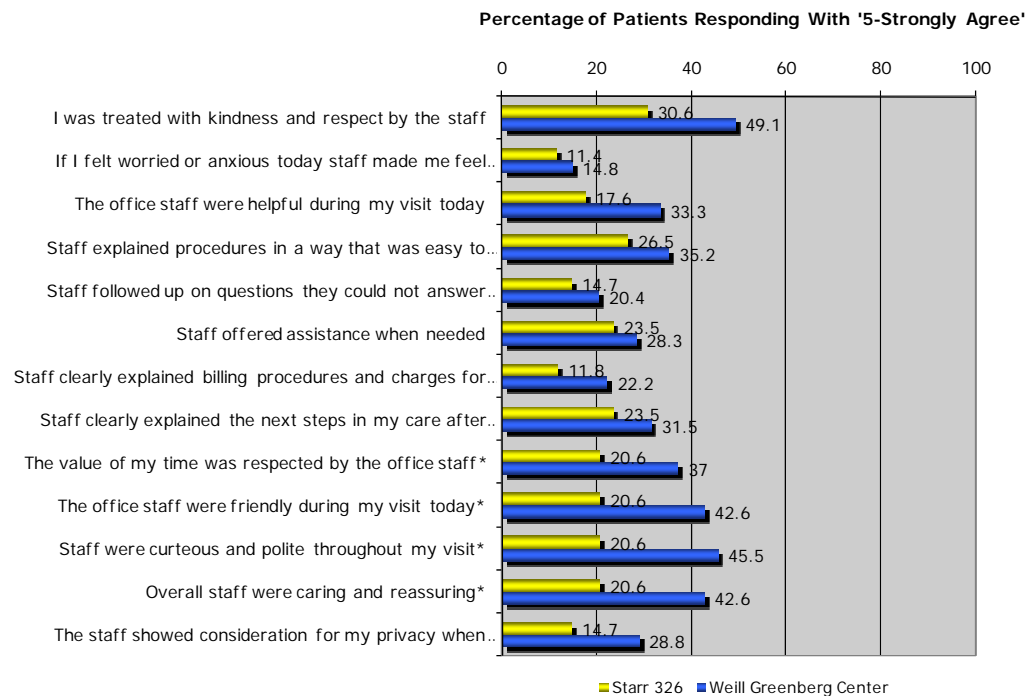
3.2 Staff Demographic Information

Of the thirteen total staff, six staff surveys were collected, for an overall 42 percent response rate. Five out of six respondents were female, and one person did not report their gender. Four staff members were between the age of 19 and 35 years old, one staff member was between 36 and 50 years old, and one person did not report their age. Three out of five respondents had worked at the practice for less than a year, two had worked at the practice between four and seven years, and one person did not report how long they had worked there. Because of the small number of staff members no information about job title was collected. This sample was determined to be overall representative of the staff population. However, while the response rate was of reasonable size, the population of the target unit itself was too small to permit meaningful statistical analysis. Therefore, in the analyses that follow, only the actual number of respondents is reported in order to give a sense of whether some trend or consensus existed for particular questions.

3.3 Patient Perceptions of Staff Interactions

Overall, patients' viewed their interactions with staff more favorably after the move to the Greenberg Center. Specifically, patients' view of staff was statistically more positive at significant levels ($\alpha=.05$) for the following questions: 'The office staff were friendly during my visit today ($X^2=4.50$, $df=1,86$, $p=.028$)'; 'Staff were courteous and polite throughout my visit ($X^2=5.64$, $df=1,84$, $p=.015$)'; 'Overall Staff were caring and reassuring ($X^2=2.30$, $df=1,89$, $p=.028$); 'Overall, I felt cared for as a

person during my visit ($X^2=7.29$, $df=1,89$, $p=.006$); and 'I was made to feel welcome during my visit ($X^2=8.47$, $df=1,88$, $p=.003$).'



*Figure 11. Patient Survey Responses on Staff Experience Section (*indicates question with a statistically significant difference)*

For a number of other staff-related questions the Greenberg Center was rated more highly but the differences were not statistically significant (see Appendix L for complete statistical information for all questions on the patient survey). Thus, for all questions asking patients about their view of their interactions with staff, the responses were more positive after the move to the Greenberg Center.

3.4 Patient Perceptions of Quality of Care

In earlier research by Becker and Douglass (2006) a four question 'Quality of Care' index was used to determine patients' perceptions of overall quality of care. Using the same index for this phase of the research, there was a significant difference following the move to the Greenberg Center ($t=-2.93$, $df=1,89$, $p=.002$). In addition, three of the questions on the original index had a significantly higher frequency of patients' responding 'excellent' following the move (see Figure 12). These questions were; 'The care I received here today was...'($X^2=9.17$, $df=1,89$, $p=.002$); 'The service I received here was...'($X^2=8.09$, $df=1,89$, $p=.004$); and 'Overall, my interactions with staff were...' ($X^2=6.05$, $df=1,89$, $p=.012$). A separate question, that other research has shown is a good gauge of a patient's loyalty to a provider (Press Ganey, 2006), 'I would recommend this office to others,' was also significantly different following the move to the Greenberg Center ($X^2=10.52$, $df=1,88$, $p=.001$).

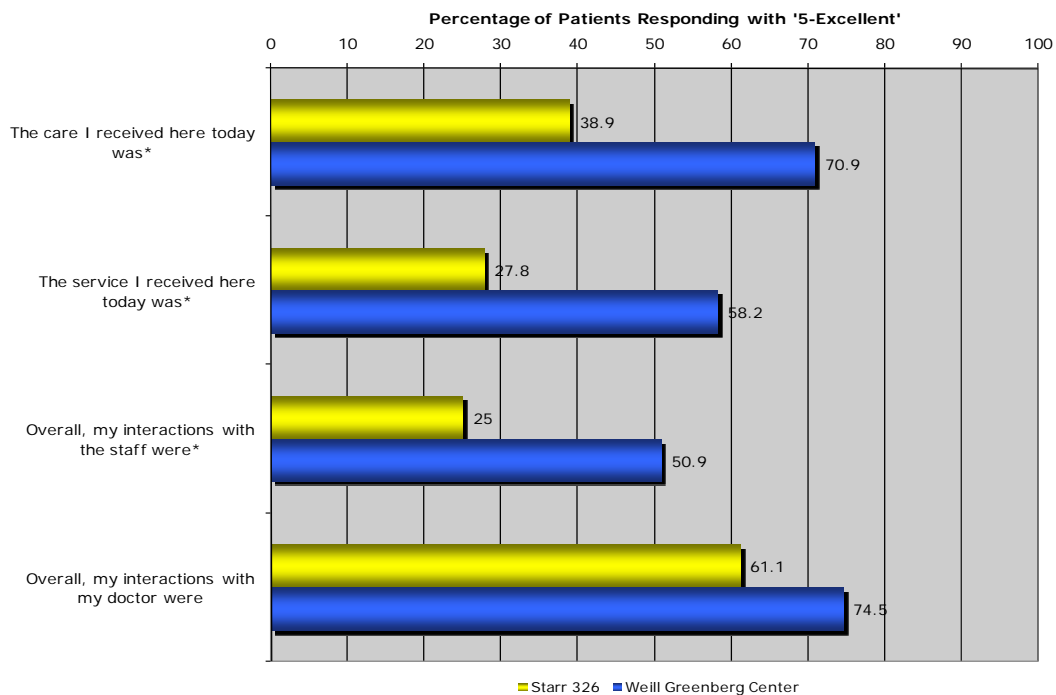
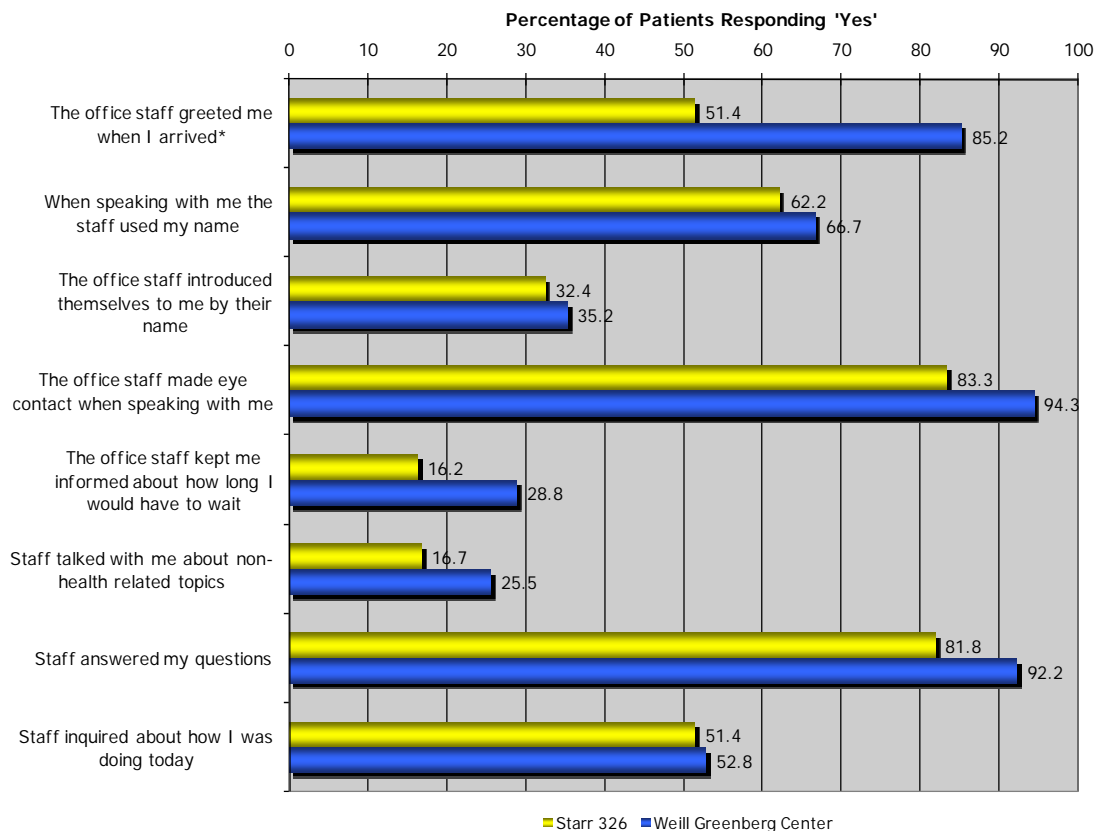


Figure 12. Patient Responses on the Quality Index (*indicates question with a statistically significant difference)

3.5 Staff Behaviors

While patients' perceptions of their interactions with staff members were higher following the move to the Greenberg Center, questions asking patients about specific behaviors of staff before and after the move to the new facility revealed few differences. In the short focused interviews patients commented several times that staff behaved similarly in both the new and old facilities; that is, very professional, polite, nice, and friendly. Staff responses about their behavior (see below), also showed no differences in behavior following the move. However, in the open-ended question on the survey more people commented on the friendliness and professionalism of the reception staff at the Weill Greenberg Center than did at Starr 326 (see Appendix L). There was only one question about changes in specific staff behaviors with a statistically significant difference before and after the move, 'The office staff greeted me when I arrived ($X^2=12.32$, $df=1,89$, $p=.001$).' For this question, fifty-one percent of respondents at Starr 326 said that they were greeted when they arrived whereas at the Weill Greenberg Center eighty five percent of respondents reported that they were greeted upon arrival (see Figure 13).



*Figure 13. Patient Survey Responses on Staff Behaviors Section (*indicates question with a statistically significant difference)*

These findings are most likely related to a change in the physical design of the reception/ check-in area (see Figures 14-17).



Figure 14. Starr 326 Reception Area



Figure 15. Starr 326 Check-out area



Figure 16. Weill Greenberg Center Reception Area



Figure 17. Weill Greenberg Center Check-Out Area

3.6 Staff Perceptions of the Work Environment

The overall results of the staff retrospective survey revealed that staff perceptions of the work environment and their own behavior before and after the move had not changed significantly. Five out of six respondents reported that a customer service-training course had been offered by the administration; however only one respondent reported that they had attended it. While staff reported on the survey that their behavior had not changed significantly after the move, four out of six respondents felt less worried at work. In a focused interview, one staff member stated that the new environment has completely changed her outlook on life. She now comes to work smiling, looking forward to the day, whereas before she was planning to quit her job. She feels like she is part of the team and a more valued employee.

One aspect of behavior, communication among the staff that was not considered specifically in the survey emerged, however, in the focused interviews. In interviews staff members reported that they interacted with each other more in the new environment. Four of the six people noted that there was improved communication because of the new layout of workspaces. Staff members felt that their co-workers were now more accessible. However, two people commented that people were much more spread out in the new facility, which meant they communicate more frequently by email or instant messaging. Three people commented that the new staff lounge had helped promote closer relationships between staff members. They often sat and ate lunch together, whereas at Starr 326 this rarely occurred.

Overall staff reported that that the Weill Greenberg Center provided more room for patients and was a much better environment in which to work. Not surprisingly, staff retrospective survey results showed that five out of six respondents felt that the physical environment was cleaner and more comfortable. Four out six staff members felt that the work environment was less cluttered and disorganized. In

focused interviews staff members commented that the physical environment was much brighter, cleaner, and aesthetically pleasing. The majority of interviewees remarked that the amount of natural light was a positive change. One person said that the new phone system reduced noise, which improved their concentration and productivity. None of the staff reported that they had been involved in the planning or design of the new space.

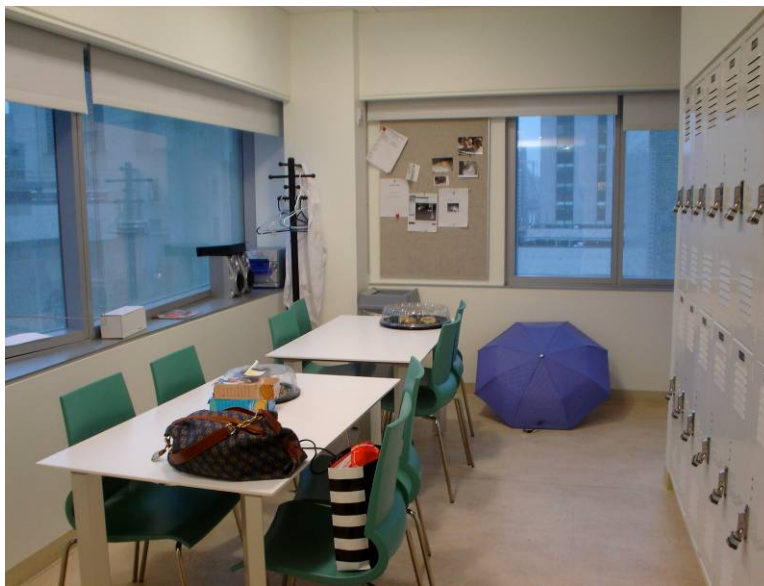


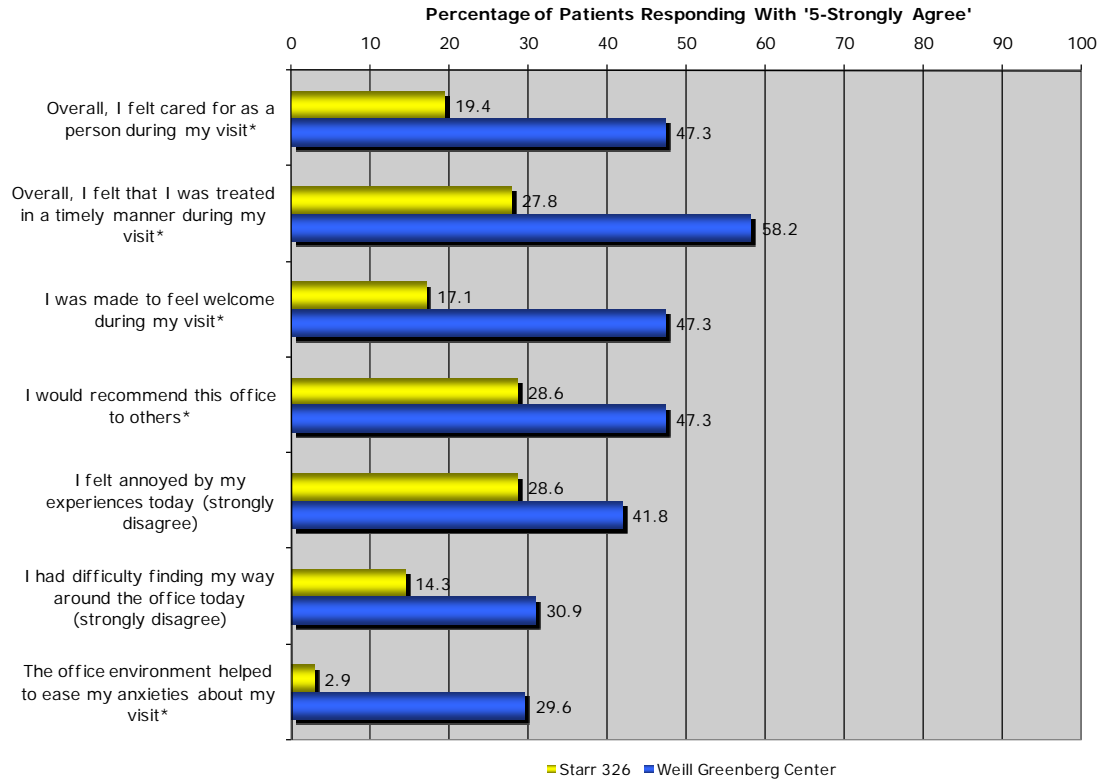
Figure 18. Weill Greenberg Center Staff Lounge



Figure 19. Weill Greenberg Center Staff Work Area

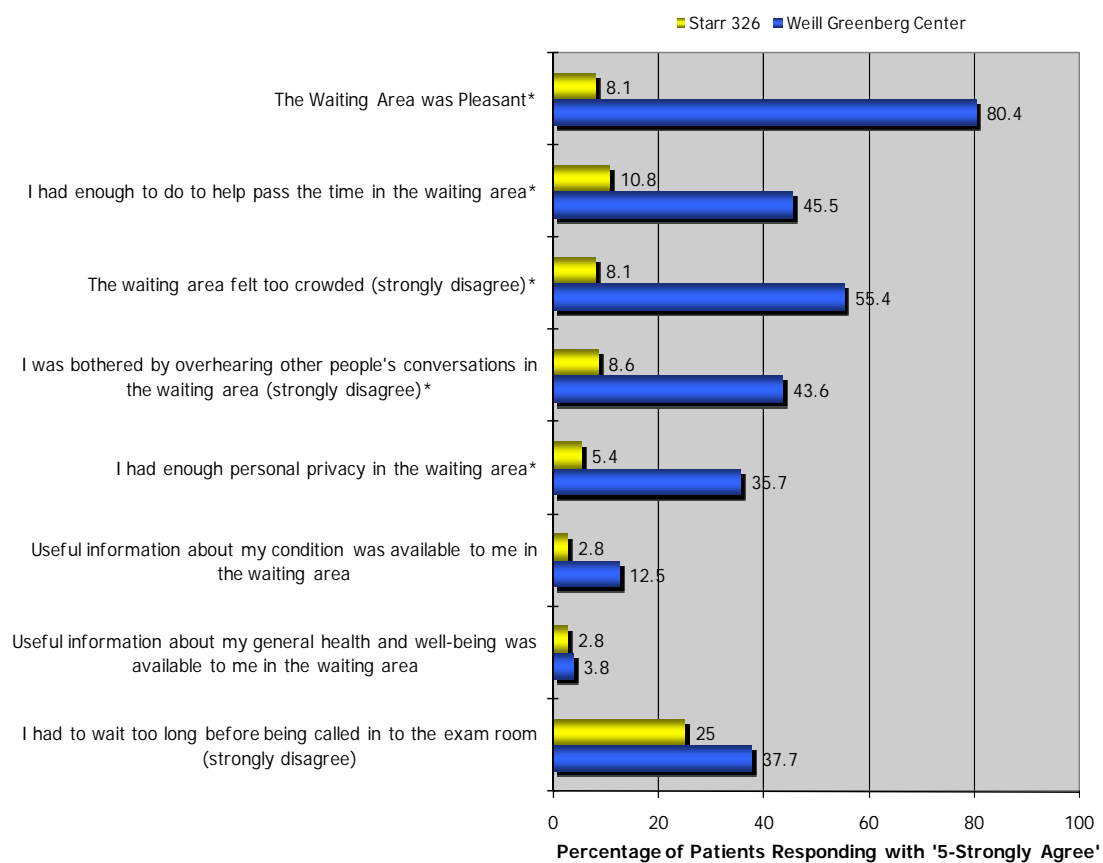
3.7 Patient Perceptions of Physical Environment

Patients' perception of their visit to the new Greenberg Center, and the role of the physical environment in their experience of the visit, were significantly more positive than in the older Starr facility. Given the anxiety attendant to hospital visits for most people, of particular interest was that significantly more patients reported that 'The office environment helped ease my anxieties about my visit ($X^2=9.85$, $df=1,87$, $p=.001$)' in the Greenberg Center compared to the Starr facility.



*Figure 20. Patient Survey Responses on Overall Visit Section (*indicates question with a statistically significant difference)*

In addition, the majority of the questions about the role of the physical environment in the waiting experience section were significantly more positive after the move to the new facility, including: , ‘The waiting area was pleasant ($X^2=46.57$, $df=1,91$, $p=.000$)’; ‘I had enough to do to help pass the time in the waiting area ($X^2=12.30$, $df=1,90$, $p=.000$)’; ‘The waiting area felt too crowded ($X^2=21.45$, $df=1,91$, $p=.000$)’; ‘I was bothered by overhearing other people’s conversations in the waiting area ($X^2=11.51$, $df=1,88$, $p=.000$)’; and ‘I had enough personal privacy in the waiting area ($X^2=11.33$, $df=1,91$, $p=.000$).’



*Figure 21. Patient Survey Responses on Waiting Experience Section (*indicates question with statistically significant difference)*

There were also significant differences on the questions, ‘The exam room felt too small ($X^2=8.79$, $df=1,90$, $p=.002$)’ and ‘The exam room was pleasant ($X^2=46.57$, $df=1,90$, $p=.000$).’ These findings are also not surprising due to increases in exam room size, and updated furnishings and fixtures.

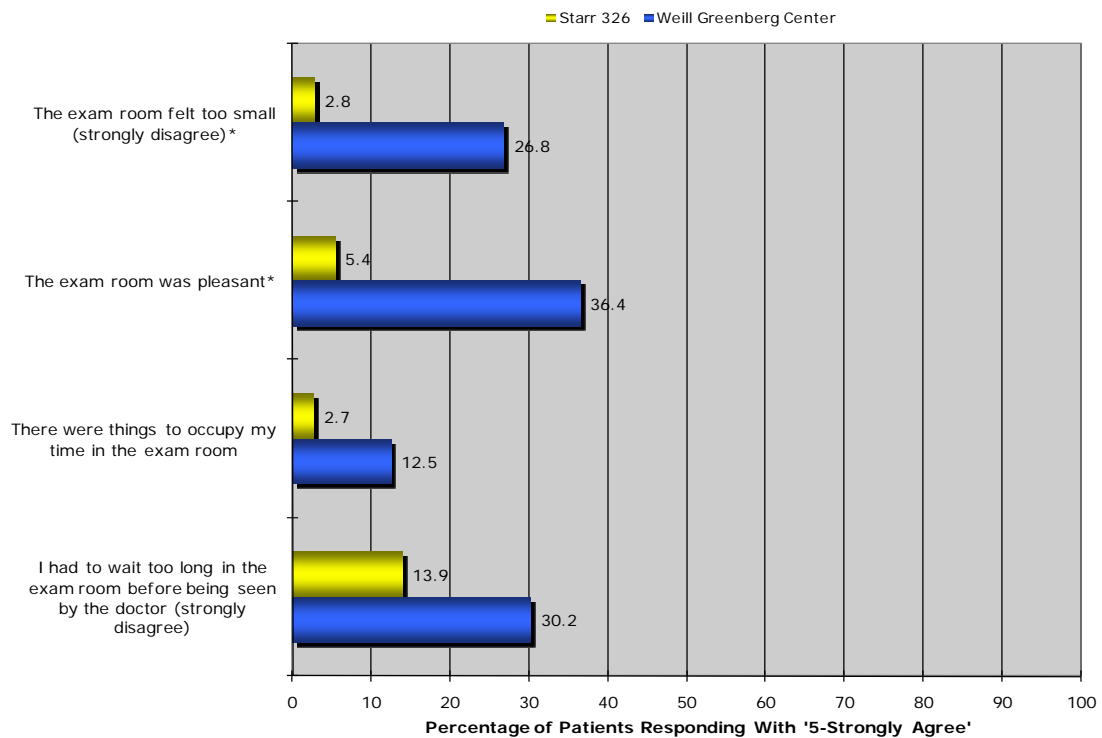


Figure 22. Patient Survey Responses to Exam Room Section (*indicates question with a statistically significant difference)

3.8 Summary of Key Findings:

- Patients perceived more positive interactions with staff members in the more attractive new environment, particularly the manner in which staff members interacted with patients.
- Patients' perceptions of quality of care and service were significantly higher in the more attractive environment.
- Patients were more likely to recommend the office to others, which indicates increased loyalty to the practice.
- Patient and staff data suggest that staff behavior with respect to patients was essentially unchanged. However, the new facility appeared to create more opportunities for communication among staff.
- Patients' appraisals of the physical environment, specifically the waiting area and the exam rooms, improved in the more attractive new environment.

CHAPTER 4

DISCUSSION & CONCLUSIONS

4.1 Patient Perceptions of Staff Interactions and Staff Behaviors

The first hypothesis was that patients' perceptions of their interactions with staff members would be significantly higher in the more attractive environment of the new Greenberg Center. This hypothesis was supported by the patient survey data. Patients at the Weill Greenberg Center did perceive more positive interactions with staff members. Specifically, they noticed differences in the manner in which staff members interacted with them. Patients perceived staff members as being more friendly, caring, welcoming, courteous, polite and respectful in the new environment. This finding supports previous research that in more attractive environments patients perceived more positive staff interactions and more positive impressions of staff than patients in less attractive environments (Becker & Douglass, 2006; Maslow & Mintz, 1956).

In the first phase of the Weill Cornell research, Becker and Douglass (2006) found a strong positive correlation between environmental attractiveness and positive impressions of staff interactions. However, they did not test whether or not actual staff behaviors varied as a result of the environment. Thus, a second hypothesis was that staff would engage in more positive behaviors with patients in the more attractive physical environment. The patient survey data and the staff survey data did not support this hypothesis. This is an interesting finding, because patients did perceive a difference in their interactions with staff members and the manner in which the service was delivered; however, they reported that actual behaviors did not change significantly.

The one behavior that patients did notice a significant change in was being greeted by a staff member upon arrival. This finding is not surprising and can be attributed to a change in the design and layout of the physical environment. At Starr 326 reception staff members were located in a separate room and spoke with patients through a glass window. The Weill Greenberg Center has an open reception desk in the waiting room where patients and staff speak face-to-face. Additionally, check-in and check-out areas have been separated into distinct spaces, reducing confusion and congestion at the main reception area.

Several respondents commented on the behaviors of staff members at the reception desk at the Weill Greenberg Center. They said that reception staff members were ‘friendly’ and ‘eager to greet you as you approach’ and ‘very clear about directions.’ The results of this study show that allocating resources and focusing on the design of the reception area can have a significant positive effect on patients’ perceptions of their visit. This corresponds to the 2006 Press Ganey patient satisfaction report that outpatient reception staff members play an important role in improving patient satisfaction. Reception staff members are usually the first point of human contact that patients have on a doctor’s visit, and are a key element of a patients’ first impression of a visit. A physical design that makes receptionists more visible and accessible, as was the case at the Greenberg Center, is likely to create more opportunities for positive interaction. The design also may send a message to the receptionist about their expected role and behavior that is quite different than when sitting behind a wall with a sliding glass window separating the staff member from the patient.

4.2 Patient Perceptions of Quality of Care

A key question of this phase of the Weill Cornell research was whether, given that the patient population and staff were essentially unchanged before and after the move to the Greenberg Center, patients' perceived quality of care improved following the move to a more attractive environment. Previous research has shown a strong correlation between the attractiveness of the physical environment and patient perceptions' of quality of care (Becker & Douglass, 2006; Arneill & Delvin, 2002). Results of this study were consistent with the earlier research. They showed a significant improvement in patients' perceptions of quality of care in the more attractive environment. Delvin (2002) explored more specific design features of waiting rooms, and found that perceived quality of care was greater for rooms that contained nice furnishings, artwork, lighting, and appeared warmer (psychologically), than those that did not. The specific elements of the new environment that might have contributed to it being viewed as highly attractive were not examined in the current study. However, the quality of the furnishings, lighting, and art work was very high. Moreover, the waiting area was located along a spectacular floor to ceiling window wall overlooking New York City, providing an enormous amount of daylight and interesting and dynamic visual relief from the typical waiting area.

Research studies have also made a strong connection between patients' impression of staff interactions and their perceptions' of overall quality of care (Becker & Douglass, 2006; Powers & Bendall-Lyon, 2003). Communication and interpersonal relations with staff members are often stated as being the most important aspects of a patient's visit (Leiter, Harvie & Frizzell, 1998; Edgman-Levitan & Cleary, 1996; Laine et al., 1996; Caplan & Sussman, 1966).

The finding of significant improvement in patients' perceptions of staff interactions reflects the important difference between what Hutton and Richardson

(1995) describe as the ‘what’ and ‘how’ of service. The ‘what’ is typically the physical, technical, and outcome quality, and the ‘how’ is the manner in which the service is delivered. It is often very hard for patients to assess the service provider’s technical competence, as well as the immediate results of a treatment, thus they rely on other measures of quality, such as the ‘how’ of the delivery and the ‘what’ of the facility design (Powers & Bendall-Lyon, 2003; Omanachu, 1990). This study did examine specific behaviors that might play a role in how patients’ evaluate the quality of their visit. However, even though patients did not notice significant changes in staff behaviors, they noticed a difference in the manner in which the behaviors were carried out in the more attractive environment. They also reported significantly more positive appraisals of the physical surroundings. Thus these results support the idea that patients use more tangible evidence, such as manner of service delivery, and the physical environment to evaluate quality (Berry & Bendapudi, 2003; Hutton & Richardson, 1995; Bitner, 1992) when the service itself is difficult to understand or judge.

The 2006 Press Ganey Patient Satisfaction Report found a strong correlation between patients’ overall rating of care and their willingness to recommend a facility to others. According to Reichheld (2003) the most powerful way to measure customer loyalty is to assess customers’ likelihood of recommending the firm to someone else. Another significant finding from the current study was patients’ increased willingness to recommend the Greenberg Center to others. This finding suggests that patients are more loyal to the practice than before the move and will come back for repeat visits, as well as recommend the practice to others. This is important for administrators responsible for growing market share and revenue.

4.3 Staff Perceptions of Behaviors and the Work Environment

Consistent with the patient survey data, staff reported on the retrospective staff survey that they had not changed their behaviors with patients significantly since the move. This finding could be due to a social desirability bias. Staff may have been reluctant to state that their behaviors had changed significantly in the new environment because they may have felt that would indicate that they were not performing as well previously. It is important to note that this study did not explore in depth the culture of the organization, which can have a significant impact on the behaviors of employees. Culture can be described as the set of formal and informal norms, expectations, values and policies and practices specific to a work unit. An organizational culture promotes certain assumptions about work, working together, and how things should be done, given a specific context. These values then drive the behavior choices made by employees (Mallak et al., 2003). From conversations with Weill Cornell administrators responsible for planning and designing the new facility, it was clear that the new facility was explicitly intended to convey to patients that the organization cared about its patients and their service experience. Making available training for staff in customer relationships, along with the design itself, was part of a long term culture change effort captured under the “Weill We Care” theme that had been officially adopted by Weill Cornell for all its facilities and services.

While staff did not report any change in their behaviors with patients, they did note in focused interviews that their interactions with their co-workers had improved due to a new employee lounge and new workspace design. According to Davis (1984) location arrangements and the design of the building can facilitate or impede job related interfaces, which can either reduce or increase employee stress. Berry and Bendapudi (2003) noted that visible employee stress can send negative signals to patients. Thus the improved communication and interpersonal relations between

employees may have impacted how staff members interacted with patients, even though they were unaware of any change. For example, they still may have asked ‘how are you,’ but the manner and tone in which the interaction was exchanged could have been more positive because of improved relations with their co-workers, thus ultimately changing the patient perceptions of the interaction. Future research should further investigate the relationship between employee communication patterns, physical environment, and patient interactions.

Somewhat surprisingly, staff survey data did not indicate any significant changes in their satisfaction or their perceptions of the work environment. However, staff did report in focused interviews that a cleaner, brighter, more aesthetically pleasing environment was a positive change. Becker & Poe (1980) found that user generated design modifications had especially positive effects on mood and morale and perceived quality of care for staff members. Staff members did not report any involvement in the design process, perhaps if they had been more involved they would feel more positively about the new environment. It may also be that the staff work areas, while bright, clean and less cluttered, paled in comparison to the very different and highly pleasant patient-centered care environment available to patients in the form of the beautifully furnished waiting area with extensive window walls as well as “spa-like” bathrooms with expensive materials, sinks, faucets, etc. It is also important to note that staff members did notice and appreciate the significant addition of the staff lounge, so future research should investigate what elements of the physical environment staff do

4.4 Patient Perceptions of the Physical Environment

Results from Becker and Douglass (2006) showed a significant relationship between the attractiveness of the environment and the reduction of patient anxiety.

Leather et al. (2003) also found that the physical design of the waiting area can buffer the negative impact of stress that is known to build in the waiting area. They examined patient perceptions' of individual design features such as general layout, color scheme, floor coverings, curtains, furniture, lighting, temperature, pictures, plants, and information, and found improved patient evaluations for the majority of these elements. Results from the current study support previous research and showed that in the more attractive environment patients did report a significant difference in the reduction of their anxiety. However, this study did not explore specific elements of the physical environment that might have contributed to the reduction of patient anxiety. In part, this stems from the fact that the environment is not experienced element by element, one element at a time: lighting, flooring, seating, daylight, etc. Rather, it is experienced as a whole.

4.5 Overall Conclusions

Overall, results showed that patients perceived a more positive manner in which staff interacted with them, as well as improved quality of care, despite no changes in actual staff behaviors. It is also evident that staff noticed some positive changes in their work environment, which could have had an impact how they interacted with patients. The results also showed an increase in the willingness of patients to recommend the office to others, which signifies increased patient loyalty to the practice. The results of this study support previous research studies that emphasize the important role of healthcare facility design in influencing patient and staff perceptions of quality and satisfaction. However, quality and satisfaction are multifaceted constructs and this study only explored how they changed from a pre-relocated site to a post-relocated site. There is a combination of factors that influence patient perceptions of care and their willingness to return to a facility, but the results of this

study show that the manner in which care is delivered and the attractiveness of the physical environment are critical factors. Therefore in order to continually improve patient perceptions' of their visit, providers should focus on delivering high quality service in high quality facilities.

4.6 Study Limitations

While the findings of this study are significant, it is important to consider its limitations. This study was a pre-post design intervention case study, and results are specific to the dermatology practice at which it was conducted. While the patient survey population was overall representative of the practice population, there was a segment of the patient population that did not speak English that was unable to be included in the sample. It is possible their experience, and responses, would be different.

The staff survey response rate was of reasonable size; however, the staff population of the target unit itself was too small to permit meaningful statistical analysis of the staff survey data. Additionally, the original research design included distributing staff surveys before and after the move to the new facility. Due to time constraints this was not possible. Therefore, the staff survey had to be changed to be in a retrospective format. While this still provided insight into staff members' perceptions of delivery of care and the work environment, it would have been beneficial to be able to directly compare survey results before and after the move. It is also important to note that the original methodology for this study included direct observations of staff behaviors in the waiting areas and corridors leading to the exam rooms. However, for reasons related to IRB review and approval, direct observations of patient-staff interaction behaviors could not be conducted.

Additionally, it is important to note that there were two slightly different designs for exam rooms at the practice, and the survey did not distinguish between them. This study also does not disentangle the difference between changes in size and changes in attractiveness. It was not surprising to find that patients felt less crowded in a space that was three times larger. What is not known is how much larger and how much nicer the space would have to be in order to achieve an improvement in patients' environmental appraisals. In effect, there might be a tipping point beyond which increases in size have minimal additional effect on perceptions of quality of care. Similarly, future research should explore the specific design elements of the environment such as furnishings and fixtures that affect patient perceptions of attractiveness and quality. It is possible that money is invested in some cases in elements of design that contribute relatively little to improved patient or staff experiences.

4.7 Directions for Future Research

This study explored the impact of a large-scale design intervention on patients' and staff members' perceptions of their interactions and behaviors, as well as their perceptions of quality of care. In order to better understand how the physical environment affects staff behaviors, both with patients and with each other, future research should employ a systematic observation methodology. It should also target a wider variety of outpatient practice types, thus increasing patient and staff sample sizes. Given the importance that patients' place on interactions with staff members, more research is needed that examines the relationship between employee communication patterns and its affect on their interactions with patients.

Healthcare facilities are among the most expensive buildings to construct, and given that healthcare organizations often face budget constraints, more research is

needed to identify specific design elements that improve patient and employee perceptions' of quality of care, as well as satisfaction. This would help healthcare organizations better invest their resources. Specifically, research should investigate what design features patients and staff members pay most attention to and how do those design details affect their perceptions of overall quality. Less research has focused on staff members in outpatient facilities and future studies should examine the impact of particular elements of the physical work environment on staff behaviors, satisfaction, and communication patterns.

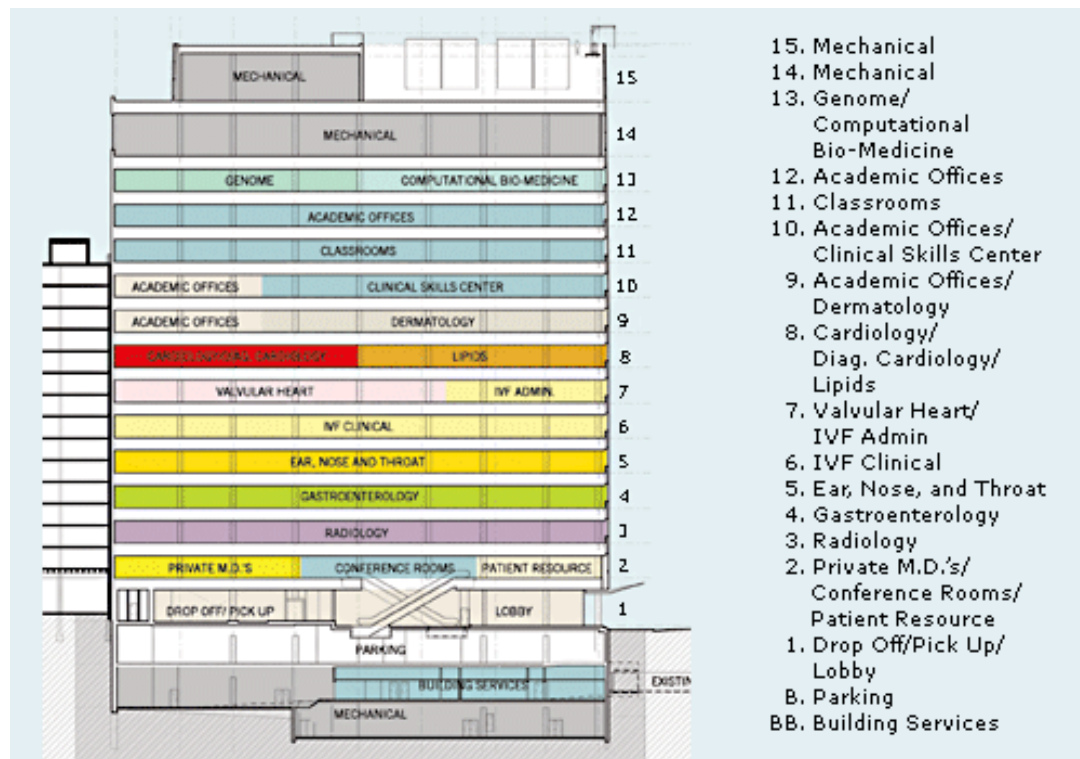
Future research should also investigate in more depth how the design of the clinical and exam spaces affects the patient experience, as well as how it affects staff members' ability to provide patient care. Related to the design of clinical spaces, future research should investigate at what point during a visit patients' feelings of anxiety are the highest, and how the physical environment can help alleviate that anxiety.

4.8 Implications for Practice

These findings suggest that improved attractiveness of the physical environment has positive effects on patient perceptions' of staff interactions and on quality of care, as well as on staff perceptions of the work environment. This research supports the idea that an attractive physical environment can help create and sustain a loyal patient population, as well as improve aspects of the work environment. It also allows healthcare organizations to justify allocating limited resources to facility improvements, especially to areas such as check-in and check-out that play an important role in patients' perceptions of their visit.

APPENDIX A.

Weill Greenberg Center Building Photos



APPENDIX B.

2006 Department of Dermatology Patient Demographics

Department of Dermatology Patient Demographics by Gender

Gender	Percentage of Total Patient Population
Male	37.31%
Female	62.69%

Department of Dermatology Patient Demographics by Age

Age (years)	Percentage of Total Patient Population
0-18	8.01%
19-35	21.8%
36-50	26.67%
51-65	23.12%
65+	20.40%

APPENDIX C.
Patient Satisfaction Survey



Cornell University



Patient Satisfaction Survey

Dear Patient,

Thank you for participating in a research study being conducted by Cornell University in conjunction with Weill Cornell Medical College. The purpose of the study is to understand how healthcare settings influence the patient experience, in order to continually improve patient satisfaction through healthcare setting planning and design. Please complete the following questionnaire based on your visit today, keeping in mind that all responses will be completely anonymous, and your participation is voluntary.

When you have completed the survey, please put it in the sealed envelope and return it to the researcher who gave it to you, or if you decide to take it with you mail in the pre-addressed stamped envelope. Thank you very much for your time and participation in this study.

Sincerely,
Dr. Franklin Becker
Principal Investigator
Professor and Chair
Department of Design and Environmental Analysis
College of Human Ecology
Cornell University

General Information

Which office were you visiting today? ☐ J-130 Ob/Gyn ☐ Iris Cantor's Woman's Health Center 10th floor ☐ Iris Cantor's Women's Health Center 11th floor
☐ Ambulatory Care Building Gastroenterology ☐ Jay Monahan Center for GI health ☐ Ambulatory Care Building Dermatology

Gender ☐ Male ☐ Female

Age ☐ 0-18 ☐ 19-35 ☐ 36-50 ☐ 50-65 ☐ 65 +

Apart from today, how many times have you visited this office in the past year? ☐ none, this is my first visit ☐ 1-3 ☐ 4-7 ☐ 8-12 ☐ 12+

Who accompanied you to the office today? ☐ Family (# _____) ☐ Friend (# _____) ☐ No One ☐ Other: _____

Please select the type of appointment you have today ☐ Procedure ☐ Consultation ☐ Check-up ☐ Other: _____

Please select the department you are visiting today ☐ Gastrointestinal ☐ Ob/Gyn ☐ Dermatology ☐ Other: _____

Waiting Area	Strongly Agree	Agree	No Opinion	Disagree	Strongly Disagree
The waiting area was pleasant	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I had enough to do to help pass the time in the waiting area	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The waiting area felt too crowded	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was bothered by overhearing other people's conversations in the waiting area	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I had enough personal privacy in the waiting area	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Useful information about my condition was available to me while in the waiting area	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Useful information about my general health and well being was available to me in the waiting area	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I had to wait too long before being called into the exam room	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How long were you in the waiting area before going into the exam room?	0-5 minutes <input type="radio"/>	6-10 minutes <input type="radio"/>	11-20 minutes <input type="radio"/>	21 - 30 minutes <input type="radio"/>	Over 30 minutes <input type="radio"/>

Exam Room	Strongly Agree	Agree	No Opinion	Disagree	Strongly Disagree
The exam room felt too small	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The exam room was pleasant	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
There were things to occupy my time while waiting in the exam room	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I had to wait too long in the exam room before being seen by the doctor	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How long did you wait in the exam room before being seen by the doctor?	0-5 minutes <input type="radio"/>	6-10 minutes <input type="radio"/>	11-20 minutes <input type="radio"/>	21 - 30 minutes <input type="radio"/>	Over 30 minutes <input type="radio"/>
If you came with someone, did that person accompany you into the exam room?	<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> N/A		
If so, did the room comfortably accommodate you and your companion?	<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> N/A		

Staff Behaviors	Yes	No			
The office staff greeted me when I arrived	<input type="radio"/>	<input type="radio"/>			
When speaking with me the staff used my name	<input type="radio"/>	<input type="radio"/>			
The office staff introduced themselves to me by their name	<input type="radio"/>	<input type="radio"/>			
The office staff made eye contact when speaking with me	<input type="radio"/>	<input type="radio"/>			
The office staff kept me informed about how long I would have to wait	<input type="radio"/>	<input type="radio"/>			
Staff talked with me about non-health related topics	<input type="radio"/>	<input type="radio"/>			
Staff answered my questions	<input type="radio"/>	<input type="radio"/>			
Staff inquired about how I was doing today	<input type="radio"/>	<input type="radio"/>			
Staff Experience	Strongly Agree	Agree	No Opinion	Disagree	Strongly Disagree
I was treated with kindness and respect by the staff	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If I felt worried or anxious today staff made me feel reassured	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The office staff were helpful during my visit today	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Staff explained procedures in a way that was easy to understand	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Staff followed up on questions they could not answer right away	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Staff offered assistance when needed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Staff clearly explained billing procedures and charges for visit	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Staff clearly explained the next steps in my care after today's visit (such as follow up appointments, home care procedures, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The value of my time was respected by the office staff	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The office staff were friendly during my visit today	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Staff were courteous and polite throughout my visit	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Overall staff were caring and reassuring	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The staff showed consideration for my privacy when asking about personal and insurance information	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Overall Visit	Strongly Agree	Agree	No Opinion	Disagree	Strongly Disagree
Overall, I felt cared for as a person during my visit	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Overall, I felt that I was treated in a timely manner during my visit	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was made to feel welcome during my visit	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would recommend this office to others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I felt annoyed by my experiences today	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I had difficulty finding my way around the office today	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The office environment helped to ease my anxieties about my visit	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Overall Experience	Excellent	Good	Neutral	Fair	Poor
The care I received here today was	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The service I received here today was	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Overall, my interactions with the staff were	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Overall, my interactions with my doctor were	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

What would have improved the quality of the check-in process? _____

What would have improved the quality of the time you spent in the waiting area? _____

What would have improved the quality of the time you spent in the exam room? _____

Any additional comments about what would improve your experience here: _____

APPENDIX D.
Patient Survey Distribution and Collection Summary

Site	Date	Session	Time	# in office	# handed out in mail	Total Out	# Returned by mail	Total In
Starr 326	1/8/2007	Afternoon	4 hrs	8	19	27		
	1/12/2007	Morning & Afternoon	7 hrs	7	7	14	13	37
	1/16/2007	Afternoon	4 hrs	9	6	15		
Totals			15	24	32	56		
Weill Greenberg Center Derm	3/21/2007	Morning & Afternoon	7 hrs	12	15	27		
	3/22/2007	Morning & Afternoon	7 hrs	9	9	18	21	56
	4/11/2007	Morning & Afternoon	7 hrs	6	13	19		
	4/12/2007	Afternoon	4hrs	8	1	9		
Totals			25	35	38	73		
Overall Total			40 hrs	59	70	129	34	93

APPENDIX E.
Original Staff Survey



Dear Employee,

Thank you for participating in a research study being conducted by Cornell University in conjunction with Weill Cornell Medical College. The purpose of the study is to understand how the physical healthcare setting influences the patient and staff experience, in order to continually improve employee and patient satisfaction through better healthcare setting planning and design. Please complete the following questionnaire.

All participation is voluntary. To insure confidentiality of staff, please enclose your completed survey in the stamped, self-address envelope attached to the survey. These will be mailed directly back to the Cornell research team located in Ithaca, New York. No names or other identifying information are being collected. No information from an individual person will be made available in any form to anyone other than the research team. Your name will not be on any stored data.

When you have completed the survey, please return it by mail using one of the self-addressed stamped envelopes provided. Thank you for your time and assistance.

Sincerely,
Dr. Franklin Becker
Principal Investigator
Professor and Chair
Department of Design and Environmental Analysis
College of Human Ecology
Cornell University

Which practice do you work at? ☐ J-130 Ob/Gyn ☐ Iris Cantor Woman's Health Center 10th Floor
 ☐ Iris Cantor Woman's Health Center 11th Floor ☐ Jay Monahan center fro GI Health

Gender ☐ Male ☐ Female

Age ☐ 0-18 ☐ 19-35 ☐ 36-50 ☐ 50-65 ☐ 65 +

How long have you been working at this practice?..... ☐ less than 1 yr. ☐ 1yr.-3yrs. ☐ 4yr.-7yrs. ☐ 8-10yrs ☐ 10+

	Never	Seldom	Sometimes	Often	Always
How often do you get help and support from people with whom you work regularly?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How often are people with whom you work regularly willing to listen to your work related problems?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How often is your practice manager willing to listen to your ideas or concerns?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Do you get sufficient information from your practice manager?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How often do people at work take a personal interest in each other?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Strongly Disagree	Disagree	No Opinion	Agree	Strongly Agree
Physicians and nurses have good working relationships	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have a supervisor that is supportive of staff	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
There is enough staff to get the work done	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I receive praise and recognition for a job well done	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have freedom to make important patient care and work decisions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
There is much team work between nurses and doctors	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
High standards of care are expected by the administration	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Strongly Disagree	Disagree	No Opinion	Agree	Strongly Agree
On my job, I have very little freedom to decide how I do my work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have a lot of say about what happens on my job	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have LITTLE Influence of the amount of work I do	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
On my job, it is difficult to complete a task without being interrupted	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am NOT asked to do an excessive amount of work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have enough time to get the job done	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My job allows me to make a lot of decisions on my own	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
At the end of a working day, I am really feeling worn out	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Strongly Disagree	Disagree	No Opinion	Agree	Strongly Agree
My job requires working fast	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My job requires working very hard	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
On the job I have to do things that should be done differently	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I receive an assignment at work without the help I need from others to complete it	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have to bend or break a rule or policy in order to carry out an assignment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I work on unnecessary things	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
At work I am usually able to "stay on top of things"	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In general, I can decide when things get done in my work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My job causes me to feel exhausted at the end of a working day	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Very much	Somewhat	Neutral	Only a little	Not at all
How bothered or upset do you feel at work?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How worried do you feel at work?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How relaxed do you feel at work?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How frustrated do you feel at work?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How unhappy do you feel at work?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How contented do you feel at work?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How tense do you feel at work?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Poor	Fair	Neutral	Good	Excellent
Compared to other women/men of your age, would you say your health is poor, fair, good or excellent?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Strongly Disagree	Disagree	No Opinion	Agree	Strongly Agree
I have enough space for storage of my personal items (e.g. purse, clothing)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The physical work environment is pleasant and attractive	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The physical work environment is clean	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The physical work environment is comfortable	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The physical work environment is cluttered and disorganized	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The physical work environment is crowded	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I do not have enough space to do my work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Not at all satisfied	Not too satisfied	Neutral	Somewhat satisfied	Very satisfied
All in all, how satisfied are you with your job?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Strongly Disagree	Disagree	No Opinion	Agree	Strongly Agree
I feel comfortable reassuring patients	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel comfortable offering patients encouragement	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel too rushed to spend time getting to know a patient a little	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have the time to make patients feel welcome	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have the time to explain things clearly to patients	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have the time to follow up on questions for patients	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am encouraged to act in a friendly, warm manner with patients	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am expected to interact in a cheerful, friendly manner with patients	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

<i>At this practice I feel I am able to...</i>	Strongly Disagree	Disagree	No Opinion	Agree	Strongly Agree
Interact in a friendly, warm, manner	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Take the time to make patients feel welcome	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Let patients know how long they will have to wait	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Get to know patients a little	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reassure patients to help reduce their anxiety	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ask patients if they are satisfied with their visit	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ask patients if they are satisfied with their care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Speak positively about the quality of care to patients	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Yes	No
In the last year the administration has offered a customer service training course	<input type="radio"/>	<input type="radio"/>
In the last year I have attended a customer service training course	<input type="radio"/>	<input type="radio"/>

Knowing what you know now, if you had to decide all over again whether to take the job you now have, what would you decide? I would...
<input type="radio"/> Decide with out hesitation to take the same job
<input type="radio"/> Have some second thoughts
<input type="radio"/> Decide to definitely NOT take this job

APPENDIX F.
Staff Retrospective Survey



Cornell University

Healthcare Workplace Survey

Hello;

Thank you for participating in a research study being conducted by Cornell University in conjunction with Weill Cornell Medical College. The purpose of the study is to understand how the physical healthcare setting influences the patient and staff experience. In order to continually improve employee and patient satisfaction through better healthcare setting planning and design. We are interested in your experience in the new facility compared to your experience in the Starr 326 facility.

All participation is voluntary. To insure confidentiality of staff, please enclose your completed survey in the stamped, self-address envelope attached to the survey. These will be mailed directly back to the Cornell research team located in Ithaca, New York. No names or other identifying information are being collected. No information from an individual person will be made available in any form to anyone other than the research team. Your name will not be on any stored data, nor will the data in any form be used for performance evaluation.

When you have completed the survey, please return it to the researcher or the box at the front desk. Thank you for your time and assistance.

Sincerely,

Dr. Franklin Becker
Principal Investigator
Professor and Chair
Department of Design and Environmental Analysis
College of Human Ecology
Cornell University

Instructions

This survey is asking about your experience in the new facility after the move compared to your experience at the J314 facility before the move.

General Information

Which practice do you work at?..... ☐ Weill Greenberg Center 9th floor Dermatology (former Starr 326 Dermatology)

Gender ☐ Male ☐ Female

Age ☐ 0-18 ☐ 19-35 ☐ 36-50 ☐ 50-65 ☐ 65 +

How long have you been working at this practice?..... ☐ less than 1 yr. ☐ 1yr. -3yrs. ☐ 4yr. -7yrs. ☐ 8-10yrs ☐ 10+

Note: Please compare your experience in the Starr 326 facility to your experience in the new facility

	Much Less Often	Somewhat Less Often	About the Same	Somewhat More Often	Much More Often
Do you get help and support from people with whom you work regularly?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Are people with whom you work regularly willing to listen to your work-related problems?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Do you get help and support from your practice manager?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Is your practice manager willing to listen to your ideas or concerns?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Do you get sufficient information from your practice manager?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Do people at work take a personal interest in each other?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Much Worse	Somewhat Worse	About the Same	Somewhat Better	Much Better
Physicians and nurses have good working relationships	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have a supervisor that is supportive of staff	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
There is enough staff to get the work done	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I receive praise and recognition for a job well done	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have freedom to make important patient care and work decisions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
There is much team work between nurses and doctors	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
High standards of care are expected by the administration	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Note: In comparison to your experience in the Starr 326 facility...					
	Much Worse	Somewhat Worse	About the Same	Somewhat Better	Much Better
On my job, I have very little freedom to decide how I do my work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have a lot of say about what happens on my job	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have LITTLE influence on the amount of work I do	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
On my job, it is difficult to complete a task without being interrupted	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am NOT asked to do an excessive amount of work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have enough time to get the job done	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My job allows me to make a lot of decisions on my own	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
At the end of a working day, I am really feeling worn out	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Much Less Often	Somewhat Less Often	About the Same	Somewhat More Often	Much More Often
My job requires working fast	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My job requires working very hard	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
On the job I have to do things that should be done differently	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I receive an assignment at work without the help I need from others to complete it	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have to bend or break a rule or policy in order to carry out an assignment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I work on unnecessary things	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
At work I am usually able to "stay on top of things"	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In general, I can decide when things get done in my work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My job causes me to feel exhausted at the end of a working day	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Note: In comparison to your experience in the Starr 326 facility....					
	Much Less	Somewhat Less	About the Same	Somewhat More	Much More
How bothered or upset do you feel at work?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How worried do you feel at work?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How relaxed do you feel at work?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How frustrated do you feel at work?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How unhappy do you feel at work?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How contented do you feel at work?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How tense do you feel at work?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Poor	Fair	Neutral	Good	Excellent
Compared to other women/men of your age, would you say your health is poor, fair, good or excellent?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Note: In comparison to your experience in the Starr 326 facility....					
	Strongly Disagree	Disagree	No Opinion	Agree	Strongly Agree
The physical work environment is more pleasant and attractive	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The physical work environment is cleaner	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The physical work environment is more comfortable	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The physical work environment is more cluttered and disorganized	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The physical work environment is more crowded	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I still do not have enough space to do my work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Note: In comparison to your experience in the Starr 326 facility...					
	Not at all satisfied	Not too satisfied	Neutral	Somewhat satisfied	Very satisfied
All in all, how satisfied are you with your job?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Compared to my experience at the Starr 326 facility... Now I feel	Strongly Disagree	Disagree	No Opinion	Agree	Strongly Agree
More comfortable reassuring patients	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
More comfortable offering patients encouragement	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Too rushed to spend time getting to know a patient a little	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have more time to make patients feel welcome	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have more time to explain things clearly to patients	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have more time to follow up on questions for patients	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am encouraged to act in a friendly, warm manner with patients	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am expected to interact in a cheerful, friendly manner with patients	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Compared to my experience at Starr 326, I feel I am more able to...	Strongly Disagree	Disagree	No Opinion	Agree	Strongly Agree
Interact in a friendly, warm, manner	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Take the time to make patients feel welcome	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Let patients know how long they will have to wait	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Get to know patients a little	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reassure patients to help reduce their anxiety	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ask patients if they are satisfied with their visit	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ask patients if they are satisfied with their care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Speak positively about the quality of care to patients	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Yes	No
In the last year the administration has offered a customer service training course	<input type="radio"/>	<input type="radio"/>
In the last year I have attended a customer service training course	<input type="radio"/>	<input type="radio"/>

Knowing what you know now, if you had to decide all over again whether to take the job you now have, what would you decide? I would...
<input type="radio"/> Decide with out hesitation to take the same job
<input type="radio"/> Have some second thoughts
<input type="radio"/> Decide to definitely NOT take this job



Cornell University: Informed Consent

Ecology of the Patient Experience

What the study is about: You are invited to take part in a research study of how the design of medical facilities affects patients' experience during their visit.

What we will ask you to do: We are asking you to participate in a focused interview. This interview will last 5-10 minutes. Its purpose is to deepen our understanding of how patients experience their visit to an outpatient medical practice. In particular, we are interested in differences, if any, that patients may experience between the previous practice facility and this new practice facility. Questions will focus on response to the physical design of the new facility, including its affects, if any, on your waiting experience and your interaction with practice staff.

Risks: We do not anticipate any serious risks to you participating in this study. There is a risk of invasion of privacy, however all responses will be held in strict confidentiality. No one will see them except the researchers conducting this study, who are located at Cornell University in Ithaca, New York (Upstate New York).

Benefits: Going to the doctor can be very stressful and we hope to better understand how multiple factors in healthcare environments contribute to a positive patient experience. We expect that the results of this research will contribute to the growing body of knowledge of evidence-based design that is helping transform hospital design.

Taking part is voluntary: Taking part in this study is completely voluntary. You may skip any questions that you do not want to answer. If you decide not to take part or to skip some of the questions, it will not affect your current or future relationship with anyone at this practice, at Weill Cornell Medical College, or at the hospital. If you decide to take part, you are free to withdraw at any time.

Your answers will be confidential. The records of this study will be kept private. In any sort of report we make public we will not include any information that will make it possible to identify you. Research records will be kept in a locked file; only the researchers at Cornell University in Ithaca, New York, as well as New York Presbyterian Hospital – Weill Cornell Medical College, Weill Cornell Medical College Institutional Review Board, and all appropriate Federal oversight agencies may have access to the research records.

New Findings: New findings will be reported back to the practices participating in the research study as well as Weill Cornell Medical College. However, because no personal identifying information is being collected individual participants will not be directly informed of new findings.

If you have questions: The researcher conducting this study is Dr. Franklin Becker, Professor of Design & Environmental Analysis, Cornell University. Please ask any questions you have now. If you have questions later, you may contact Professor Becker at fdb2@cornell.edu or at 607-255-1950. If you have any questions or concerns regarding your rights as a subject in this study, you may contact the Cornell University Committee on Human Subjects (UCHS) at 607-255-5138 or access their website at <http://www.osp.cornell.edu/Compliance/UCHS/homepageUCHS.htm>. Or you may contact the Weill Cornell Medical College Institutional Review Board at (212) 821-0577, 0518 or access their website at http://www.med.cornell.edu/research/rea_com/ins_rev_boa.html.

You will be given a copy of this form to keep for your records.

Statement of Consent: I have read the above information, and have received answers to any questions I asked. I consent to take part in the study.

Your Signature _____ Date/ Time _____

Signature of Co-Investigator _____ Date/ Time _____

UCHS Approval:

UCHS Expiration:

APPENDIX H.

Patient Focused Interview Guide

Interview Guide: Unlike a interview protocol in which the interviewer reads each question exactly as it is written in a pre-determined order, a *focused* interview is designed to allow the interviewer to explore a subject area more generally with the interviewee; that is, the interviewer begins with a list of general topic areas which h/she explores with the interviewee. The order of the questions and the follow-up questions (“probes”) are governed by the interviewee’s responses. The goal is to explore in a dynamic manner the interviewee’s experience, in this case related to their visit to an outpatient facility.

1. In general, what were some of the more positive aspects of your recent visit to this facility, as well as aspects, if any, that you think could be improved?

Example Probe

Patient: I really like it. It is very pleasant and comfortable. The people here are great.

Researcher: What is it about this practice that makes it especially pleasant and comfortable? (then..) Can you give me some examples of what the people with whom you interacted here did or said that made the made the experience so positive?

Patient: Well, I don’t know... The friendliness of the nurses and doctors always make it a positive experience. (Probe: how did they convey their “friendliness”? Can you give me an example or two?

2. Can you tell me about any differences you notice between the old practice and the new one?

Example Probe

Patient: Yes, as I just mentioned, it is much more pleasant here.

Researcher: Is there anything else about the new facility that makes it especially pleasant? Yes, there is a lot more natural sunlight. The old facility did not have any windows.

3. Do you notice any difference in your waiting experience here compared to previous visits at the old facility?

Example Probe

Patient: Yes, the new computers in the waiting room were great for checking my email while I was waiting.

Researcher: Did having the computers available have any affect how long it felt like you were waiting, or any other aspect of your experience today?

Patient: Well, I guess so... It at least kept me occupied while I was waiting.

Researcher: Have you noticed any other differences between the new and old facility about how it felt waiting?

Patient: No, not really that is the only one that I can think of. The furniture is newer and there is more daylight.

4. Do you notice any difference in your stress/anxiety levels compared to previous visits at the old practice?

Example Probe

Patient: No, going to the doctor is still makes me very nervous.

Researcher: What makes you the most nervous about going to the doctor?

Patient: I don't know... I guess I just get scared that there is something really wrong.

5. Do you notice any differences in your interactions with staff members compared to previous visits at the old clinic?

Example Probe

Patient: No, I don't think so.

Researcher: How would you describe the interaction you have with staff here?

Employee: They've always been very supportive.

Researcher: Can you give me an example or two of what they do or say that makes it feel like such a supportive environment?

6. Do you notice any differences in your interactions with your doctor compared to previous visits at the old clinic?

Example Probe

Patient: Yes, he seemed to be more relaxed today, and to take a little more time talking with me about my situation.

Researcher: Can you describe what you mean by being more relaxed?

Patient: For example, he asked me how I was doing today and asked if he had been clear about what I was supposed to do until we met next, when usually he seems so rushed that he is in and out, and conversation is to the point.

APPENDIX I.

Staff Focused Interview Informed Consent Form



Ecology of the Patient Experience: (Staff Focus)

What the study is about: The purpose of this study is to understand how physical characteristics of the work environment influence staff experience working in an outpatient medical practice.

What we will ask you to do: We are asking you to participate in a focused interview. This interview will last 5-10 minutes. Its purpose is to deepen our understanding of staff's work experience in an outpatient medical practice. In particular, we are interested in differences, if any, that staff may experience between the previous practice facility and this new practice facility. Questions will focus on response to the physical design of the new facility, including its affects, if any, on staff's ability to work effectively and efficiently, and their interaction with patients and other practice staff.

Risks: We do not anticipate any serious risks to you participating in this study. There is a risk of invasion of privacy, however all responses will be held in strict confidentiality. No one will see them except the researchers conducting this study, who are located at Cornell University in Ithaca, New York (Upstate New York). The study and its findings are in no way whatsoever related to individual performance assessment.

Benefits: Working in healthcare is very demanding, and we hope to better understand how multiple factors in the healthcare work environment contribute to health care professionals' health and well-being and their ability to work effectively. We do expect that the results of this research will contribute to the growing body of knowledge of evidence-based design that is helping transform hospital design.

Taking part is voluntary: Taking part in this study is completely voluntary. You may skip any questions that you do not want to answer. If you decide not to take part or to skip some of the questions, it will not affect your current or future relationship with the Weill-Cornell Medical College, this practice, or the hospital. If you decide to take part, you are free to withdraw at any time.

Your answers will be confidential. The records of this study will be kept private. In any sort of report we make public we will not include any information that will make it possible to identify individuals. Research records will be kept in a locked file; only the researchers at Cornell University in Ithaca, New York, as well as New York Presbyterian Hospital – Weill Cornell Medical College, Weill Cornell Medical College Institutional Review Board, and all appropriate Federal oversight agencies may have access to the research records.

New Findings: New findings will be reported back to the practices participating in the research study as well as Weill Cornell Medical College. However, because no personal identifying information is being collected individual participants will not be directly informed of new findings.

If you have questions: The researcher conducting this study is Dr. Franklin Becker, Professor of Design & Environmental Analysis, Cornell University. Please ask any questions you have now. If you have questions later, you may contact Professor Becker at fdb2@cornell.edu or at 607-255-1950. If you have any questions or concerns regarding your rights as a subject in this study, you may contact the Cornell University Committee on Human Subjects (UCHS) at 607-255-5138 or access their website at <http://www.osp.cornell.edu/Compliance/UCHS/homepageUCHS.htm>. Or you may contact the Weill Cornell Medical College Institutional Review Board at (212) 821-0577, 0518 or access their website at http://www.med.cornell.edu/research/rea_com/ins_rev_boa.html.

You will be given a copy of this form to keep for your records.

Statement of Consent: I have read the above information, and have received answers to any questions I asked. I consent to take part in the study.

Your Signature _____ Date/ Time _____

Signature of Co-Investigator _____ Date/ Time _____

UCHS Approval:

UCHS Expiration:

APPENDIX J.

Staff Focused Interview Guide

Interview Guide: Unlike a interview protocol in which the interviewer reads each question exactly as it is written in a pre-determined order, a *focused* interview is designed to allow the interviewer to explore a subject area more generally with the interviewee; that is, the interviewer begins with a list of general topic areas which h/she explores with the interviewee. The order of the questions and the follow-up questions (“probes”) are governed by the interviewee’s responses. The goal is to explore in a dynamic manner the interviewee’s experience, in this case related to their visit to an outpatient facility. Adjustments to the guide during the interview will occur in order to clarify or gain more insight into employee’s responses.

1. In general, what are some of the more positive aspects of working in this facility, as well as aspects, if any, that you think could be improved?

Example Probe

Employee: I really like it. It is a beautiful new environment..

Researcher: What makes it such a beautiful environment?

Employee: Well, it is more spacious. And everything is new. And it all feels modern. I look forward to coming to work here now much more than in the old facility.

2. What differences, if any, are there between working here compared to working in the old facility?

Example Probe

Employee: Yes, it is better designed. We have more space in which to work; we’re not on top of each other all the time.

Researcher: For you, what’s the impact or benefit of that?

Employee: It just seems to be a less stressful environment. Everyone seems a little more positive.

3. Do you notice any difference in how effectively you are able to work here compared to the old facility?

Example Probe

Employee: Yes, the new electronic record keeping system reduces the amount of clutter and paper flow that I have to deal with.

Researcher: Does this have any effect on how you interact with patients, or other staff?

Employee: Well, I guess so... it at least keeps everything more organized so that I do not need to unnecessarily search for a patient's records or insurance information. Also, it gives me a bit more time to interact with patients.

Researcher: Anything else?

Employee: No, I don't think so.

4. Do you notice any difference in how stressed you feel since the move?

Example Probe

Employee: No, my job is still very stressful.

Researcher: What is the most stressful aspect of your job?

Employee: There is just so much work to be done and not enough people to do it.

Researcher: Does this impact in any way how you interact with patients?

Employee: Well... I try to always be polite and friendly with patients, but sometimes I find I do get very overwhelmed and maybe I'm not as friendly as I could be.

5. Have there been any personnel changes since the move?

Example Probe

Employee: Yes, we have a new receptionist and a new med tech.

Researcher: Has this had any affect on the work environment?

Employee: Well, the receptionist is very friendly and the med tech is very good at what she does. I suppose it has had a good effect on the work environment.

Researcher: What do you mean when you say it had a good effect?

Employee: I mean the atmosphere at work is more positive.

Researcher: Is there anything else that makes the atmosphere at work more positive than it used to be?

6. Do you notice any differences in your interactions with your co-workers since the move?

Example Probe

Employee: No, I don't think so.

7. Were you involved in any way with the planning and design phases of the new facility?

Example Probe

Employee: No.

Researcher: Now that you have some experience with the new facility, are there things that you might suggest when someone was designing this kind of facility that would enable you to work more effectively or efficiently, in terms of specific tasks or with staff and/or patients?

Employee: For example, the lab is so isolated from the rest of the practice that the med techs often leave the lab to socialize near the nursing station and then they aren't there when they need to be. If they had been asked about where the lab needed to be in relation to the nursing station, maybe this could have been avoided.

APPENDIX K.

Patient Survey Information: Past Visits, Appointment Type, and Support

Past Visits

# Visits in Past Year	Starr 326 (N=37)	Weill Greenberg Center (N=55)	Total Population (N=92)
None, first visit	24.3 %	61.8%	46.7%
1-3	56.8%	29.1%	40.2%
4-7	10.8%	5.5%	7.6%
8-12	5.4%	1.8%	3.3%
12+	2.7%	1.8%	2.2%

**There was one missing case for the Weill Greenberg Center*

Appointment Type

Appt. Type	Starr 326 (N=37)	Weill Greenberg Center (N=56)	Total Population (N=93)
Procedure	40.5%	32.1%	35.5%
Consultation	32.4%	19.6%	24.7%
Check-up	24.3%	41.1%	34.4%
Other	2.7%	7.1%	5.4%

Support

Who Supports	Starr 326 (N=36)	Weill Greenberg Center (N=56)	Total Population (N=92)
Family	19.4%	14.3%	16.3%
Friend	2.8%	3.6%	3.3%
No One	77.8%	80.4%	79.3%
Other	0%	1.8%	1.1%

**There was one missing case for Starr 326*

APPENDIX L.

Results for the Patient Satisfaction Survey

Note: Questions highlighted in yellow indicate a significant difference at the 95 percent confidence level

Waiting Experience

Question	Starr 326 Std. Dev	Starr 326 Mean	Starr 326 Frequencies	%	WGC Std. Dev	WGC Mean	WGC Frequencies	%	Chi- Square	DF	P-Value (1-tailed)
The Waiting Area was Pleasant	1.08	3.32	1 Strongly Disagree 2 Disagree 3 No Opinion 4 Agree 5 Strongly Agree	5.4 21.6 16.2 48.6 8.1	0.40	4.80	1 Strongly Disagree 2 Disagree 3 No Opinion 4 Agree 5 Strongly Agree	0.0 0.0 0.0 19.6 80.4	46.57	91	0.000
I had enough to do to help pass the time in the waiting area	0.88	3.70	1 Strongly Disagree 2 Disagree 3 No Opinion 4 Agree 5 Strongly Agree	2.7 8.1 16.2 62.2 10.8	0.87	4.27	1 Strongly Disagree 2 Disagree 3 No Opinion 4 Agree 5 Strongly Agree	1.8 3.6 5.5 43.6 45.5	12.30	90	0.000
The waiting area felt too crowded	1.33	3.11	1 Strongly Disagree 2 Disagree 3 No Opinion 4 Agree 5 Strongly Agree	8.1 37.8 8.1 27.0 18.9	0.87	1.61	1 Strongly Disagree 2 Disagree 3 No Opinion 4 Agree 5 Strongly Agree	55.4 35.7 3.6 3.6 1.8	21.45	91	0.000
I was bothered by overhearing other people's conversations in the waiting area	0.91	2.34	1 Strongly Disagree 2 Disagree 3 No Opinion 4 Agree 5 Strongly Agree	8.6 62.9 20.0 2.9 5.7	0.93	1.80	1 Strongly Disagree 2 Disagree 3 No Opinion 4 Agree 5 Strongly Agree	43.6 41.8 7.3 5.5 1.8	11.51	88	0.000
I had enough personal privacy in the waiting area	1.00	3.22	1 Strongly Disagree 2 Disagree 3 No Opinion 4 Agree 5 Strongly Agree	2.7 27.0 21.6 43.2 5.4	0.89	4.07	1 Strongly Disagree 2 Disagree 3 No Opinion 4 Agree 5 Strongly Agree	1.8 1.8 19.6 41.1 35.7	11.33	91	0.000
Useful information about my condition was available to me in the waiting area	0.84	2.61	1 Strongly Disagree 2 Disagree 3 No Opinion 4 Agree 5 Strongly Agree	8.3 33.3 50.0 5.6 2.8	0.95	3.13	1 Strongly Disagree 2 Disagree 3 No Opinion 4 Agree 5 Strongly Agree	1.8 21.4 51.8 12.5 12.5	2.61	90	0.105
Useful information about my general health and well-being was available to me in the waiting area	0.89	2.67	1 Strongly Disagree 2 Disagree 3 No Opinion 4 Agree 5 Strongly Agree	8.3 33.3 44.4 11.1 2.8	0.84	3.08	1 Strongly Disagree 2 Disagree 3 No Opinion 4 Agree 5 Strongly Agree	5.8 9.6 59.6 21.2 3.8	0.07	86	0.636
I had to wait too long before being called in to the exam room	0.75	1.94	1 Strongly Disagree 2 Disagree 3 No Opinion 4 Agree 5 Strongly Agree	25.0 61.1 8.3 5.6 0.0	1.19	2.08	1 Strongly Disagree 2 Disagree 3 No Opinion 4 Agree 5 Strongly Agree	37.7 39.6 5.7 11.3 5.7	1.17	87	0.198
How long were you in the waiting room before going into the exam room	0.82	3.74	1 30+ Minutes 2 21-30 Minutes 3 11-20 Minutes 4 6-10 Minutes 5 0-5 Minutes	0.0 2.9 40.0 37.1 20.0	1.12	3.67	1 30+ Minutes 2 21-30 Minutes 3 11-20 Minutes 4 6-10 Minutes 5 0-5 Minutes	5.5 7.3 29.1 30.9 27.3			

Exam Room Experience

Question	Starr 326 Std. Dev	Starr 326 Mean	Starr 326 Frequencies	%	WGC Std. Dev	WGC Mean	WGC Frequencies	%	Chi- Square	DF	P-Value (1-tailed)
The exam room felt too small	1.01	2.69	1 Strongly Disagree 2 Disagree 3 No Opinion 4 Agree 5 Strongly Agree	2.8 55.6 16.7 19.4 5.6	0.86	1.98	1 Strongly Disagree 2 Disagree 3 No Opinion 4 Agree 5 Strongly Agree	26.8 57.1 8.9 5.4 1.8	8.79	90	0.002
The exam room was pleasant	1.03	3.22	1 Strongly Disagree 2 Disagree 3 No Opinion 4 Agree 5 Strongly Agree	5.4 21.6 24.3 43.2 5.4	0.73	4.20	1 Strongly Disagree 2 Disagree 3 No Opinion 4 Agree 5 Strongly Agree	0.0 1.8 12.7 49.1 36.4	11.65	90	0.000
There were things to occupy my time in the exam room	0.94	2.70	1 Strongly Disagree 2 Disagree 3 No Opinion 4 Agree 5 Strongly Agree	2.7 51.4 21.6 21.6 2.7	1.12	2.98	1 Strongly Disagree 2 Disagree 3 No Opinion 4 Agree 5 Strongly Agree	7.1 28.6 35.7 16.1 12.5	2.72	91	0.098
I had to wait too long in the exam room before being seen by the doctor	0.82	2.11	1 Strongly Disagree 2 Disagree 3 No Opinion 4 Agree 5 Strongly Agree	13.9 72.2 5.6 5.6 2.8	1.14	2.13	1 Strongly Disagree 2 Disagree 3 No Opinion 4 Agree 5 Strongly Agree	30.2 49.1 3.8 11.3 5.7	3.16	87	0.062
How long did you wait in the exam room before being seen by the doctor	0.69	4.56	1 30+ Minutes 2 21-30 Minutes 3 11-20 Minutes 4 6-10 Minutes 5 0-5 Minutes	0.0 2.8 2.8 30.6 63.9	0.73	4.38	1 30+ Minutes 2 21-30 Minutes 3 11-20 Minutes 4 6-10 Minutes 5 0-5 Minutes	0.0 0.0 14.3 33.9 51.8			

Staff Behaviors Section

Question	Starr 326 Std. Dev	Starr 326 Mean	Starr 326 Frequencies	%	WGC Std. Dev	WGC Mean	WGC Frequencies	%	Chi- Square	DF	P-Value (1-tailed)
The office staff greeted me when I arrived	0.51	0.51	0 No 1 Yes	48.6 51.4	0.36	0.85	0 No 1 Yes	14.8 85.2	12.32	89	0.001
When speaking with me the staff used my name	0.49	0.62	0 No 1 Yes	37.8 62.2	0.48	0.67	0 No 1 Yes	33.3 66.7	0.20	89	0.412
The office staff introduced themselves to me by their	0.47	0.32	0 No 1 Yes	67.6 32.4	0.48	0.35	0 No 1 Yes	64.8 35.2	0.70	89	0.483
The office staff made eye contact when speaking with	0.38	0.83	0 No 1 Yes	16.7 83.3	0.23	0.94	0 No 1 Yes	5.7 94.3	2.86	87	0.093
The office staff kept me informed about how long I	0.37	0.16	0 No 1 Yes	83.8 16.2	0.46	0.29	0 No 1 Yes	71.2 28.8	1.91	87	0.129
Staff talked with me about non health related topics	0.38	0.17	0 No 1 Yes	83.3 16.7	0.44	0.25	0 No 1 Yes	74.5 25.5	0.96	85	0.238
Staff answered my questions	0.39	0.82	0 No 1 Yes	18.2 81.8	0.27	0.92	0 No 1 Yes	7.8 92.2	2.04	82	0.140
Staff inquired about how I was doing today	0.51	0.51	0 No 1 Yes	48.6 51.4	0.50	0.53	0 No 1 Yes	47.2 52.8	0.02	88	0.530

Staff Experience Section

Question	Starr 326 Std. Dev	Starr 326 Mean	Starr 326 Frequencies	%	WGC Std. Dev	WGC Mean	WGC Frequencies	%	Chi- Square	DF	P-Value (1-tailed)
I was treated with kindness and respect by the staff	0.59	4.22	1 Strongly Disagree 2 Disagree 3 No Opinion 4 Agree 5 Strongly Agree	0.0 0.0 8.3 61.1 30.6	0.54	4.47	1 Strongly Disagree 2 Disagree 3 No Opinion 4 Agree 5 Strongly Agree	0.0 0.0 1.8 49.1 49.1	3.07	86	0.062
If I felt worried or anxious today staff made me feel reassured	0.80	3.31	1 Strongly Disagree 2 Disagree 3 No Opinion 4 Agree 5 Strongly Agree	0.0 8.6 62.9 17.1 11.4	0.90	3.39	1 Strongly Disagree 2 Disagree 3 No Opinion 4 Agree 5 Strongly Agree	1.9 7.4 55.6 20.4 14.8	0.21	86	0.452
The office staff were helpful during my visit today	0.55	4.06	1 Strongly Disagree 2 Disagree 3 No Opinion 4 Agree 5 Strongly Agree	0.0 0.0 11.8 70.6 17.6	0.77	4.11	1 Strongly Disagree 2 Disagree 3 No Opinion 4 Agree 5 Strongly Agree	0.0 1.9 18.5 46.3 33.3	2.59	86	0.085
Staff explained procedures in a way that was easy to understand	0.76	3.97	1 Strongly Disagree 2 Disagree 3 No Opinion 4 Agree 5 Strongly Agree	0.0 0.0 29.4 44.1 26.5	0.88	4.02	1 Strongly Disagree 2 Disagree 3 No Opinion 4 Agree 5 Strongly Agree	0.0 3.7 25.9 35.2 35.2	1.33	85	0.180
Staff followed up on questions they could not answer right away	0.91	3.32	1 Strongly Disagree 2 Disagree 3 No Opinion 4 Agree 5 Strongly Agree	2.9 5.9 61.8 14.7 14.7	0.82	3.54	1 Strongly Disagree 2 Disagree 3 No Opinion 4 Agree 5 Strongly Agree	0.0 0.0 66.7 13.0 20.4	0.45	86	0.354
Staff offered assistance when needed	0.82	3.85	1 Strongly Disagree 2 Disagree 3 No Opinion 4 Agree 5 Strongly Agree	0.0 2.9 32.4 41.2 23.5	0.88	3.87	1 Strongly Disagree 2 Disagree 3 No Opinion 4 Agree 5 Strongly Agree	0.0 3.8 34.0 34.0 28.3	0.24	86	0.407
Staff clearly explained billing procedures and charges for visit	1.02	3.26	1 Strongly Disagree 2 Disagree 3 No Opinion 4 Agree 5 Strongly Agree	2.9 20.6 35.3 29.4 11.8	1.05	3.63	1 Strongly Disagree 2 Disagree 3 No Opinion 4 Agree 5 Strongly Agree	1.9 14.8 24.1 37.0 22.2	1.53	86	0.170
Staff clearly explained the next steps in my care after today's visit (such as follow up appointments, home care procedures, etc.)	1.02	3.76	1 Strongly Disagree 2 Disagree 3 No Opinion 4 Agree 5 Strongly Agree	2.9 8.6 20.6 44.1 23.5	0.86	4.02	1 Strongly Disagree 2 Disagree 3 No Opinion 4 Agree 5 Strongly Agree	0.0 5.6 18.5 44.4 31.5	0.65	86	0.289
The value of my time was respected by the office staff	0.77	3.88	1 Strongly Disagree 2 Disagree 3 No Opinion 4 Agree 5 Strongly Agree	0.0 2.9 26.5 50.0 20.6	0.89	4.04	1 Strongly Disagree 2 Disagree 3 No Opinion 4 Agree 5 Strongly Agree	0.0 3.7 25.9 33.3 37.0	2.65	87	0.081
The office staff were friendly during my visit today	0.62	4.09	1 Strongly Disagree 2 Disagree 3 No Opinion 4 Agree 5 Strongly Agree	0.0 2.9 5.9 70.6 20.6	0.70	4.31	1 Strongly Disagree 2 Disagree 3 No Opinion 4 Agree 5 Strongly Agree	0.0 1.9 7.4 48.1 42.6	4.50	86	0.028
Staff were courteous and polite throughout my visit	0.50	4.15	1 Strongly Disagree 2 Disagree 3 No Opinion 4 Agree 5 Strongly Agree	0.0 0.0 5.9 73.5 20.6	0.68	4.36	1 Strongly Disagree 2 Disagree 3 No Opinion 4 Agree 5 Strongly Agree	0.0 1.8 5.5 47.3 45.5	5.64	84	0.015
Overall staff were caring and reassuring	0.75	3.91	1 Strongly Disagree 2 Disagree 3 No Opinion 4 Agree 5 Strongly Agree	0.0 2.9 23.5 52.9 20.6	0.80	4.19	1 Strongly Disagree 2 Disagree 3 No Opinion 4 Agree 5 Strongly Agree	0.0 0.0 24.1 33.3 42.6	4.50	89	0.028
The staff showed consideration for my privacy when asking about personal and insurance information	0.86	3.59	1 Strongly Disagree 2 Disagree 3 No Opinion 4 Agree 5 Strongly Agree	2.9 0.0 47.1 35.3 14.7	0.94	3.85	1 Strongly Disagree 2 Disagree 3 No Opinion 4 Agree 5 Strongly Agree	1.9 1.9 34.6 32.7 28.8	2.30	89	0.103

Overall Visit

Question	Starr 326 Std. Dev	Starr 326 Mean	Starr 326 Frequencies %	WGC Std. Dev	WGC Mean	WGC Frequencies %	Chi-Square	DF	P-Value (1-tailed)
Overall, I felt cared for as a person during my visit	0.52	4.11	1 Strongly Disagree 0.0 2 Disagree 0.0 3 No Opinion 8.3 4 Agree 72.2 5 Strongly Agree 19.4	0.57	4.44	1 Strongly Disagree 0.0 2 Disagree 0.0 3 No Opinion 3.6 4 Agree 49.1 5 Strongly Agree 47.3	7.29	89	0.006
Overall, I felt that I was treated in a timely manner during my visit	0.50	4.25	1 Strongly Disagree 0.0 2 Disagree 0.0 3 No Opinion 2.8 4 Agree 69.4 5 Strongly Agree 27.8	0.98	4.33	1 Strongly Disagree 0.0 2 Disagree 10.9 3 No Opinion 3.6 4 Agree 27.3 5 Strongly Agree 58.2	8.09	89	0.004
I was made to feel welcome during my visit	0.73	3.86	1 Strongly Disagree 0.0 2 Disagree 2.9 3 No Opinion 25.7 4 Agree 54.3 5 Strongly Agree 17.1	0.77	4.33	1 Strongly Disagree 0.0 2 Disagree 3.6 3 No Opinion 7.3 4 Agree 41.8 5 Strongly Agree 47.3	8.47	88	0.003
I would recommend this office to others	0.76	4.11	1 Strongly Disagree 0.0 2 Disagree 5.7 3 No Opinion 5.7 4 Agree 60.0 5 Strongly Agree 28.6	0.56	4.60	1 Strongly Disagree 0.0 2 Disagree 0.0 3 No Opinion 3.6 4 Agree 32.7 5 Strongly Agree 63.6	10.52	88	0.001
I felt annoyed by my experiences today	0.92	1.97	1 Strongly Disagree 28.6 2 Disagree 57.1 3 No Opinion 5.7 4 Agree 5.7 5 Strongly Agree 2.9	0.93	1.80	1 Strongly Disagree 41.8 2 Disagree 45.5 3 No Opinion 7.3 4 Agree 1.8 5 Strongly Agree 3.6	0.98	88	0.222
I had difficulty finding my way around the office today	0.89	2.17	1 Strongly Disagree 14.3 2 Disagree 68.6 3 No Opinion 5.7 4 Agree 8.6 5 Strongly Agree 2.9	0.99	1.98	1 Strongly Disagree 30.9 2 Disagree 54.5 3 No Opinion 3.6 4 Agree 7.3 5 Strongly Agree 3.6	3.20	88	0.060
The office environment helped to ease my anxieties about my visit	0.75	2.97	1 Strongly Disagree 0.0 2 Disagree 25.7 3 No Opinion 54.3 4 Agree 17.1 5 Strongly Agree 2.9	0.84	3.98	1 Strongly Disagree 0.0 2 Disagree 3.7 3 No Opinion 24.1 4 Agree 42.6 5 Strongly Agree 29.6	9.85	87	0.001

Quality Index

Question	Starr 326 Std. Dev	Starr 326 PRE Mean	Starr 326 Frequencies %	WGC Std. Dev	WGC Mean	WGC Frequencies %	Chi-Square	DF	P-Value (1-tailed)
The care I received here today was	0.62	4.31	1 Poor 0.0 2 Fair 0.0 3 Neutral 8.3 4 Good 52.8 5 Excellent 38.9	0.50	4.69	1 Poor 0.0 2 Fair 0.0 3 Neutral 1.8 4 Good 27.3 5 Excellent 70.9	9.17	89	0.002
The service I received here today was	0.71	4.06	1 Poor 0.0 2 Fair 0.0 3 Neutral 22.2 4 Good 50.0 5 Excellent 27.8	0.54	4.56	1 Poor 0.0 2 Fair 0.0 3 Neutral 1.8 4 Good 40.0 5 Excellent 58.2	8.09	89	0.004
Overall, my interactions with the staff were	0.62	4.11	1 Poor 0.0 2 Fair 0.0 3 Neutral 13.9 4 Good 61.1 5 Excellent 25.0	0.78	4.35	1 Poor 0.0 2 Fair 1.8 3 Neutral 12.7 4 Good 34.5 5 Excellent 50.9	6.05	89	0.012
Overall, my interactions with my doctor were	0.65	4.56	1 Poor 0.0 2 Fair 0.0 3 Neutral 2.8 4 Good 36.1 5 Excellent 61.1	0.49	4.73	1 Poor 0.0 2 Fair 0.0 3 Neutral 1.8 4 Good 23.6 5 Excellent 74.5	2.36	89	0.307

APPENDIX M.

Summary of Patient Responses to Open-Ended Questions

Starr 326:

Improvement of Check-In:

- More receptionists
- Add clock at sign- in area (2)
- More information about check-in/ out procedures
- Friendlier, more caring staff (eg—greeting) (4)
- More information about wait time (2)
- Add coffee machine
- Remove glass wall at check in
- Electronic sign-in/ registration

Improvement of Waiting:

- More & Larger variety of magazines (11)
- Larger waiting room (7)
- Homier waiting room (2)
- More comfortable chairs
- Add music
- More information about dermatology (2)
- Needs windows

Improvement of Exam Room:

- Add magazines (4)
- Add an accessible computer terminal (2)
- Add TV
- Nicer surroundings
- Better paint

Additional Comments:

- Scheduling was easy
- Staff provided excellent care (3)
- Better phone service (3)
- Make appointments by internet/ email
- Better signage

Weill Greenberg Center:

Improvement of Check-In:

- More professional staff/ friendlier (6)
- Better check in procedure (check in book inefficient)
- More private
- Not sure who to speak to at check-in desk

Improvement of Waiting:

- Very neat, relaxed
- Nice bathroom
- Better activities for children (2)
- More reading material (2)
- Add computer terminal
- More obvious placement of water cooler
- More medical information

Improvement of Exam Room:

- Too long of a waiting period before discussed treatment
- Too cold (2)
- More reading material (3)
- Add TV (2)

Additional Comments:

- Staff explains things well
- Great nurses/ doctors
- Better signage/ a bit maze-like (2)
- Lovely new office
- “The opulence of the waiting area borders on obscene. A waste of money. No wonder healthcare is too expensive.”

REFERENCES

- Arneill, A. B., & Delvin, A. S. (2002/12). Perceived quality of care: The influence of the waiting room environment. *Journal of Environmental Psychology*, 22(4), 345-360.
- Arnetz, B. (1999). Staff perception of the impact of health care transformation on quality of care. *International Journal for Quality in Health Care*, 11(4), 345-351.
- Babwin, D. (2002). Building boom. *Hospitals & Health Networks*, 76(3), 48.
- Becker, F. D., & Poe, D. B. (1980). The effects of user-generated design modifications in a general hospital. *Journal of Nonverbal Behavior*, 4(4), 195-218.
- Becker, F., & Douglass, S. J. (2006). The ecology of the patient visit: Attractiveness, waiting times, and perceived quality of care. *Healthcare Design*, 6(7), 12.
- Berry, L., & Bendapudi, N. (2003). *Clueing In Customers*
- Bitner, M. J. (1992). Servicescapes: The Impact of Physical Surroundings on Customers and Employees. *Journal of Marketing*, 56(2), 57.
- Caplan, E. K., & Sussman, M. B. (1966). Rank Order of Important Variables for Patient and Staff Satisfaction with Outpatient Service. *Journal of health and human behavior*, 7(2), 133-137.
- Carpenter, D. (2004). A Good, Old-Fashioned Building Boom. *Hospitals & Health Networks*, 78(3), 34.

Carpman, J. R., & Grant, M. A. (1993). *Design that cares: Planning health facilities for patients and visitors* (2nd Edition ed.). Chicago, IL: American Hospital Publishing, Inc.

Clinical Services. (2007). Retrieved May 29, 2007, from <http://www.cornelldermatology.com>

Commission for Architecture and the Built Environment. (2004). *The role of hospital design in the recruitment, retention, and performance of NHS nurses in England*. London, UK: PriceWaterhouse Coopers.

Cuellar, A. E., & Gertler, P. J. (2005). How The Expansion Of Hospital Systems Has Affected Consumers. *Health affairs*, 24(1), 213.

Davidson, A. W. (1994). Banking on the Environment to Promote Human Well-Being. *Banking on Design? Proceedings of the 26th annual conference of the Environmental Design Research Association*, Oklahoma City, OK. 62-66.

Davis, T. R. (1984). The Influence of the Physical Environment in Offices. *The Academy of Management Review*, 9(2), 271-283.

Designing for quality: Hospitals look to the built environment to provide better patient care and outcomes.(2003). *The Quality letter for healthcare leaders*, 15(4), 2.

Devlin, A. S. (1992). Staff, Patients and Visitors: Responses to Hospital Unit Enhancements. *Proceedings of the 25th annual conference of the Environmental Design Research Association*, Oklahoma City, OK. 113-117.

- Devlin, A. S., & Arneill, A. B. (2003). Health Care Environments and Patient Outcomes: A Review of the Literature. *Environment and Behavior*, 35(5), 665-694.
- Douglas, C. H., & Douglas, M. R. (2004). Patient-friendly hospital environments: exploring the patients perspective. *Health Expectations*, 7(1), 61-73.
- Douglass, S. G. (2006). *The ecology of the patient experience: Physical environments, waiting times, and quality of care*. Unpublished Master of Science, Cornell University.
- Edgman-Levitan, S., & Cleary, P. D. (1996). What information do consumers want and need? *Health Affairs*, 15(4), 42-56.
- Evans, G. (2001). Chapter 20: Environmental Stress and Health. In A. Baum, T. A. Revenson & J. E. Singer (Eds.), *Handbook of Health Psychology* (pp. 365-385). Mahwah, New Jersey: Lawrence Erlbaum Associates.
- Evans, G. W., & Mitchell McCoy, J. (1998). When buildings don't work: The role of architecture in human health. *Journal of Environmental Psychology*, 18, 85-94.
- Fottler, M. D., Ford, R. C., Roberts, V., Ford, E. W., & Spears, J. D., Jr. (2000). Creating a healing environment: The importance of the service setting in the new consumer-oriented healthcare system / Practitioner application. *Journal of Healthcare Management*, 45(2), 91.
- Grimson, J. (2001). Delivering the electronic record for the 21st century. *International Journal of Medical Informatics*, 64, 111-127.

- Guo, K. L. (2003). Market-focused management: A model for US academic health centers. *Journal of Health Organization and Management*, 17(2), 88.
- Hutton, J. D., & Richardson, L. D. (1995). Healthscapes: The role of the facility and physical environment on consumer attitudes, satisfaction, quality assessments, and behaviors. *Health Care Management Review*, 20(2), 48-61.
- Iglehart, J. K. (1993). Teaching Hospitals. *The New England Journal of Medicine*, 329(14), 1052-1056.
- Iglehart, J. K. (2005). The Emergence of Physician-Owned Specialty Hospitals. *The New England Journal of Medicine*, 352(1), 78-84.
- Institute for Health Improvement. (2007). *Patient Centered Care: General*. Retrieved July 11, 2007, from <http://www.ihl.org/IHI/Topics/PatientCenteredCare/PatientCenteredCareGeneral/>
- Institute of Medicine (Ed.). (2001). *Crossing the quality chasm: A new health system for the 21st century*. Washington, DC: National Academy Press.
- The Joan and Sanford I. Weill Medical College. (2007). Retrieved May 29, 2007, from <http://www.cornell.edu.proxy.library.cornell.edu:2048/visiting/weill.cfm>
- Joint Commission. (2002). *Healthcare at the crossroads: strategies for addressing the evolving nursing crisis* (Annual Report Joint Commission on Accreditation of Healthcare Organizations).

- Kantrowitz, M., & Associates. (1993). *Design Evaluation of Six Primary Care Facilities for the Purpose of Informing Future Design Decisions*. Los Angeles: The Center For Health Design.
- Karasek, R. (1979). Job demands, job decision latitude, and mental strain: Implications for job redesign. *Administrative Science Quarterly*, 24, 285-308.
- Koplan, J. P., & Fleming, D. W. (2000). Current and Future Public Health Challenges. *JAMA: The Journal of the American Medical Association*, 284(13), 1696-1698.
- Koska, M. T. (1989). Quality--thy name is nursing care, CEOs say. *Hospitals*, 63(3), 32.
- Krout, J., & Wethington, E. (2003). *Residential Choices and Experiences of Older People*. New York: Springer.
- Krueger, P., Brazil, K., Lohfeld, L., Edward, H. G., Lewis, D., & Tjam, E. (2002). Organization specific predictors of job satisfaction: findings from a Canadian multi-site quality of work life cross-sectional survey. *BMC Health Services Research*, 2(1), 6.
- Laine, C., Davidoff, F., Lewis, C. E., Nelson, E. C., Nelson, E., Kessler, R. C., et al. (1996). Important Elements of Outpatient Care: A Comparison of Patients' and Physicians' Opinions. *Annals of Internal Medicine*, 125(8), 640-645.
- Landro, L. (2007, March 21). The informed patient: Hospitals set blueprint for a better 'Healing Environment'; Outdated facilities redesign patient areas to lift quality of care. *Wall Street Journal*, pp. D. 9.

- Leather, P., Beale, D., Santos, A., Watts, J., & Lee, L. (2003). Outcomes of Environmental Appraisal of Different Hospital Waiting Areas. *Environment and Behavior*, 35(6), 842-869.
- Leighty, J. (2007). *Healing by design*. Retrieved 10/05, 2006, from http://www.nurseweek.com/news/features/03-04/unitfuture_print.html
- Leiter, M. P., Harvie, P., & Frizzell, C. (1998). The correspondence of patient satisfaction and nurse burnout. *Social Science Medicine*, 47(10), 1161-1167.
- Marberry, S. O. (1995). *Innovations in healthcare design*. New York: John Wiley & Sons, Inc.
- Marberry, S. O. (2006) *Improving Healthcare with Better Building Design*, Concord, CA: The Center for Health Design.
- Maslow, A. H., & Mintz, N. L. (1956). Effects of esthetic surroundings: I. initial effects of three esthetic conditions upon perceiving energy and well-being in faces. *Journal of Psychology*, 41, 247-254.
- Mayer, T. A., & Cates, R. J. (1999). Service Excellence in Health Care. *Journal of the American Medical Association*, 282(13), 1281-1283.
- Mayer, T. A., Cates, R. J., Mastrovich, M. J., & Royalty, D. L. (1998). Emergency Department Patient Satisfaction: Customer Service Training Improves Patient Satisfaction and Ratings of Physician and Nurse Skill. *Journal of Healthcare Management*, 43(5), 427-440.

- McNeese-Smith, D. K. (1999). A content analysis of staff nurse descriptions of job satisfaction and dissatisfaction. *Journal of advanced nursing*, 29(6), 1332-1341.
- Miller, G. (2007). *Medical college's newly named Weill Greenberg Center boasts state-of-the-art ambulatory care, education, and research*. Retrieved 05/29, 2007, from <http://www.news.cornell.edu/stories/Jan07/Weill.Greenberg.center.html>
- Moos, R. H., & Insel, P. N. (1974). *Work environment scale manual*. California: Consulting Psychologists Press, Inc.
- Mroczek, J., Mikitarian, G., Viera, E. K., & Rotarius, T. (2005). Hospital Design and Staff Perceptions: An Exploratory Analysis. *The Health Care Manager*, 24(3), 233-244.
- Nelson, C., West, T., & Goodman, C. (2005). *The Hospital Built Environment: What Role Might Funders of Health Services Research Play?* No. 05-0106-EF). Rockville, MD: Agency for Healthcare Research and Quality- U.S. Department of Health and Human Services.
- Nesmith, E. L. (1995). *Healthcare architecture: Designs for the future*. Washington, DC: The American Institute of Architects Press.
- Neuberger, J. (2000). The educated patient: new challenges for the medical profession. *Journal of internal medicine*, 247(1), 6-10.
- New Era for Patients- an innovative Ambulatory Care and Medical Education Building*. (2007). Retrieved May 29, 2007, from http://healthnewsdigest.com/news/Education_390/New_Era_for_Patients_printer.shtml

New York Hospital (New York- Presbyterian Hospital/ Weill Cornell Medical Center).

(2007). Retrieved May 29, 2007, from

<http://www.med.cornell.edu.proxy.library.cornell.edu:2048/archives/history/nyp.html>

NIOSH. Motivation and Stress Research Section- Generic Job Stress Questionnaire. ().

Cincinnati, Ohio 45226: National Institute for Occupational Safety and Health.

Omachonu, V. K. (1990). Quality of care and the patient: New criteria for evaluation.

Health Care Management Review, 15(4), 43-50.

Paleologou, V., Kontodimopoulos, N., Stamouli, A., Aletras, V., & Niakas, D. (2006).

Developing and testing an instrument for identifying performance incentives in the Greek health care sector. *BMC Health Services Research*, 6(1), 118.

Pearlin, L. I., & Schooler, C. (1978). The structure of coping. *Journal of Health and*

Social Behavior, 19, 2-21.

Planetree, I. (2007). *Welcome*. Retrieved July 11, 2007, from

<http://www.planetree.org/about/welcome.htm>

Powers, T. L., & Bendall-Lyon, D. (2003). The satisfaction score. *Marketing Health*

Services, 23(3)

Press Ganey Associates. (2006). *Press Ganey 2006 Healthcare Satisfaction Report*.

South Bend, IN: Press Ganey Associates, Inc.

- Reichheld, F. F. (2003). The One Number You Need to Grow.[Electronic version].
Harvard Business Review, 81(0017), 47-54.
- Rostenberg, B. (1986). *Design Planning for Freestanding Ambulatory Care Facilities: A Primer for Health Care Providers and Architects*. United States: American Hospital Publishing, Inc.
- Stansfeld, S., Head, J., & Marmot, M. (2000). *Work-related factors and ill health: The Whitehall study*. Norwich, UK: HSE Books.
- Stern, A. L., MacRae, S., & Gerteis, M. (2003). Understanding the consumer perspective to improve design quality. *Journal of Architectural and Planning Research*, 20(1), 16-28.
- Stichler, J. F. (2007). Using Evidence-based Design to Improve Outcomes. *Journal of Nursing Administration*, 37(1), 1-4.
- Ulrich, R., & Zimring, C. (2004). *The Role of the Physical Environment in the Hospital of the 21st Century*. Concord, CA: Center for Health Design.
- Ulrich, R. S. (1997). A theory of supportive design. *Journal of Healthcare Design*, 9, 3-7.
- Ulrich, R. S. (2000). *Evidence based environmental design for improving medical outcomes. Proceedings of the conference, Healing by Design: Building for Health Care in the 21st Century*. Montreal: McGill University Health Centre.
- Ulrich, R. S. (1992). How Design Impacts Wellness. *The Healthcare Forum journal*, 35(5), 20.

- Urden, L. D. (2002). Patient satisfaction measurement: current issues and implications. *Lippincott's Case Management*, 71(5), 194-200.
- Watson, C. A. (2005). Integration of Technology and Facility Design: Implications for Nursing Administration. *Journal of Nursing Administration*, 35(5), 217-219.
- Weil, J. (2007). *Medical College plans for first clinical building in its 106-year history*. Retrieved 05/29, 2007, from http://www.news.cornell.edu.proxy.library.cornell.edu:2048/chronicle/04/6.10.04/Weill_clinical_bldg.html
- Weill Cornell Medical College breaks ground for new ambulatory care and medical education building. (2007). Retrieved May 29, 2007, from <http://www.nyp.org/news/hospital/3.html>
- Williams, M. V. (2004). The future of hospital medicine: Evolution or revolution? *The American Journal of Medicine*, 117(6), 446-4.

