A Qualitative Study of Inpatient Rehabilitation Client Perceptions of the Semi-Fixed Environment

Liane Hewitt

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A QUALITATIVE STUDY OF INPATIENT REHABILITATION CLIENT
PERCEPTIONS OF THE SEMI-FIXED ENVIRONMENT

by

Liane Hewitt

A Dissertation on Partial Fulfillment of the
Requirements for the
Degree of Doctor in Public Health
in Health Promotion and Education

June 2007
Each person whose signature appears below certifies that this dissertation, in her opinion, is adequate in scope and quality as a dissertation for the degree of Doctor of Public Health.

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ABSTRACT OF THE DISSERTATION

A Qualitative Study of Inpatient Rehabilitation Client Perceptions of the Semi-Fixed Environment

by

Liane Hewitt

Doctor of Public Health in Health Promotion and Education

Loma Linda University, Loma Linda California, 2007

Helen Hopp Marshak, Chairman

Background and Purpose. Literature supports the importance of the environment on promoting or compromising health. However, little is known about how the semi-fixed environment affects client perceptions and recovery from a debilitating condition. The purpose of this study was to investigate beliefs about control within the semi-fixed environment and client perceptions of the rehabilitation process.

Design and Method. This study utilized a basic qualitative research design with 10 rehabilitation clients whose average inpatient length of stay was 14 days. Data were collected in two phases. Phase I included two inpatient visits involving semi-structured interviews on the rehabilitation process and videotaping of the client’s semi-fixed environment. Phase II included a home visit, face-to-face interview using guiding questions about the client’s perception of their rehabilitation stay and how the
environment impacted these perceptions, and a review of the videotapes taken during the client’s inpatient stay.

Results. Six themes emerged from the semi-structured interview data which were: Had Choices, It's in the Room, View of Nature, Meaningful to Me, Being Connected, and God’s Plan. The majority of clients identified that having control within their semi-fixed environment was not as important as being supported by and connected to significant others such as family and friends. Feeling connected also included having ready access to nature and the outdoors. For several of the clients it did not matter where personal semi-fixed items were placed within their room; just knowing that a meaningful object (being connected) was nearby and that they could have access to it at anytime was sufficient. A majority of clients shared that staff attitude and a faith in God’s plan facilitated the recovery process. The discussion section addresses the concepts of temporality (time) and social support/connectedness as they relate to this research population.

Conclusions and Implications for Health Education. The rehabilitation client has special needs and these needs are often dependent on the severity of functional limitations. To develop meaningful and effective intervention strategies, health care professionals must understand the varied perspectives of those individuals who struggle with disabling conditions and how the semi-fixed environment might enhance or worsen their recovery. For the health educator, this study yields a better understanding of the multiple factors that impact perceptions of health promoting environments, specifically related to inpatient rehabilitation clients.
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CHAPTER 1
INTRODUCTION

A. Statement of Problem

The effects of the physical environment on health and health behaviors are well documented in the literature (Christiansen & Townsend, 2004; Jackson, 2003; Fjeld & Bonnevie, 2002; Booth, Mayer, & Sallis, 2001; Hynes, Brugge, Watts, & Lally, 2000; Heller, Miller, & Factor, 1998; Ulrich, 1984; Baum & Davis, 1980). For instance, in a recent study by Fjeld and Bonnevie (2002), lighting and plants were found to decrease employee absences and physical complaints. Over two decades ago, Ulrich (1984) found that patients with a window view post-operatively had shorter hospital stays and required fewer pain medications than those who did not have window views. Hynes et al. (2000) assert that environments with poor ventilation and a lack of fresh air affect respiratory system function thus impacting one’s ability to perform daily activities. Jackson (2003) states that the physical environment impacts health especially as related to chronic disease such as stroke, diabetes, arthritis, and heart disease. For example, he reports that many residential communities are built without access to parks and walkways and that appealing roadside signs advertise fast foods which are often very high in fat content. Brown et al. (2005) report that where people live directly impacts how much exercise they do. Babey, Brown, and Hastert (2005) state that one in four California adolescents do not have access to safe outdoor spaces for physical activity, thus decreasing opportunities for regular exercise.

The environment is a continuous source of feedback. Not understanding it, or perceiving the environment to be unsupportive, increases stress levels, especially when
catastrophic or unanticipated events occur (Evans & Mitchell, 1998; Fiedler, 1998). One's ability to adapt to change and learn new coping strategies for an altered lifestyle may be negatively impacted if the environment is perceived as unsupportive (Booth et al., 2001; Evans & Mitchell, 1998; Ulrich, 1991), thus an understanding of the environmental aspects that impact perceptions and health can help to identify when change or modifications are needed.

1. Environmental Elements. According to Rapoport (1982), the environment is composed of three elements: a) fixed - elements that are standard architectural components and include the ceiling, walls, and floors, b) semi-fixed - elements that are easily changed such as furniture, plants, photos and artifacts, and c) non-fixed - elements that are related to the individual, specifically body positions, gestures, and nonverbal behaviors. Of these three elements the semi-fixed environment can have a wide impact on individual behaviors with relatively little cost or effort (Csikszentmihalyi & Rochberg-Halton, 1981; Rodin & Langer, 1977; Langer & Rodin, 1976). For example, books may remind people of achievements, and photos allow individuals to relive memorable occasions and remind them of their support system. Personal objects can express status, power, and impact how people organize and experience their lives (Csikszentmihalyi & Rochberg-Halton, 1981). Csikszentmihalyi and Rochberg-Halton (1981) found that past memories and current experiences are linked to the objects in one's environment and that how people use, own, and surround themselves with objects might accurately reflect personality. From another perspective, Gerlach-Spriggs, Kaufman and Warner (1998) found that employees are able to accomplish more, and families feel better, in health care settings where there is a link to nature such as restorative gardens or
plants. Familiar subtle scents are relaxing and lead to improved moods (Diffendal, 2002). Soft background music has positive cognitive effects with color impacting muscle tension, brain wave activity, heart rate, and respiration (Diffendal, 2002; Venolia, 1988). These effects occur, in part, as a result of the semi-fixed environment.

The physical arrangement of space can affect social interaction (Evans & Mitchell, 1998; Christiansen & Baum, 1991). Chairs facing each other or circularly positioned encourage interaction. Heller et al. (1998), in a study of 249 community based residents with cognitive impairment, found that the more variety (personalization of resident rooms and decorations) and stimulation within the physical environment (window views), the better the adaptive behaviors. Thus, even simple environmental modifications can impact one’s ability to function in a specific context.

2. Rehabilitation Needs. According to Physical Medicine and Rehabilitation, Statistics of Disability (2005), more than half of persons over age 65 have some level of disability, four million Americans live with the effects of stroke, and 50-70% of stroke victims regain functional independence while 15-30% are permanently disabled. One brain injury occurs every 21 seconds and the cost of treating traumatic brain injury (TBI) is estimated to be more than $48.3 billion per year. About 11,000 people incur a spinal cord injury (SCI) each year. Car accidents, guns, and falls are the leading causes of SCI and TBI. A majority of these clients participate in rehabilitative services at some point in their recovery process. The National Institute on Disability and Rehabilitation Research (2005) indicates that almost one in five people has a disability. More than 5.8 million need assistance with instrumental activities of daily living such as shopping and cooking, while 3.4 million need assistance with basic activities of daily living such as bathing,
grooming and dressing. The data also indicate that multiple sclerosis, cancer, paralysis, vision problems, and orthopedic impairments cause major functional limitations.

According to Berkowitz (1998), the annual cost of spinal cord injuries is approximately $97 billion and the American Heart Association (2004) reports that stroke related expenses were almost $57 billion. Finkelstein et al. (2006) found that in the year 2000, injuries including motor vehicle accidents cost an estimated $406 billion in medical treatments and lost productivity. The National Center for Health Statistics, Center for Disease Control [CDC] (2003) report that the number of individuals with limitations in daily activities due to chronic conditions is 34.3 million; 31.3 million adults have physical functioning difficulties, and 14.9 million adults are unable or have difficulty walking a quarter mile. The National Organization on Disability (2004) found that only 35% of people with disabilities report working full or part time, three times as many live in poverty, and 50% worry about not being able to care for themselves or being a burden to their family. Clearly, this is a population in need of optimum rehabilitative services and education.

3. Rehabilitation Clients. For the rehabilitation client, a disease or injury causes significant changes in health and lifestyle. The client is often exposed to a medical/hospital environment that produces fear, uncertainty, and a loss of choice and control. If the rehabilitation client experiences an environment that does not encourage perceived control and adaptive responses, feelings of helplessness occur, which in turn leads to a decrease in motivation, competency, and increased functional disability (Young, Meterko, & Desai, 2000; Evans & Mitchell, 1998; Connell, 1997; Borkan, Quirk & Sullivan, 1991). Stated another way, if the environment communicates helplessness,
this perception will persist, leading to depression and anxiety which further impedes performance. Gerlach-Spriggs et al. (1998) assert that patients who enter a hospital rarely have a sense of place and often give up their freedom, mobility and privacy. Fottler et al. (2000) further state that hospitals are often sterile and monotonous, giving the impression that the power lies within the hospital and that the patient has limited choices. In contrast, an environment that is set up to encourage motivation and perceived control can be a powerful tool in the development of adaptive responses to new situations (Evans & Mitchell, 1998; Heller et al., 1998). Ulrich (1991) asserts that in order to promote wellness, health care facilities must support coping by increasing patient control, allowing access to social supports, and having positive distractions within the environment. Little research however has been done to identify how aspects of the semi-fixed environment affect the rehabilitation client population.

4. Rehabilitation Client Collaboration. The most effective rehabilitation programs identify the client as an integral part of the rehabilitation process (Stokols, Allen, & Bellingham, 1996). Client involvement includes goal setting and intervention planning. If clients perceive they are able to control or cause specific outcomes, it positively influences their thoughts, feelings, and subsequent actions (Christiansen & Townsend, 2004; Weinberg & Chappell, 1996; Venolia, 1988; Rodin & Langer, 1977; Langer & Rodin, 1976). In an experimental study almost three decades ago, Langer and Rodin (1976) gave a group of elderly clients their choice about attendance at an activity and the responsibility of caring for a plant along with other activities that emphasized their control or choice (e.g., movie). As a result of this relatively modest intervention to enhance personal control, elderly clients were more alert, active, and had a better sense of
well being than those who had decisions made for them by staff members. This indicates that relatively minor changes to the semi-fixed environment can result in better health outcomes. It also indicates that clients who are able to modify their semi-fixed environment might perceive enhanced personal control, leading to better health outcomes. The rehabilitation client often perceives little to no control of their environment and treatment (Evans & Mitchell, 1998; Langer & Rodin, 1976). Encouraging a choice over the semi-fixed features within the client's room could decrease helplessness and increase perceived control during the rehabilitation process, which in turn, may lead to improved functional outcomes.

B. Purpose of the Study

Client satisfaction is the most common variable studied in relation to the impact of environment on health care; however, client perceptions of the environment are ignored by many professions in explaining and predicting important individual, group, or organizational factors (Lacayo, 2004; Young et al., 2000; Fottler et al., 2000; Connell, 1997; Fleming, 1981). As mentioned earlier, Langer and Rodin (1976) found that a sense of choice regarding the environment facilitated perceptions of personal control which led to increased activity, alertness, and well being but little follow up research has been done on this topic.

Each client experiences the demands of the rehabilitation environment in a different way and rehabilitation settings are designed to accommodate for a loss of function and ability (Connell, 1997). There is limited research on the impact of the semi-fixed environment on perceptions of the rehabilitation process. Many organizations design facilities that are health promoting by adding restorative gardens, larger
socialization areas, changing rooms to single occupancy, and extensively re-designing the physical environment of client rooms including the addition of technology (Wolski, 2003; Fjeld & Bonnevie, 2002; Venolia, 1988; Ulrich, 1984). From the rehabilitation client perspective, however, little research has evaluated if these environmental changes actually improve perceptions leading to positive rehabilitation outcomes. If less costly environmental changes are implemented, they might have similar effects on health outcomes as major, more expensive environmental modifications.

The purpose of this research was to investigate the relationship between perceived control within the semi-fixed environment and client perceptions of the rehabilitation process. As previously stated, the semi-fixed environment includes elements that are easily manipulated such as furniture, plants, photos, and artifacts (Rapoport, 1982). The rehabilitation process progresses from admission following referral, evaluation and assessment, team planning, implementation of the collaborative treatment plan, and discharge planning. In 1965, Leavell and Clark categorized public health services into three main levels of prevention: primary, secondary, and tertiary. Within these three main levels are five categories and the rehabilitation category is listed within tertiary prevention. Tertiary prevention occurs when a disability is permanent and involves prevention of complications and deterioration (Greiner, Fain, & Edelman, 2002; Leavell & Clark, 1965). Although much of public health emphasizes primary prevention, for members of the community who have suffered catastrophic injuries, retraining, re-educating, and returning to gainful employment is also an integral part of the healing process. Thus, the focus of the research was on perceptions of the semi-fixed environment in this population.
C. Research Questions

This study addressed the following research questions:

1. How does the semi-fixed environment impact clients receiving rehabilitation services as evidenced by their perceptions of control and choice during the rehabilitation process?

2. What are the client’s perceptions throughout the inpatient rehabilitation process?

3. Does exercising choice within the semi-fixed environment impact the rehabilitation process?

Following admission to rehabilitation services at Loma Linda University Medical Center, Rehabilitation Institute, clients participate in an intensive therapy program for the majority of their inpatient stay. The average length of stay is approximately 14 days and during this time the clients have the opportunity to affect their semi-fixed environment. Qualitative research methods guided the inquiry, specifically through observation of the clients’ rehabilitation environment during their inpatient stay, followed by individual face-to-face interviews and reflections after discharge from the facility.

D. Theoretical Justification

Many theories are used to explain health related perceptions and behaviors. For this study I chose Rotter's social learning theory (SLT) and Bandura's social cognitive theory (SCT) to guide my research because these theories emphasize an individual's perception of control over their environments and how the environment in turn influences perceptions.

1. Social Learning Theory. In social learning theory (SLT), developed under the umbrella of behaviorism, Rotter attempted to explain why people and animals react
the way they do in various situations (Brown, 2005; Rotter, 1966). Along with other
behaviorists, Rotter stated that individuals learn on the basis of reinforcement, which is a
belief that certain outcomes are a result of their actions ("internals") or a result of outside
factors ("externals"). Positive or negative reinforcements impact the likelihood of a
behavior. He identified locus of control as a predominant construct of SLT (Brown, 2005;
Rotter, 1966), which is the belief that certain outcomes are a result of one's own action
(internal) or are a result of other factors such as luck or chance (external). Rotter stated
that health outcomes could be improved by the development of control over one's life.
The main assumption in the locus of control literature asserts that giving people control
over their lives will improve health outcomes (Baranowksi, Perry & Parcel, 1997; Abella
& Heslin, 1984).

2. Social Cognitive Theory. SLT tends to explain behavior as a result of
reinforcement, whereas social cognitive theory (SCT) proposes that multiple factors
affect behavior including the environment, thoughts, and emotions (Bandura, 1986).
Bandura states that human behavior is considered "triadic, dynamic and reciprocal"
(Baranowski et al., 1997, p. 153; Bandura, 1986). SCT addresses the environmental,
psychosocial, and cognitive factors that affect behaviors and are described next.

Environmental factors, those external to the person, provide support and resources for
individuals to accomplish tasks. Situations are the person's perception of their
environment and may include activities, physical features, and one's role within a given
situation. If one perceives personal control (self-efficacy) within their environment or the
availability and adequacy of supports/resources, positive behaviors may be facilitated.
The construct of reciprocal determinism is the dynamic, nonlinear interaction between
the person, behavior, and environment (Cottrell et al., 2002; McKenzie & Smeltzer, 2001; Baranowski et al., 1997). If one of these three components change (person, behavior, or environment), the situation needs to be re-evaluated. It is important to evaluate the multiple factors that impact this interaction.

One way in which a person learns a behavior is through observational learning. This occurs when an individual observes others and the reinforcements they receive for an action. Reinforcement can be either positive or negative and will impact the likelihood that a behavior will occur again. SCT includes three types of reinforcement: direct (operant conditioning), vicarious (observational learning), and self-reinforcement (self control). The rehabilitation client may observe another client whom they perceive as having control in a situation and do what they do in hopes of securing positive reinforcements. A client may identify music as a motivator and ask family or friends to bring in audio devices; this can be self reinforcing and perceived as support by significant others.

Outcome expectancies are the values that one places on an outcome. An individual will likely do an activity they perceive has more positive than negative outcomes. For example, clients may choose to have several meaningful objects such as pictures in their rooms, if they perceive these items as motivating factors to improve function as well as a means for socialization. Self-efficacy is the confidence one has about successfully completing a task or behavior. High self-efficacy increases the likelihood of a positive behavior. One who believes they can impact even a small portion of their environment will likely have more confidence to do more challenging tasks. For example, a rehabilitation client who feels supported and is given choices of where to
place personal items in their room may feel more empowered to request that larger pieces of furniture be moved to facilitate their perceived functional needs, thereby enhancing the recovery process.

Among the many factors influencing behavior is the perception of control. Both the SLT and SCT imply that some level of personal control over environmental factors impacts an individual's attitude and ultimate behaviors. SCT goes beyond that with resources/supports for behavior. In this study, questions such as “Did you choose what objects you had in your room?” and “What would you have liked to have in your room and why?” explored the level of perceived control of the rehabilitation client and how this impacted the rehabilitation process. It was expected that the more perceived control the client experiences during the rehabilitation process, the greater the motivation and ability to adapt to an altered lifestyle. As stated previously, to plan and implement effective health interventions one must consider the multiple factors that may impact outcomes.

3. Learned Helplessness. An unresponsive environment as well as the perception of loss of control appear to be major factors in the development of learned helplessness (Evans & Mitchell, 1998; Weinberg & Chappell, 1996.) When a individual repeatedly “learns” that there is no association between actions and outcomes, s/he begins to feel helpless and gradually may stop trying to control any new situation, leading to passivity and dependence such as is the case with many elderly who are admitted to skilled nursing facilities following medical interventions (Bandura, 1997; Connell, 1997; Weinberg & Chappell, 1996; Duffy & Wilson, 1984). People who are institutionalized are often deprived of the ability to control their environment; even if they have the skills to do a task the impoverished environment will negatively impact their performance and affect
how they think, feel, and act (Crist, Royeen & Schkade, 2000; Evans & Mitchell, 1998; Langer & Rodin, 1976; Langer, 1975). For the rehabilitation client, learned helplessness may occur especially if the client perceives an environment that does not support empowerment and hope.

It is important to recognize that multiple factors influence health outcomes and that the relationship between these factors is not linear but one that is constantly changing. The environment must be perceived as supportive and empowering to facilitate positive coping and health outcomes.

E. Significance to Health Promotion and Education

Health promotion focuses on "educational, political, environmental, regulatory or organizational mechanisms that support actions and conditions of living conducive to the health of individuals, groups, and communities" (Cottrell et al., 2002, p. 8; Peterson & Stunkard, 1989). It differs from disease prevention in that it places more emphasis on the role of the individual, groups, and organization as agents shaping health practices (Stokols, 2000). Many health promotion programs focus solely on the individual and not the environment. Health promotion is about empowerment (Green, Richard & Potvin, 1996).

The research presented here focused on the impact of the environment on rehabilitation clients who have suffered a life altering incident with its accompanying loss of control and fear of future functional abilities. Perceived control of any component of their immediate environment, while they are participating in inpatient rehabilitative services, may facilitate the client's ability and motivation to adapt to his/her new situation. This could lead to decreased mortality and morbidity, increased participation
and morale, client empowerment, and long term functional independence. From an administrative point of view, it is possible that a simple physical environmental change such as placing a shelf or larger bedside tables within the client's reach for their personal items, may be just as effective in promoting well being as a costly total room re-design. For instance, in this study clients who were encouraged to have familiar and/or meaningful objects in their rooms were more adaptable, responsive, and motivated throughout their rehabilitation process. Health educators can educate rehabilitation administrators and rehabilitation team members about environmental influences that foster a health promoting environment during the rehabilitation process as well as encourage clients, with less perceived control over their environment, to change semi-fixed aspects.

Public health practitioners must be involved as advocates for healthier physical environments (Perdue, Stone & Gostin, 2003; Stokols, 1992). This includes involvement in planning for environmental design, providing data to policymakers, providing a voice for underrepresented populations, promoting healthy activities for children and teens, and, more importantly, being effective role models. The challenge is to develop collaborative models that address personal and environmental factors in health promotion (Stokols, 1992). Public health practitioners must work closely with architects, developers, planners, interior designers, and other experts to create environments that are health promoting (Jackson, 2003).
CHAPTER 2
REVIEW OF THE LITERATURE

The field of public health recognizes the broad effect of the environment on population groups. A century ago the environmental emphasis was on unsanitary conditions and the spread of infectious disease. In the past 50 years public health has addressed the physical environment by targeting such areas as lead paint, sanitation, and fire codes (Jackson, 2003). Today, the emphasis has moved to the health promoting or healing effects of the environment (Perdue, Stone & Gostin, 2003; Diffendal, 2002; Stokols, 2000; Bloom, 1995).

Environmental factors are part of a web of causation that lead to healthy and unhealthy behaviors which are likely to play a role in the success or failure of health promoting programs (Stokols, 2000; Baranowski et al., 1997; Green et al., 1996). Baranowski et al. (1997) further point out that environmental factors can be manipulated to achieve health promoting objectives. For example, a public health strategy to promote physical activity in weight loss programs stresses environmental changes to create opportunities and remove barriers (Booth et al., 2001; Hartie, 1975). Such strategies for increasing physical activity include signs promoting the use of stairs, making stairs accessible and attractive, and providing walking paths within the community, all of which would be considered fixed environmental factors.

While a plethora of research addresses the detrimental effects of the environment on health and social behavior, researchers in the field express the need for more empirical evidence on the health promoting effects and perceptions of the environment (Lacayo, 2004; Perdue et al., 2003; Mendell et al., 2002; Diffendal, 2002; Evans, Wells, Chan, &
Saltzman, 2000; Mansour, Lanphear, & DeWitt, 2000; Baum & Davis, 1980; Cohen, Glass, & Singer, 1973). There is a need for empirical evidence to describe and understand environmental-behavioral relationships (Stokols, 2000; Baum & Davis, 1980) and this research was undertaken to do just that.

A. Definitions

1. Environment. Stokols (1992) defines the environment as an "array of independent attributes" (p. 6). Cheadle et al. (1992) further define the environment as anything that is external to the individual and shared by community members. The term "environment" is often used synonymously with "context"; it is difficult to understand a person without assessing the context that supports or hinders their behaviors (Kramer, Hinojosa, & Royeen, 2003; Venolia, 1988). The environment tells one about who they are and how they fit within that context (Venolia, 1988). For example, a hospital environment projects that the power lies with the institution and the important person is the physician or health care providers. Rooms are sterile and monotonous and clients rarely perceive that they have any control over their environment or the interventions they will receive (Fottler et al., 2000; Young et al., 2000; Gerlach-Spriggs et al., 1998; Bloom, 1995). This study focused on the semi-fixed aspects of the environment which are those aspects (such as photos, plants, music, and furniture) that can be easily altered. These items are relatively cost efficient avenues for intervention as compared to the fixed environmental components.

2. Client. For this research project I chose to use the term "client" versus "patient." According to Webster's Dictionary (1997), a "patient" is defined as one receiving medical care and a "client" as a customer. The term "patient" has been
associated with a passive, dependent role. The Occupational Therapy Practice Framework (2002) defines "client" as "individuals (including others involved in the individual's life who may help or be served indirectly such as caregiver, teacher, parent, employer spouse, etc), groups or populations (i.e., organizations and communities") (p. 630). In recent years client-centered interventions have been encouraged because more individuals want to be included in their health care decisions and there is evidence that such an approach improves health outcomes (Adams, Smith, & Ruffin, 2001; Stewart, 2000). This approach to treatment encourages a respect for and a collaboration with the individual receiving the care (Crepeau, Cohn, & Schell, 2003). Clients are encouraged and empowered to assist in decision making. The term "client" is preferred in the proposed research because it denotes an active participant in the rehabilitation process.

3. Rehabilitation Process. The rehabilitation process progresses from admission following referral, to evaluation and assessment, intervention planning and implementation, and discharge planning. Clients spend a minimum of three hours in therapy and in therapy groups on a daily basis. They are encouraged to participate in scheduled recreational activities with other rehabilitation clients during the evening hours and on weekends. When clients are not in therapy, they often spend a significant amount of time in their hospital rooms. The current (2007) average length of stay at the Rehabilitation Institute, East Campus, Loma Linda University Medical Center, is 14 days. Throughout the hospital stay regular rehabilitation team meetings are scheduled which include family conferences to facilitate discharge planning.
B. Public Health and the Environment

1. Environment and Health. Jackson (2003) states that poor health may result from the environment that one resides in and the way in which the physical environment is designed may hold potential to address issues such as stroke, diabetes, depression, and social inequities. Baranowski et al. (1997) state that the environment can activate the body’s ability to heal itself. Bloom (1995) asserts that as we are able to make the environment safer and more responsive to individual needs, the environment automatically becomes more health promotive. Baum and Davis (1980) report that better environments can be designed if planning is research based, identifying how the environment meets the needs and choices of individuals.

Research illustrates the variety of relationships between the environment and health. In a study by the United States Army, there were 50% more confirmed respiratory infections among recruits who lived in newer barracks that had closed windows than those who lived in the older barracks with open windows which allowed more outside air and less recirculated air (Mendell et al., 2002). Cohen et al. (1973) found that children living on the lower floors of a 32-story building, with more exposure to traffic noises, had more hearing impairment than a matched sample who lived in higher apartments. This hearing impairment caused difficulty with auditory discrimination, which further affected their ability to read and learn within the classroom setting.

Ideally, the physical environment should encourage individuals to engage in healthy behaviors (Perdue et al., 2003). Public health practitioners must advocate for healthier physical environments by being involved in planning in environmental design,
providing data to policymakers, being an advocate for underrepresented populations, promoting healthy activities for youth, and being role models of healthy behavior (Perdue et al., 2003; Stokols, 1992).

2. Sense Of Place. Frumkin (2003) discusses "sense of place" as a public health construct and acknowledges that this construct is difficult to define. It identifies the atmosphere of a place and the quality of the environment and includes both the physical as well as social environment. He goes on to say that place evokes memories, arouses emotion and passion, and affects how we do things on a daily basis. To have an understanding of the impact of place on people requires that we understand human diversity. This means that each one of us will react differently in a given environment and situation. It is important that public health practitioners address the environment in that some environments may be more health promoting than others and to some people more than others.

C. Personal Control

From the very young to the very old, we strive to control our environments by the clothes we wear, the car we drive, and the items we put in our homes (Csikszentmihaly & Rochberg-Halton, 1981; Schulz, 1976). The idea of personal control originated in motivational theories: people want to do more than just react to their environment; they strive to control it (Bandura, 1997; Peterson & Stunkard, 1989). Personal control is defined as the belief an individual holds about the degree that he or she can bring about a certain outcome (Bandura, 1997; Weinberg & Chappell, 1996; Peterson & Stunkard, 1989). When personal control is easy to exercise it enables the individual to deal with the demands of life (Christiansen & Townsend, 2004; Spake, 1998; Bandura, 1997;
As people achieve their goals and master their environment they experience a mounting sense of control (Fiveash & Nay, 2004). An individual becomes vulnerable, however, when they experience limited choices, lack information, are ignored, or lack support from others resulting in feelings of helplessness and loss of control (Fiveash & Nay, 2004).

Control is associated with effective coping, adaptation, and optimism. It requires that the individual have knowledge, skills, and the resources to deal with situations (Dempsey & Dunst, 2004; Bruce & Thornton, 2004; Bandura, 1997; Peterson & Stunkard, 1989). People with high personal control live more healthy lifestyles, are more likely to seek and follow through with medical advice, are better able to cope with crises, are able to gather support, and have more competent immune systems (Bruce & Thornton, 2004; Ganster, Fox, & Dwyer, 2001; Peterson & Stunkard, 1989). For instance, in a study by Watt (1999) of 174 middle and high school minority students, perceptions of control were associated with increased educational desires and decreased aggressiveness. Thus, perceptions of control are important in health promoting behaviors.

When a person is institutionalized they experience feelings of helplessness, depression, indifference, and apprehension (Crist et al., 2000; Bandura, 1997; Weinberg & Chappell, 1996; Schulz, 1976; Langer, 1975). A person may feel that they have little control because they have to follow institutional rules and schedules and do what "powerful others" tell them to do (Weinberg & Chappell, 1996). For example, if clients don’t eat fast enough by themselves, they are fed and eventually give up feeding themselves even though they are still capable of doing so. The staff function under time
pressures and experience decreased control themselves (Weinberg & Chappell, 1996). For example, it is more efficient for staff to put people in wheelchairs and take 2-3 people at one time to a dining room versus walking them individually. Staff may move things in the client’s room without awareness of the impact this has on the client. The client may not then be able to reach their light, TV, or walker and this in turn leads to a decrease in personal control.

Fiedler (1998), in a quasi-experimental longitudinal study, assessed the efficacy of a psychoeducational group intervention to enhance the perceived control of spinal cord injured patients during their initial rehabilitation process. She found that patients who perceived more control over their medical regimes demonstrated improved levels of functional independence in daily activities. Langer and Rodin (1976) evaluated the effects of personal responsibility and choice on a group of 91 nursing home residents. The experimental group, who were given responsibility for their own activity choices such as movie attendance and caring for a plant, were found to be more alert, active and had improved well-being and attitudes just three weeks after the initial communication from the nursing home administrator compared to the group whose choices were made by the staff. In a follow up study, Rodin and Langer (1977) found that the positive effects of self responsibility, including decreased mortality, lasted as long as 18 months after the initial study. Fiveash and Nay (2004) studied 60 participants with acute and chronic health problems who were hospitalized at some point in their disease process. The purpose of their study was to identify how these clients established and maintained control over their health. They concluded that it is possible to increase a person's sense of control by providing information for the client, encouraging client participation in
treatment decisions, offering choices including how to manage their environment, and providing support.

Psychologists assert that providing choices increases an individual's sense of personal control and motivation (Iyengar & Lepper, 1999; Sethi, 1998). People offered choices feel a sense of autonomy, control, and empowerment (Christiansen & Townsend, 2004; Iyengar & Lepper, 1999). Interestingly, the effects of choices may be significantly more culturally specific than was previously identified. European-Americans demonstrated decreased intrinsic motivation and impaired performance when choices were made for them. Asians, on the other hand, were more motivated to attempt difficult tasks when trusted authority figures and peers made choices for them (Sethi, 1998). Individual choice is less important for those from more socially interdependent cultures (Iyengar & Lepper, 1999).

As clients strive to achieve their goals and have the opportunity to control even a portion of their environment, they will experience a sense of accomplishment and empowerment. Health care practitioners need to respect clients as active health participants and be able to provide opportunities and support for a client's control over their health care.

D. Theoretical Background and Application to Research

Theories of health behavior guide planning, implementation, and evaluation and are used to explain behaviors and suggest possible methods to promote change. Rotter's social learning theory and Bandura's social cognitive theory were used to guide this research because they emphasize an individual's perception of control over their
environment and the impact on outcomes. The key components of both theories were described in Chapter 1. Application of the SLT and SCT are presented here.

1. Social Learning Theory. A more internal locus of control (ILC), also referred to as self-agency, personal control, and self determination, is perceived as positive because decisions and choices are made by the individual. Research shows that men tend to have higher ILC than women, and individuals who are higher in an organization tend to be more internally motivated (Reich, Erdal, & Zautra, 1990). Individuals with an ILC are more likely to initiate change, whereas those who are externally controlled are more likely to be influenced by others (Brown, 2005; Lerman & Glanz, 1997; Kaplan, Sallis, & Patterson, 1993). High internals tend to react favorably when their environment offers them choice or freedom of action (Reich et al., 1990). Externals tend to respond more to social influences, have larger social networks, and are less active in their health behaviors that internals (Reich et al., 1990).

Manno and Marston (1972) found a positive relationship between weight loss and ILC in a group of overweight individuals indicating that those who are internally motivated are more likely to initiate and sustain a behavior. Lee and Mancini (1981) found women who are more internally controlled tend to use more effective birth control methods than those who are externally controlled. Scheier, Botvin and Miller (1999) examined the personal life events and stress of 1,138 minority youth as related to alcohol use. They found that an internal locus of control contributed to a decrease in alcohol use among these youth. These studies indicate that ILC appears to be a factor in making positive health choices in a variety of contexts.
Reich et al. (1990) state that in some areas of life, especially those dealing with physical health, people may relinquish control to others and that further studies are needed to identify these associations. For example, in the case of medical treatment, some individuals will relinquish all control to the physician. This discourages questions and discussions about treatment options, making one wonder if this is truly a health facilitating relationship because the interaction between client and physician is very limited. In situations where control is limited for a period of time such as immediately following a diagnosis of catastrophic disease or injury, developing a more external locus of control is considered an adaptive response and this is often observed with the acute or newly admitted rehabilitation client (Reich et al. 1990). This allows the client time to process the situation and hear opinions and recommendations from perceived knowledgeable sources. If the situation changes, however, continuing with an external locus of control (learned helplessness) is not considered adaptive. Thus, encouraging choice and client participation in health promoting activities is important for long term health and function.

2. Social Cognitive Theory. Bandura's social cognitive theory (SCT) stems from the social learning theory and has its origins in psychology. This interpersonal theory focuses on the factors that influence behavior and suggests that changes in behavior are impacted by the environment, personal attributes, and behavior (Seefeldt, Malina, & Clark, 2002; Bandura, 1986). If personal control is encouraged within one’s environment, positive behaviors may occur. Inpatient rehabilitation clients often feel that they have a limited ability to control their environment. They are in a facility that provides a certain amount of structure which is frequently dictated by federal and state regulations. Even so, choices of what and how to organize “their space” can be made available and encouraged. For spinal
cord injured clients, they may request that the bed be moved to the center of the room to allow for transfer ease which may increase their level of independence to do the transfers. These same clients may request an additional table and move items from the bedside table to a place where they can see or access the item more readily increasing their perception of environmental control.

Objects in one's semi-fixed environment can provide motivation for behaviors, especially if the client had a choice in selection of these objects. For example, a picture of family members may motivate a client to participate more fully in the rehabilitation process. This notion of being connected to a social network can encourage positive adaptive responses. Although the client is not in a familiar place they can find meaning in the objects that are available in and throughout their environment.

*Reciprocal determinism* is the interaction between person, behavior and environment and this relationship is dynamic and nonlinear. When considering behavior change one must consider the environment and personal factors in planning and interventions. *Self-efficacy*, a central construct of SCT, is the confidence that one has in doing a particular behavior. Self-efficacy is influenced by such things as knowledge, skill, and success of past actions and is often situation and behavior specific. If the rehabilitation clients have control (high self-efficacy) over their semi-fixed environment it may positively impact their ability to follow through with the challenging task of relearning how to do daily activities in light of catastrophic injury or disease.

These theories identify how individuals are both the product and producer of their environment and that behavior can be modified by one's environment. Individuals have the ability to influence their future; however, there are many factors that may modify decisions
and behaviors. There is little known about the impact of perceived control of the semi-fixed environment and the rehabilitation client.

E. Environmental Impact on Behavior and Health

The environment impacts both behavior and health and includes social, physical, cultural and organizational factors (Stokols, 2000; Baranowski et al., 1997; Law et al., 1996). The term “health promoting” implies this interdependence (Stokols, 2000). When the environment is perceived to be safe, less fragmented, and more emotionally responsive to our needs, the environment automatically becomes more health promoting (Bloom, 1995). People must be able to make sense of their environment and it is important that environments be designed with the client's perspective in mind (Martin, 2000; Christiansen & Baum, 1991); better environments can be designed if planning is based on research that identifies how the environment will meet the needs of clients (Baum & Davis, 1980). Winerman (2004) states that someday it may be possible to evaluate brain activity as people navigate their environment, identifying what produces joy, beauty, competence, and creativity.

1. Physical Environment. Prior to the 1970s, strategies to improve the health of individuals and populations focused on medical treatment (Stokols, 2000). Since Hippocrates, physicians have recognized the importance of the environment in healing and that the environment should not conflict with the goal of healing (Kaye & Blee, 1997; Venolia, 1988). The environment provides the cues for behavior and often guides our responses (Rapoport, 1982). In a study of 249 cognitively impaired residents of nursing homes versus community settings, researchers found that the more variety and stimulation in the environment, the greater the adaptive behaviors (Heller et al., 1998).
Stimulation included pictures, color, and window views and adaptive responses included more independence in decision making and participation in daily living activities. This indicates that the environment can have a significant effect on cognitive abilities and activity participation.

The physical environment, which includes room size, TV, ambient temperature, space, and lighting, often affects our behavior without our awareness (Fitch, 1999; Evans & Mitchell, 1998; Baranowski et al., 1997). Buildings often tell us how small and powerless we are; built environments do not always promote healthy lifestyles (Perdue et al., 2003; Booth et al., 2001; Venolia, 1988). Baum and Davis (1980), in a study of 54 dorm students, found that long corridor arrangements increased perceptions of crowding and decreased social interaction versus short corridor arrangements. Evans et al. (2000) found that those participants who were chronically exposed to residential crowding and noise had impaired social relationships and decreased motivation.

Researchers at the Center for Health Design, located in Pleasant Hill, California, studied the effects of cardiac wing redesign, such as increasing room space, on patient outcomes. They found a 60% decrease in patient falls as a result (Rich, 2002). This additional space encouraged safer mobility. The Bronson Methodist Hospital in Kalamazoo, Michigan, modified their 348 bed facility to provide only private rooms and noted a marked decrease in hospital-acquired infections (Rich, 2002). These changes indicate that many health promoting changes in the fixed physical environment are effective but can be costly.

2. Social Support. According to the Harvard Health Letter (2007) the average American indicates that they have a maximum of two people that they can truly talk with
about important issues and that 20% of Americans identify themselves as being lonely. The article continues to state that researchers have found a link between social support and life span. An example being that individuals with a diverse social network generally live longer, recover quicker from health issues, and live more meaningful lives.

Social support refers to "an individual’s perception of how much s/he can rely on others for emotional support as well as other valuable interpersonal resources" (Williams and Galliher, 2006, p. 859; Lewis, 2002). Cohen (2004) further defines social support as helping an individual to cope with stress and identifies three categories of support: a) instrumental – material aid such as financial assistance, b) informational – such as advice or guidance, and c) emotional such as empathy and caring. Heany and Israel (2002) add a fourth category, appraisal, which they define as information for self-evaluation such as constructive feedback.

Relationships are an important aspect of social support. Those with high levels of support report positive well being and appear to be able to deal with stressful situations more effectively (Williams & Galliher, 2006; Cohen, 2004; Wenzel, Glanz, & Lerman, 2002). Peer support groups are often used for those who have a serious disease to help facilitate support, thereby impacting outcomes (Cohen, 2004).

Social factors can be stress buffering or a main effect. According to Cohen (2004), social support can be positive whether or not a stressor is present (main effect). As a stress buffer, social support appears to decrease stress in three ways: a) support helps provide options to a problem, b) support may decrease the severity of a situation, and c) support can provide a distraction from the situation. He goes on to state that it is
important to develop and increase “natural” social networks and decrease negative associations within one’s social network.

In medical settings, clients need emotional support from friends and family and informational support from health care practitioners (Heany & Israel, 2002). Wenzel et al. (2002) further state that having accessible friends can affect the perceptions of illness or injury. These relationships can actually facilitate beliefs in one’s ability to cope with a situation.

Attention is being placed on patient/client-centered approaches in health care. According to Lewis, DeVellis and Sleath (2002) interactions between clients and health care practitioners is facilitated when a “participatory” client-centered strategy is used. Health educators can play a role in teaching patients how to interact with health care providers which may facilitate positive health outcomes.

Social support is a multifaceted concept which, according to Chlebowy and Garvin (2006), may affect one’s ability to adapt to life changes. Lerman and Glanz (1997) and Cohen (2004) agree that social support can have positive effects on one’s ability to cope with illness and/or disability. Fiveash and Nay (2004) found that individuals gain a sense of control when they feel supported by family and friends. A study done by Ethgen et al. (2004), found osteoarthritic patients (n=108) to have greater physical functioning if they were involved in social relationships. They defined social support as the availability of caring and reliable people. The authors conclude that health interventions could be facilitated by adding a social support component to the activities.

Cooper and Guthrie (2007) used an ecological framework to study factors that affect health behaviors in adolescent African-American females (n=137). They found
that positive family, peer, and neighborhood interaction increased positive health choices. They also state that self perceptions and efficacy may be impacted by these positive relations.

Williams and Galliher (2006) used a survey to assess the effects of social support in close relationships on depression and self-esteem in 272 college students. They found that social support and social connectedness were critical for the well being of these college students.

The compelling impact of social support on health has created an interest among health educators and researchers in this area (Heany & Israel, 2002). Ecological models of health behavior emphasize a dynamic interaction between individuals and their physical and sociocultural environment (Baranowski et al., 1997; Sallis & Owen, 1997). It is important that these variables be assessed to develop intervention strategies that promote positive and sustaining health outcomes (Williams & Galliher, 2006; Cohen, 2004; Lewis, 2002).

F. Semi-fixed Characteristics

Many semi-fixed characteristics within our physical environment such as light, color, and music affect how we respond. Fitch (1999) states that changing the sensory environment is important to human beings and that we must have an understanding of the interactions between the environment and person in health and disease. A variety of factors from plants to music to color have been studied in an effect to evaluate how these impact behaviors.

1. Plants and Nature. Introducing indoor plants is the easiest way to transform an environment. Plants provide an ongoing connection with nature and are perceived as
calming (Diffendal, 2002; Venolia, 1988). In a Norwegian study of 51 offices, researchers found that workers who had plants in their offices had fewer complaints of physical symptoms (Fjeld & Bonnevie, 2002). Another study by the same researchers found that adding plants to a hospital radiology department decreased complaints of physical discomfort by 25%; by adding full spectrum fluorescent light, short term absences due to illness decreased by another 10%. In a study of school age children, Fjeld and Bonnevie (2002) found that children in those classrooms with plants and full spectrum lighting demonstrated increased ability to concentrate and decreased fatigue and eye irritations. Ulrich (1984), in a hospital study of post operative patients, reports that those who viewed trees from their room versus those who saw only a brick wall had shorter poster operative stays, required fewer pain medications, and had fewer post surgery complications. These studies show ways to impact the semi-fixed environment that are cost effective and health promoting.

2. Music. Soft background music produces positive cognitive effects and white noise increases one's ability to focus on tasks by masking annoying sounds (Diffendal, 2002). To be health promoting, sounds that soothe, delight, or encourage should be provided (Venolia, 1988). In a study of the impact of music on the lives of elders, Hays and Minichiello (2005) found that music allowed the participants to escape from some of the stressors in their lives and promoted positive self-esteem by helping them feel more competent and independent. Music also decreased the feelings of isolation and loneliness by encouraging relationships and sharing with others. Csikszentmihalyi and Rochberg-Halton (1981) found that music was very important to younger generations, helping them
to find meaning in their sometimes stressful lives. The choice, specifically type of music, does appear to impact one’s ability to respond to changes in life contexts.

3. Color. Color is often the first thing noticed when entering a room. Color is always affected by light and how one color is placed next to another changes the way it is perceived. Warm colors such as yellow, peach, pink, red, or orange direct attention outward, increase activity, and are perceived as more cheerful and warming, while blues, greens, grays, and turquoise direct attention inward, decrease activity, and are perceived as more sterile; consequently cool colors such as light green and aqua are frequently used for patient treatment rooms (Diffendal, 2002; Venolia, 1988). Warm colors are often used for danger signs and signals because they stand out to the human eye. Stone (2003) found that performance appears to be affected by the color of the environment. Performance of a low demand task worsened over time in a blue versus a red environment; blues appeared to have a calming effect and red a more stimulating effect. In an informal study reported by Jardine-Michelson (2004), children who were exposed to a calm and relaxing environment, which included light colors and soft music, had a 33% decrease in non-authorized absences and improved relationships with teachers and other students. Although there are studies indicating that color impacts individual responses, Evans (2003) reports that there is not clear evidence that color affects mood, emotions, or well being in any consistent manner. Thus, color can have benefits and drawbacks depending on the type and duration of a given task and the context in which it is used. In rehabilitation hospital environments, where objectives tend to encourage client involvement, warm colors are recommended.
4. Lighting. Lighting is an important environmental factor. Softer lighting makes people less self conscious and more receptive, whereas unnatural colored lighting causes feelings of discomfort (Venolia, 1988). Diffendal (2002) reports that natural light is ideal for the healing environment, citing a 1985 study by Dr. John Ott which identified that UV light increases metabolism, decreases fatigue and blood pressure, and promotes general well being. Seasonal affective disorder (SAD) is a form of depression that occurs relative to the amount of daylight exposure. Those who are chronically exposed to shorter daylight hours suffer more sadness and fatigue and patients who are depressed respond better in sunny rooms (Evans, 2003). By providing appropriate lighting input health outcomes can be facilitated.

5. Space. Furniture arrangement is also important. The physical arrangement of chairs in a waiting room can either encourage or discourage social interaction (Evans & Mitchell, 1998; Christiansen & Baum, 1991). Chairs around a table or chairs facing each other encourage interaction. In a review of the literature Evans (2003) found evidence that the well being of Alzheimer's patients can be enhanced by designing smaller patient units, reducing noise, using signs, and making the units more homelike. For the elderly stroke client, high ceilings decrease hearing, and space in therapy rooms may be difficult for the cognitively impaired client (Connell, 1997; Duffy & Wilson, 1984) whereas more space is needed for the physically impaired client.

Many semi-fixed environmental characteristics affect how we respond. It is important that these factors be considered when evaluating health behaviors.
H. Healing Environment

Health care costs have significantly increased in the United States. The environment is an important part of the health care experience because it provides the first impression of the health care experience and influences the client's expectations even before service is provided (Fottler, Ford, Roberts, & Ford, 2000). The environment needs to promote well being and contribute to the body's healing process (Baranowski et al., 1997).

The concept of the healing environment dates back to Florence Nightingale who found that natural light, ventilation, and cleanliness helped patients recover (Diffendal, 2002). Diffendal (2002), in defining a healing environment, states that it is a "physical setting and a supportive culture that nurtures the physical, intellectual, social, and spiritual well being of patients and helps them cope with the stresses of illness and hospitalization" (p. 15). Fottler et al. (2000) proposes that the elements of a healing environment include options and choices, access to social support, connection with nature, pleasant distractions, and the reduction of environmental stress. They also emphasize the importance of the healing environment in patient satisfaction, promoting healing, and improving attitudes. Venolia (1988) adds that a healing environment stimulates awareness, allows privacy, provides meaningful and varied stimulation, and encourages relaxation and balance.

1. Hospital Settings. Most hospitals are good examples of how not to create a healing environment (Evans & Mitchell, 1998; Venolia, 1988; Langer & Rodin, 1976). Hospitals often project that the power resides with the institution and that the important person is the physician. Clients give up personal control in such areas as privacy, when
to go to sleep and wake up, when/where/what to eat and when to bathe and get dressed (Gerlach-Spriggs et al., 1998; Weinberg & Chappell, 1996). Rooms are often sterile and monotonous and clients rarely have control over their environment or treatment (Venolia, 1988). Clients who enter a hospital barely have a sense of place and they perceive hospitals as impersonal and intimidating (Young et al., 2000; Gerlach-Spriggs et al., 1998). Gallagher (1993) states that hospitals hinder healing by encouraging clients to stay in bed, whereas clients are energized in the home because of the environmental stimulation. Upon returning home, clients are surrounded by familiar and meaningful objects within their semi-fixed environment. This study looked at both the inpatient hospital setting and the client’s home.

The future of health care is client-centered or patient-centered (Kaye & Blee, 1997). Crepeau et al. (2003) state there is a need for more collaborative and respectful interaction between health care providers and their clients to increase client participation in decision making regarding their care and treatment. Health promoting environments do not just include the physical components, they also include the interaction and relationships between people. Being respected and empowered in health care environments that are often perceived as controlling encourages positive outcomes.

2. **Staff Impact.** Lastly, the hospital environment can affect staff and the care provided within the institution. Diffendal (2002) and Fottler et al. (2000) state that creating a positive work environment such as adding color and plants, playing soft music, and decreasing crowding improves staff attitudes and concentration on tasks. Staff may also feel that creating a positive environment demonstrates that administration is committed to their well-being. Hospital administrators are aware that employee attitudes
and behaviors impact client satisfaction and the perception of quality service (Fottler, et al., 2000). This awareness, however, does not always mean that the issues are addressed.

3. Levels of Prevention. In a landmark public health text, restoration and rehabilitation is identified as the fifth category of prevention, the first four being health promotion, specific protection; early diagnosis and prompt treatment, and disability limitations. Leavell and Clark (1965) state that health care has not fully met its responsibility until the client has been trained to live within the constraints of his/her disability and reach his/her highest level of function. After World War II there was an interest in increasing rehabilitation for the disabled, especially for disabled servicemen. This was a new concept emphasizing the dignity and worth of individuals. Disease and disability cause pain, anxiety, and suffering as well as significant economic costs. Hospitals in the past have emphasized medicine and surgery. They are now having to meet the changing health care needs of their clients and assume greater responsibility for all phases of health.

4. Rehabilitation Settings. Rehabilitation settings are designed to accommodate loss of function and adaptive responses due to catastrophic trauma and disease (Connell, 1997). Many public health practitioners have also failed to remember that rehabilitation is a category within tertiary prevention. Clients who participate in a rehabilitation program experience multiple environmental demands such structured treatment schedules, medical regimens, changes in functional abilities, and unfamiliarity within the environment that can either facilitate or inhibit recovery and adaptation (Crist et al., 2000; Ulrich, 1991). The question often is whether the disability is the barrier or whether human and physical environments are the real barriers (Christiansen & Townsend, 2004).
For the disabled person, serious disability becomes an identity and the four most challenging experiences are those of lowered self-esteem, physical deficits, anger, and a new, undesirable identity (Christiansen & Townsend, 2004). Bodies are different, thinking about one's self is changed, and social relations are strained. Clients who enter rehabilitation programs experience their environment differently. Stress occurs when the demands of the environment exceed the client's coping resources; stress decreases as healing and training progresses in the rehabilitation process (Evans & Mitchell, 1998; Connell, 1997). Over 15 years ago, Borkan, Quirk and Sullivan (1991) stated that most research done with hip fracture clients emphasizes physiological and biomechanical factors and there is a need for research that addresses the impact of psychosocial and environmental factors on client outcomes, yet such research has not been done.

The rehabilitation client faces many personal challenges as they participate in the rehabilitation process. The environment, which includes staff attitudes, room design/ambience, and other social supports, can impact a client's perceptions of the rehabilitation process which ultimately could impact functional outcomes. For the purposes of this study, I concentrated on the semi-fixed aspects of the environment.

H. Summary

The environment, specifically the client's perception of the environment, is ignored by many professions in explaining and predicting important individual, group, or organizational behaviors (Lacayo, 2004; Connell, 1997). Attributes of the physical environment are a relatively new topic of research interest and there is a need for quality evidence supporting the environment/behavior relationship (Humpfl, Owen, & Leslie, 2002; Diffendal, 2002). Researchers in public health recognize that health and illness are
closely linked to environmental factors (Stokols, 2000). Professionals from various disciplines such as public health, architectural design, medicine, and interior design must come together to research the effects of the environment on health and healing (Diffendal, 2002). Bacchus et al. (1999) stresses the importance and value of gathering information from clients about their experiences and perceptions of interventions as a part of the research process. To have a better understanding of how clients perceive their rehabilitation environment it was important that this research project include face-to-face interviews about their experiences. This was done on three separate occasions throughout the research process which added to the richness of data collected.

Throughout health care, clients and their significant others are recognized as the "experts" about the subjective quality of their experience—what makes them feel better, and what they need to help them recover, heal, and adapt to the significant changes in their lives (Picker Institute, 1997). If health care professionals want to create health promotive or life enhancing environments, they must understand how clients and their significant others experience and perceive their environment. This includes understanding the client's perceptions of control over environmental factors and how perceptions influence outcomes. Studying client satisfaction is but one variable in the delivery of health care services. Limited research has been done on how the rehabilitation client perceives the medical care environment and whether choice within the semi-fixed environment impacts this perception and ultimate behaviors. With the increased number of individuals with chronic disease and disability it is important that clients who want control over their health be given the opportunity to do so. This study

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addressed the rehabilitation client’s perceptions of their environment, specifically the semi-fixed aspects, and how this impacted their inpatient rehabilitation stay.
CHAPTER 3

METHOD

A. Design - Qualitative Methodology

This study used a qualitative, naturalistic inquiry study design. Qualitative research methods, defined as any type of research that produces data not by statistical procedures, are increasingly used in health education to help discover and understand how people experience the world in which they live (Safman & Sobal, 2004; Strauss & Corbin, 1998; Merriam, 1998). Qualitative researchers attempt to understand the nature, dynamics, and relationships of the human experience, to get to know "their" world (Hasselkus, 2003; Strauss & Corbin, 1998; Merriam, 1998). The strengths of qualitative data include: a) a focus on events as they occur or occurred in a natural setting, b) a rich and holistic data set, c) data collected over an extended period of time, and d) the emphasis on the participant's "lived experience" (Miles & Huberman, 1994). Much of qualitative research analysis is subjective reality and naturalistic inquiry and allows for an exploration of how the environment can affect behavior (Strauss & Corbin, 1998; Hasselkus, 2003; Schisler & Polatajko, 2002). In qualitative research, the researcher is the primary instrument for data collection and analysis and he/she must be flexible, sensitive, and have good communication skills. Participant observations and interviews require the researcher to go to various sites. Qualitative research findings are usually in the form of themes, categories, or patterns (Merriam, 1998). Merriam (1998) further states that the qualitative study must provide the reader with enough information so that the conclusions derived make sense. Ensuring validity and reliability in qualitative research means conducting the study in an ethical fashion, which includes accurate data
reporting, and ensuring that readers understand the research process used (Garza, 2005; Thorne, 2000).

A naturalistic inquiry study design allows the researcher to describe how the participant perceives, describes, feels, remembers, and makes sense of an experience, specifically their inpatient rehabilitation experience (Thorne, 2000; Lester, 1999; Miles & Huberman, 1994; Christiansen & Baum, 1991; Rapoport, 1982). Each person has a unique way of interpreting his/her experiences and these meanings impact behavior choices and responses. It is important for health care providers to have an understanding of the meaning that clients place on their environmental cues (Patton, 2002; Thorne, 2000). The methods used to collect data for this research included three face-to-face interviews, including one after discharge, and two videotapes of the participant’s inpatient rehabilitation room, which were reviewed during the third and final interview. During the third interview (post discharge) the researcher asked open ended questions about the client’s inpatient rehabilitation stay and the videotaped material.

B. Setting

1. Overview. Loma Linda University Medical Center (LLUMC) is located in the Inland Empire region of Southern California. It is a Seventh-day Adventist health care institution whose mission is to continue the healing ministry of Jesus Christ, to make man whole, and emphasizing whole person care. LLUMC provides a variety of health care services for its immediate community and has earned national and international recognition for its exceptional care.

The Rehabilitation Institute is located on the East Campus, LLUMC. The East Campus, a 23-acre facility, is dedicated to providing a healing environment offering both
comprehensive inpatient and outpatient health care services. At the time this study was conducted, the East Campus included a hospital, two office buildings, and ambulatory services. Rehabilitation services, orthopedics, neurosurgery, and family medicine are specialties included in the East Campus. The East Campus Hospital, formerly Loma Linda University Community Medical Center, first opened in 1972 and joined the Loma Linda University Adventists Health Sciences Center (LLUAHSC) in 1982.

The inpatient rehabilitation service offers five programs: spinal cord injury rehabilitation, head injury rehabilitation, pediatric rehabilitation, stroke rehabilitation, and general rehabilitation. General rehabilitation diagnoses include, but are not limited to, diabetes, deconditioning, amputees, Parkinson's disease, and other neurological disorders. Each program is medically supervised by a physical medicine and rehabilitation physician who works with a collaborative team consisting of residents, program coordinators, nurses, physical therapists, occupational therapists, speech pathologists, psychologists, social workers, dietitians, recreation therapists, a case manager, orthotists and prosthetists, and chaplain services.

The majority of therapy is scheduled between 8 am and 5 pm and the family is invited to participate in therapy services and throughout the rehabilitation process. Each client receives a minimum of three hours of therapy during the day. To be admitted to inpatient rehabilitation the client must be diagnosed by a physician with a condition requiring rehabilitative services, be medically stable, require at least two or more therapies, be able to tolerate at least three hours of therapy per day, and have discharge plans. Services aim at improving function and include activities of daily living training, mobility training, bowel and bladder care, safety awareness, cognitive re-training,
communication, swallowing, and family/significant other education and training. The average length of stay is 14 days.

2. Inpatient Rehabilitation Room. Each rehabilitation room generally houses two inpatient clients. Each room is 23’ long and 12’ wide including a bathroom. See Appendix A for a graphic presentation.

C. Participants

The participants for this study met the following criteria: English speaking, age 18 and older, participated in the Head Injury, Spinal Cord Injury, Stroke, or General Rehabilitation programs, received at least two rehabilitation services, had a minimum 10-day inpatient stay, lived within 1-1.5 hours driving distance from Loma Linda University, and were discharged to a non-medical facility. Each participant was referred to the researcher by the program coordinator or inpatient rehabilitation supervisor who assessed the client’s ability to participate in the interview process and give informed consent.

Fifteen clients were initially screened and invited to join the study. One client declined participation, two did not meet the minimum 10-day stay criteria, one was readmitted to the hospital for surgery one day post discharge, and one was discharged to a medical facility. The number of research participants totaled 10, eight females and two males. The majority were Caucasian (6/10) and participated in the stroke (5/10) or general rehabilitation programs (4/10) (Table 1).

D. Procedures

After IRB approval was obtained, I contacted the Rehabilitation Executive Director to schedule an inservice (Appendix B) with the three program coordinators to explain the study. During the first inservice, two program coordinators and the Executive
Director were present. I reviewed the study and discussed specifics about the role of the program coordinator. One program coordinator was not present and I met with her separately upon her return to work. The program coordinators were given my contact information (phone number and email address) for participant referrals. Questions about the study were addressed during these inservices. About three weeks into data collection, I requested that the inpatient rehabilitation supervisor be added as a referral source. Approval was given by the Rehab Executive Director and the IRB was notified of this change of protocol and approval granted.

1. Phase 1: In Hospital Observation: The program coordinator or inpatient rehabilitation supervisor contacted me within four days of admission if a client verbalized an interest in participating in the research study. The clients were assured by the program coordinator or inpatient rehabilitation supervisor that they were not obligated to participate and that declining participation would not adversely affect their rehabilitation stay. After receiving the client’s name, I contacted the client. In order to not interfere with the client’s rehabilitation program, my visits were made in the early morning, evening, and on weekends.

a. Visit One. During the first visit, I discussed the research project and answered any questions that the client had regarding their participation in the study. If the client agreed to participate, I then reviewed the California Experimental Subjects Bill of Rights which was downloaded from the research.llu.edu website. Following this, I reviewed the informed consent document (Appendix C) and secured the necessary signatures. I provided copies of both documents for the client in a sealed envelope, and a copy was placed in the client’s medical record, per facility policy.
During this visit, the demographic and observation form was completed (Appendix D) and the client’s room videotaped, recording objects and the placement of objects within the client’s room. I made sure not to include any client identifiers such as the client’s face during the videotaping sessions to preserve their privacy and ultimately their anonymity. I then talked with the client about his/her diagnosis, anticipated discharge plans, and anything else the client wanted to share. The first visit lasted from 45-90 minutes. I then made arrangements for the second visit, which was approximately day 10 of the client’s rehabilitation stay. A field note was written immediately after the visit.

b. Visit Two. Visit Two was approximately 30 minutes long. I again videotaped the client’s room and inquired about their stay and discharge plans. I also documented, on the demographic and observation form, the number of objects in the client’s room, 0-1 (low), 2-4 (medium), and 5+ (high), and listed the types of objects present in the client’s room. Objects included, but were not limited to, pictures, plants, books, and TV. I told the client I would be contacting him/her within two weeks post discharge and made sure that the discharge information was accurate by checking with the unit secretary. A field note was written immediately following this visit.

2. Phase 2: Personal Interview. Within two weeks of discharge, I contacted the client to schedule an appointment for the final interview. Interviews were done in the client’s home or in the home of a family member and at their convenience. During the final interview the client was asked open-ended questions (Appendix E) about their stay on the rehabilitation unit. With the client, I also reviewed the videotapes of the rehabilitation hospital room taken during visits 1 and 2.
<table>
<thead>
<tr>
<th>Gender</th>
<th>Race</th>
<th>Age</th>
<th>Marital Status</th>
<th>Program</th>
<th>Stay/Days</th>
<th># of Items</th>
<th>Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>Caucasian</td>
<td>71-80</td>
<td>Widow</td>
<td>General</td>
<td>10</td>
<td>2-4</td>
<td>magazines</td>
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<tr>
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<td>31-40</td>
<td>Single</td>
<td>Stroke</td>
<td>12</td>
<td>5+</td>
<td>balloons, pictures, stuffed toys</td>
</tr>
<tr>
<td>Male</td>
<td>Caucasian</td>
<td>61-70</td>
<td>Married</td>
<td>General</td>
<td>17</td>
<td>2-4</td>
<td>picture, CD player</td>
</tr>
<tr>
<td>Female</td>
<td>Hispanic</td>
<td>61-70</td>
<td>Widow</td>
<td>Stroke</td>
<td>15</td>
<td>2-4</td>
<td>plant</td>
</tr>
<tr>
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<td>Caucasian</td>
<td>81+</td>
<td>Widow</td>
<td>Stroke</td>
<td>12</td>
<td>5+</td>
<td>plant, balloon, stuffed toy, paper décor</td>
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<tr>
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<td>Married</td>
<td>Spinal Cord</td>
<td>16</td>
<td>5+</td>
<td>picture, plant, book, stuffed toy, figurine</td>
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<tr>
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<td>61-70</td>
<td>Single</td>
<td>General</td>
<td>14</td>
<td>5+</td>
<td>plants, books, stuffed toy</td>
</tr>
<tr>
<td>Female</td>
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<td>Married</td>
<td>Stroke</td>
<td>13</td>
<td>5+</td>
<td>plants, magazines</td>
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<tr>
<td>Female</td>
<td>Caucasian</td>
<td>71-80</td>
<td>Married</td>
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<td>12</td>
<td>5+</td>
<td>plants, books, stuffed toy</td>
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<tr>
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<td>Other</td>
<td>81+</td>
<td>Widow</td>
<td>General</td>
<td>12</td>
<td>2-4</td>
<td>plant, book</td>
</tr>
</tbody>
</table>

Note. *# of items (semi-fixed) were recorded during visit 2. A TV and phone were available in every room and were included in the item count.
The open-ended questions provided the opportunity to explore the client’s perceptions and experiences while on rehabilitation. The final interviews were 1-1/2 to 2 hours in length and frequently included a tour of the client’s home and sharing of pictures and meaningful items. A field note was written immediately following the visit and a thank you note was sent to each client within one week of the final interview.

E. Data Collection and Storage

The researcher completed a brief demographic and observation form prior to beginning the visit one dialogue. The form included age, gender, marital status, race/ethnicity, and primary rehabilitation program. Videotaping was done during the first and second visit and field notes were written after each visit. A research process checklist (Appendix F) was used to track the study progress.

Data were collected until saturation, which for this study was 10 participants. Face-to-face interviews, videotapes, and field notes were used for data analysis. Pseudonyms were used for each client in all transcriptions and field notes to protect client confidentiality. These pseudonyms were known only by me. Audiotapes, videotapes, transcribed interviews, and field notes were kept at my home office throughout the study. Only the researcher and Loma Linda University faculty had access to the data collected. Personal identifiers were destroyed after data analysis was complete. At the conclusion of the study, the de-identified data will be kept in a locked file within the School of Allied Health Professions, Loma Linda University, and destroyed after seven years.

F. Data Analysis

Data analysis occurred throughout the process of gathering information. Recorded interviews were transcribed verbatim and were read and re-read to identify key
words and categories. Initially, line-by-line analysis was done followed by coding themes and major ideas. Field notes were also read and coded for recurring themes.

I met with a professional colleague to discuss and analyze participant themes and researcher observations. Following these meetings, I met with my faculty advisor to discuss recurring themes and implications for health educators.

G. Summary

The purpose of this qualitative research was to investigate the relationship between perceived control within the semi-fixed environment and client perceptions of the rehabilitation process. Personal control, at any level, is an important factor to consider in health promotion environments. This research helped to identify environmental factors that impact client perceptions of control over the rehabilitation environment and how this impacted their inpatient rehabilitation stay.

H. Researcher Reflections

As a researcher, I was impressed with how candid the study participants were. Each shared freely and welcomed me into their lives and homes as they recovered from various medical issues. Each had a hope and positivity about their future and were very appreciative of the support they received while in the hospital. Each also spoke of the importance of family and friends, and how with this support, things couldn’t help but continue to “get better.”

I. Participant Profiles

1. Participant #1. Participant #1 was an 80+ year old female who resided with family. She was the mother of five children each of whom she was very proud. She described herself as active, loved gardening, and enjoyed spending time with family. She
was soft-spoken and articulate. She was widowed for several years and was a great-grandmother. She believed in God’s purpose for her life and was very thankful for all her blessings. During her hospital stay, she participated in the general rehabilitation program due to deconditioning and limited activity tolerance.

2. Participant #2. Participant #2 was a 75+ year old female who resided with family. She was quiet and articulate. She thoroughly enjoyed sharing her art pieces with the researcher. Each piece had special meaning to her as she spoke of her travels and how she acquired them. She loved bright colors and worked to ensure that things are organized and well planned. She spoke very highly of her family and friends, many of whom she has known since college. She was an avid reader and felt it was important to stay current and well informed. She voiced frustration with having to be dependent on others. She felt “it is God’s plan for me but I am getting weary but whatever God’s plan, will be.” She was making plans to remodel her home in a variety of bright colors. During her hospital stay, she participated in the stroke rehabilitation program.

3. Participant #3. Participant #3 was a 70+ year old female who resided with her husband. She couldn’t wait to return home to be with her pets, who she called her “babies.” She enjoyed talking with others and felt that participating in research projects was very important for the good of others. She had definite opinions about how the hospital room should be set up to foster independence, stating only a man could have designed a room like this (referring to the poor sink design and access), and laughed. She enjoyed the many visitors and prayers that were said for her. She was animated when talking about her friends and faith. Her Bible was very important to her. She shared that one thing she learned from being in the hospital is that she will never tell someone what
to do because people need to be involved in decisions that affect them. She was an avid craftsperson and reader. During her hospital stay, she participated in the stroke rehabilitation program.

4. Participant #4. Participant #4 was a 60+ year old female who resided with family. She was soft spoken but readily shared her opinions. She felt her purpose in life was to be the best grandmother she could be. She planned to live with family until she was able to live alone, but was in no hurry. She spoke highly of the support she received in the hospital and that she was always treated with respect. She prayed that her physical status would not deteriorate further and was hopeful in light of the recent lab results. She enjoyed outdoor visits with family and the simple things they did to make her feel special. During her hospital stay, she participated in the general rehabilitation program due to decreased endurance, deconditioning, and limited mobility.

5. Participant #5. Participant #5 was a 40+ year old male who resided with family. He drove heavy equipment, enjoyed his job very much, and hoped to return to work as soon as possible. He spoke very highly of the friends who visited him and his faith that God would make him whole. He said that never did he question that God would heal him. Religious artifacts were very meaningful to him. He enjoyed watching TV and movies. He felt that he was treated with respect by the rehabilitation staff. His family stayed in his room all day and well into the evening and encouraged him to participate in therapy so that he would get stronger and be able to go home. He was very thankful for the support. During his hospital stay, he participated in the spinal cord injury rehabilitation program.
6. Participant #6. Participant #6 was a 65+ year old widowed female. She smiled frequently but became tearful when talking about her limitations and the love for her family, especially her granddaughter. She had two daughters and was very grateful for her inpatient rehabilitation roommate. She enjoyed being outdoors because when she was at home she worked in the garden. Family was very important to her and she didn’t want to be a burden to them. She wished she could do more for herself, as she rubbed her weaker leg. During her hospital stay, she participated in the stroke rehabilitation program.

7. Participant #7. Participant #7 was an 85+ year old female who resided alone. She had two children who visited frequently. She was active and articulate. She did admit that she was clumsier than she used to be but felt that this clumsiness would improve with time. She enjoyed outdoor activities and still watched sports on TV “but it’s not the same.” She loved being outdoors and while in the hospital made sure that the curtains were open and that she walked outside for therapy. She watched TV for current events and was saddened by many world events, as she shook her bowed head. She liked to have control of her immediate environment and initiated organizing her area. She was very proud of her children although admitted to being lonely on occasion. During her hospital stay, she participated in the stroke rehabilitation program.

8. Participant #8. Participant #8 was a 65+ year old male who resided with his wife. He enjoyed talking with others and debating current issues, felt he could be the President and make things right. He continued to be very frustrated with his visual limitations and hoped that upcoming doctor visits would resolve the issue. He was most frustrated that he could not see the TV due to the visual limitations. He enjoyed listening
to music and being outside. He had opinions on a variety of topics and believed his way was the best, then followed this comment with a grin. His family visited often. He felt he had control of his immediate environment although sometimes wished there wasn’t so much clutter in his room because it limited space for visitors. During his hospital stay, he participated in the general rehabilitation program due to limited mobility and deconditioning.

9. Participant #9. Participant #9 was a 35+ year old female who resided with family. She was very anxious to return home. She had difficulty with orientation and requested that things be written down for her. She loved her family deeply and was so appreciative of their patience and willingness to help her. She preferred that the curtains remain closed in her room so that the light didn’t interfere with the TV. She got tearful when talking about her situation but remained positive that she would get stronger. She spoke highly of her rehabilitation stay and felt that having limited choices was okay for now because she was there for therapy. Each item in her room had special meaning to her. During her hospital stay, she participated in the stroke rehabilitation program.

10. Participant #10. Participant #10 was a 70+ year old female. She lived with her family and had other family members living nearby. She enjoyed talking with people and sharing her current medical situation with them. She liked to have control of medical decisions and would develop strategies to help her make good decisions. She enjoyed watching TV, especially forensic shows, and was very proud when she could figure out “who done it” before anyone else. She had a can-do attitude about her life and was very organized and precise in tasks. She had a compassion for others. She enjoyed being
outside and joking with the staff to “keep them on their toes.” During her hospital stay, she participated in the general rehabilitation program for deconditioning and wound care.
CHAPTER 4

PUBLISHABLE PAPER

Title: The Environment Can Facilitate Recovery

Authors: Liane Hewitt, DrPH, Helen Hopp Marshak, PhD, Joyce Hopp, PhD, and Patricia Jones, PhD

Submitted to Rehab Management: The Interdisciplinary Journal of Rehabilitation (June 2007)
Introduction

Health care professionals have long recognized the impact of the environment on health. Literature supports the idea that individuals are affected by their surroundings and that perceiving the environment to be unsupportive increases stress and anxiety levels. A person’s ability to adapt to change and learn new coping strategies may be negatively impacted if the environment is perceived as not being supportive.

According to Rapoport, three elements comprise the environment: a) fixed – elements that are standard architectural components such as the ceiling, walls and floors; b) semi-fixed – elements that are easily changed such as furniture, plants, photos, and artifacts; and c) non-fixed – elements that are related to the individual such as gestures and nonverbal behaviors. Of these three elements, the semi-fixed environment can have a wide impact on individual behaviors with relatively little cost. For example, photos allow people to relive memorable occasions and remind them of their support systems which may encourage health promoting behaviors.

Control is associated with effective coping, adaptation, and optimism. People with high personal control live healthier lifestyles, are more likely to follow through with medical advice, are better able to cope with crises, and are better able to use resources. For the rehabilitation client, a disease or injury causes significant changes in health and lifestyle. The client is often exposed to a medical environment that produces fear, uncertainty, and a loss of control and choice. If the rehabilitation client experiences an environment that does not encourage perceived control and adaptive responses, feelings of helplessness may occur, which in turn leads to a decrease in
motivation, competency, and increased functional disability.\textsuperscript{7,19,20,21} Stated another way, if the environment communicates helplessness, the client’s perception will persist, leading to depression and anxiety which can further impede performance. The most effective rehabilitation programs identify the client as an integral part of the rehabilitation process.\textsuperscript{22} If clients perceive they are able to control or effect specific outcomes, it can positively influence their thoughts, feelings, and subsequent actions.\textsuperscript{5,12,23,24}

Research

Our research investigated the relationship between perceived control within the semi-fixed environment, and rehabilitation client perceptions of the rehabilitation process. This study utilized a qualitative naturalistic inquiry research design to gain a better understanding of the client’s “lived experience” while receiving inpatient rehabilitation services. Clients in this study received rehabilitation services for an average of 14 days before discharge to home.

The first author interviewed 10 rehabilitation clients receiving services at the Rehabilitation Institute, Loma Linda University Medical Center and aggregated data into six primary themes: Had Choices, It’s in the Room, View of Nature, Meaningful to Me, Being Connected, and God’s Plan. The themes are further explained in the findings section of this article.

Each client participated in three interviews with the researcher. Two interviews, which included videotaping of the semi-fixed environment, occurred while the client was receiving inpatient rehabilitation services. The final interview occurred within two weeks of discharge at the client’s home and included reviewing of the clients’ videotapes to help with recall of their inpatient semi-fixed environment.
Data analysis was continuous throughout the process of gathering information in order to identify themes and patterns. The recorded final interview was transcribed verbatim. The first author read and re-read transcriptions to identify key words and categories.

Participants

Eight females and two males participated in this study for a total of 10 research participants. Two (20%) were between the ages of 30-50 years, three (30%) were between 51-70 years, and five (50%) were between 71-85 years. Forty percent of the participants were widowed, 40% were married, and 20% were single. With regards to rehabilitation program, 50% participated in the stroke program, 40% in the general program, and 10% participated in the spinal cord injury rehabilitation program.

Findings

Loma Linda University Medical Center (LLUMC) is located in the Inland Empire region of Southern California. It is a Seventh-day Adventist health care institution whose mission is to continue the healing ministry of Jesus Christ, to make man whole, and emphasize whole person care. The Rehabilitation Institute is located on the East Campus, LLUMC. The East Campus, a 23-acre facility, is dedicated to providing a healing environment offering both comprehensive inpatient and outpatient health care services.

Overall comments about the client’s rehabilitation stay and room environment were positive. Families and clients commented that the rehabilitation environment was welcoming and healing; several participants stated that the positive and optimistic attitude of staff helped in their recovery. From admission, all research participants knew that they would be returning home with family on discharge; the average length of stay
was 14 days for this research group. During the final interview all participants expressed a happiness to be home and that their recovery had continued since leaving rehabilitation.

Themes

Within each theme, we provide illustrative client quotations appearing within parentheses.

Had Choices. All 10 participants felt they had some level of control and choice throughout their rehabilitation stay; however several did comment that they would have liked more choice about therapy ("I didn’t want to go to therapy. That was really the choices I wish I had more power on"). They acknowledged, however, that going to therapy would facilitate their recovery ("They were really sticklers on getting me going and that was only for me and I understood that"). In reflecting on her rehabilitation stay, one participant stated that she learned a lot about what she “won’t do again” to control others ("Because I was thinking to myself since I’ve been here I will never, ever tell my friends what they should do when they’re in the hospital. I’ve gotten more advice on what to do").

It’s in the Room. Each rehabilitation room contained a variety of semi-fixed, standard items. By far the most popular and appreciated was the flat screen TV, ("That TV was the bomb, man"). Room color (warm earth tones) was perceived as soothing and peaceful and general comments about the furniture were positive except for the safety concerns raised regarding the instability of the bedside table, ("If I were to fall and grab that table, it wouldn’t have done me a bit of good. In fact, it probably would have hurt me even worse").
View of Nature. All participants had positive comments about access to the outdoors and shared how the connections with nature impacted their stay ("You know when you opened up the first blinds and saw, you could see morning, you could see the sun going down. You could see the sun at high noon. It makes a difference"). During the final interview several clients proudly shared their outdoor patios and gardens with the researcher, leading to further discussion about why the rehabilitation patio and garden area were so meaningful and healing to them throughout their stay.

Meaningful to Me. Meaningful, semi-fixed objects varied among study participants. Some clients had religious figurines, hand-held games, and homemade blankets. Each semi-fixed object held special meaning for the clients as they reflected back to their childhood years or currently to the support they have received from family and friends, as evidenced by the items in their rooms. Participants were not as concerned about where or how an item was placed. Just knowing an item was in their room and that they could have access to it anytime was enough control.

Flowers and plants, which represented connectedness and caring by others, were the most frequent semi-fixed items found in client rooms. All participants appreciated the single white rose and written Bible verse they received from staff upon their admission to rehab. Several participants also received stuffed animals and a variety of reading materials. Although reading was not considered a priority, they appreciated the choices. Pictures, cards, and balloons also held special meaning. One client stated that pictures of her son made her “happy” and having him close “all the time, even if it was only a picture” motivated her to improve so she could return home and be with him.
**Being Connected.** Support from family, friends and staff was meaningful to each research participant. This support manifested itself in many ways – roommates, phone calls, cards, and visits (“I was really happy that they came all to the hospital and seeing me and was worried about me and everything”; “made me feel good that one of my bosses came down to see me that often and left work right away to come and see me”). Being supported was a major theme identified by this research study. None of the participants reported a lack of support during their rehabilitation and they anticipated continued support when they were discharged. In other research those with high levels of support report positive well being and appear to be able to deal with stressful situations more effectively as would be for the rehabilitation client.27,28

**God’s Plan.** Several participants shared that faith and hope were important in their recovery. This may be unique to the client population studied at this facility. Although religious backgrounds varied, all were thankful for their blessings and each held a faith in God’s plan for their lives, (“I have always had confidence in God protecting me and keep me from harm and I know He was going to take care of me”).

Conclusion

This research study explored how and if rehabilitation stays were impacted by a client’s perception of control within their semi-fixed environment. Six themes were identified in this project: Had Choices, It’s in the Room, View of Nature, Meaningful to Me, Being Connected, and God’s Plan. According to the literature, institutionalization can lead to feelings of helplessness and depression.7,19,20,21 Interestingly, the research participants indicated that having high levels of control was not as important as feeling supported and connected. The importance of social support and control is well
documented in the literature. A sense of temporariness about their rehab stay made it
easier to cope with their current situation, especially since all knew that they would be
going home with family on discharge. Relinquishing control for a short period of time
was acceptable as the clients acknowledged that the rehabilitation staff knew what needed
to be done to improve their function. Support from various sources was available for the
clients as they worked toward their goals. Control within the semi-fixed environment
was not as important as just knowing an item was in their room and that someone had
thought about bringing it in (a sense of connectedness).

The setting utilized for this research project acknowledged and supported the
healing environment concept and the research participant comments revealed that they
recognized this philosophy. All clients had ready access to both social supports and
outdoor areas which they stated provided a sense of healing. The semi-fixed items in
their rooms reinforced the feeling of connectedness. Flowers implied that someone
thought of them. The many stuffed animals were taken home and kept as remembrances
of their rehabilitation stays. Visitors brought in a variety of other items that they thought
would be uplifting and meaningful to the client.

The environment can activate the body’s ability to heal itself. As rehabilitation
staff are able to make the environment safer and more responsive to the needs of the
rehabilitation client, the environment automatically becomes more health promoting.
Better environments can be designed if planning is research based and identifies how the
environment can meet the needs and choices of individuals.

Throughout health care, clients and their significant others are recognized as the
“experts” about the subjective quality of their experiences: what makes them feel better
and what they need to help them recover, heal, and adapt to significant changes in their lives. If we as health care professionals want to create health promoting or life enhancing environments, we need to understand how clients and their significant others experience and perceive their environment and how important being socially supported and connected is in health outcomes.
References


23. Weinberg, L, Chappell, N. *Perceived control or learned helplessness in older people: Choice, control and powerful others*. University of Victoria: Centre on Aging; 1996.


CHAPTER 5
OTHER FINDINGS AND DISCUSSION

A. Introduction

Overall comments about the client’s rehabilitation stay and room environment were positive. Families and clients commented that the rehabilitation environment was welcoming and healing and several clients shared that the positive and optimistic attitudes of staff helped with their recovery.

All participants knew early on that they would be returning home with family upon discharge which makes the rehabilitation setting unique from those in other research (critical care, nursing home or long term settings). Discharge dates were determined during the rehabilitation team conferences and length of stays averaged 13.8 days, range of 10-17 days. During the final interview, which was done within two weeks post discharge, all participants expressed a joy at being home and that their recovery had continued since leaving rehabilitation.

Six themes emerged from the data. These were: Had Choices, It’s in the Room, View of Nature, Meaningful to Me, Being Connected, and God’s Plan. Below is an elaboration of these themes compared to the Chapter 4 article and relevant quotes are listed in Table 1.

B. Themes

1. Had Choices. All 10 participants identified that they felt some level of control and choice throughout their rehabilitation stay. Several did comment that they wished
they had more choice about therapy such as appointment times but acknowledged that they were in rehabilitation for therapy and that participating would help in their recovery.

Within their room a majority of the participants had choices regarding furniture and personal items placement and even had a choice of room. For one participant, she informed the staff that she would not move to another room stating “I said I don’t want to go and the lady (nurse) turned around and walked out and I never saw her again.” She was content with her decision to take control of the situation given that she enjoyed the relationship she had with her current roommate. This participant also shared that she learned a lot about what she won’t do again to control others.

“Because I was thinking to myself since I’ve been here I will never, ever tell my friends what they should do when they’re in the hospital. I’ve gotten more advice on what to do. Everybody called me up, well now you should do so and so. I’m not going to do that anymore because you have to experience it yourself to realize it and my friends especially were always telling each other what to do.”

During our final visit at home this client shared how family tried to make decisions about her many pets to lessen her workload but these ended up hurting her more than helping and she made them aware of this.

Several researchers note that we all strive to control our environments in some manner and that when control is perceived as high we are better able to achieve goals and effectively cope with stressful situations (Fiveash & Nay, 2004; Csikszentmihaly & Rochberg-Halton, 1981; Schulz, 1976). The research participants were kept informed of their status, offered some choices about managing their room environment and provided
## Examples of Client Quotes for the Six Themes Identified During Study

<table>
<thead>
<tr>
<th>Themes</th>
<th>Quotes</th>
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<tr>
<td>Had Choices</td>
<td>Yes, I did. I had my own things. We respected each other and I had control you know of my part. I never really asked anybody to do hardly anything for me but I’m blessed that that when the time came that I needed people that they were there for me. Yeah whenever I wanted to go, I went, I didn’t have any problems getting wherever I wanted to do. I said, Oh Lord, I hate to go. It was like, oh God, I don’t feel like going. And come one, where are your shoes, where are your things, I was like okay. I didn’t want to go to therapy. That was really the choices I wish I had more power on, but the girls they were really sticklers on getting me going and that was only for me and I understood that. Oh yeah, I’d leave it (TV) on at night quiet at least. It puts me to sleep like and then uh I knew the nurses shut it off and I’d wake up and I’d turn it right back on, but real low.</td>
</tr>
<tr>
<td>It’s In The Room</td>
<td>That TV was the bomb, man. Even though it was small. But they had good channels, Discovery Channel, they had National Geographic, which is always good. Nothing more, I got the TV there. They had the Animal Planet, History and there was another one on animals and then there was 3ABN and I loved 3ABN..it was relaxing and they had a wonderful movie on wolves one night and I loved wolves and I enjoyed it. The bed that is you can’t hardly turn so when you’re on one side you want to turn to the other side it is difficult. I loved the beds and it was handy. The nightstand up here behind you is not handy. It’s not conducive. It’s good for the nurses, but it’s not for the patients. In those chairs? No, those chairs were too low. If I got in them I couldn’t get out. No woman in her right mind would have designed a sink like that. It’s ridiculous.</td>
</tr>
<tr>
<td>Themes</td>
<td>Quotes</td>
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<td>-------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>View of Nature</td>
<td>Yeah, I like that was probably for me, that was probably one of the nicest things about my room. It gave me an opportunity to open the door and go out there. I had a patio back there and my kids came with my grandchildren came one time my nephew brought them and we had a little picnic in the back. Oh that place was beautiful. I went to the garden. Usually the days were very nice so sometimes (daughter) would push me out into the sunshine.</td>
</tr>
<tr>
<td>Meaningful to Me</td>
<td>She (roommate) got my flower and she hung it up there for me with the tacks and I said oh thank you so much and it’s card that says you know welcome and we enjoy having you. I enjoyed the flowers being there too, potted plants are the best. That bouquet is from my brother and his wife. This is from a nurse. It was a table center for an event they had and so they had extras so they brought me one. Is a couple of white roses that my grandson brought me so that was special. I think of them (family) and I miss them. The neighbor next to me, the girl, one of her friends just came in and brought me that basket of flowers...Oh my God, that was from my neighbor, I call her my girlfriend because she was real nice, we got along really good. Yeah because it has the ability to squeeze so I will help my hand. No my sister brought me this little bitty bear, the white bear. My other stepsister brought me my white bear and a Valentine’s balloon that’s what she gave me and then my niece gave me that, the walrus and then my other niece gave me my bear...I think of them.</td>
</tr>
<tr>
<td>Being Connected</td>
<td>I was really happy that they came all to the hospital and seeing me and was worried about me and everything. My wife called me everyday. Made me feel good that one of my bosses came down to see me that often and left work right away to come and see me. He (son) wants to make sure that I’m well, that when I’m ready I can get on my own. If not, to stay here with him. Well like when people would come up and see me, my pastor would come, they’d read a verse to me or something and I felt so good.</td>
</tr>
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Table 1 (continued)

Client Quotes

<table>
<thead>
<tr>
<th>Themes</th>
<th>Quotes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Being Connected</td>
<td>Yeah and he said and I know you would so I’m going to just put my trust in you and I was like I’m going to do it Daddy and that’s when he told me that I started crying for him and I said, okay, I cried one for you, once for mama and I said this is the last time I cry because I have to get myself back together. My friends and relatives are a bonus but having her (wife) by my side was the best thing for me... she would come in and tell me afterwards when I calmed down and I wasn’t so flustered and she’d make it a point for me to understand. The people there are so nice, extra nice. Or if I would say well this foot is really hurting me and I can’t really do anything, they respected that and they would say we’ll come back later. They was all everybody was all nice to you... They just really tried to help you.</td>
</tr>
<tr>
<td>God’s Plan</td>
<td>It is God’s plan for me but I am getting weary but whatever is God’s plan will be. If I wanted to have some comfort I could open it (Bible) up and read, I call it God’s love letter. My Bible is all marked and Psalms is my favorite. God is really gracious and if you have a personal relationship with God, He answers your prayers. Maybe not the way you want them but He answers them. They (family) are just great. I love them to death. I live, I guess that’s why God don’t take me because I’m needed here.</td>
</tr>
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</table>
support from various sources. According to Fiveash and Nay (2004), these three elements can increase a person’s sense of control.

It is interesting to note that for these research participants personal control and choice were not as important as being supported and connected to family and friends. All 10 participants returned home with family upon discharge, had short length of stays on rehabilitation and showed progress throughout their therapy sessions. Possibly the sense that one could deal with decreased control and choice was tolerable because the current situation would not last forever. Doing what was required while in rehabilitation would help them return to what they perceived as meaningful.

2. *It’s In The Room.* Each rehabilitation room included a variety of semi-fixed (things that could be easily moved) standard items. By far the most popular and appreciated was the flat screen TV which was wall mounted. The TV provided a distraction from their current situation and a connectedness to the outside world. It also provided an opportunity for the participant to control a portion of their environment. One participant who enjoyed watching movies before his accident welcomed the opportunity to sit with family and continue watching movies as he recuperated. This provided distraction from a stressful situation, perceived control, and opportunity for social support.

Room color (muted earth tones) was one of the first things noticed by the rehabilitation clients and most shared that the colors were peaceful and soothing. One client did comment, however, that for a longer rehabilitation stay staff should consider additional options although she was non specific with this recommendation. Variety in
color was provided by the numerous plants, pictures, and other personal items within each room and throughout the rehabilitation unit.

Comments about room furniture such as chairs, bed, bedside table, and dresser varied from good to non-conducive for the clients. One participant voiced safety concerns regarding the bedside table stating, “There was a table on wheels and they’re trying to prevent accidents, I think it was a disaster waiting to happen.” Two participants had comments about the lack of closet accessibility and poor sink design.

Furniture arrangement and availability are important to consider within the environment. Physical arrangements can affect social interaction, which was considered important to these rehabilitation participants (Evans & Mitchell, 1998; Christiansen & Baum, 1991). Participants felt that they had enough chairs for visitors but occasionally stated that things such as towels, medical equipment, and clothes that were put in the chairs prevented visitors from sitting down. Accessibility within the environment and room design impact perceived control and personal safety which can affect how willing one is to consider and implement adaptive responses.

3. View of Nature. All participants had positive comments about the outdoor access and how the connections with nature positively impacted their stay. One participant in particular shared “It also made you feel better to see, uh, you know when you opened up the first blinds and saw, you could see morning, you could, you know, see the sun going down. You could see the sun at high noon. It makes a difference.” He felt a connection and a hope for recovery by connecting with nature and frequently requested that his therapy be done outdoors. During his down time he would sit outside and listen to music.
Literature supports the positive impact that nature has on individuals. Venolia (1988) and Diffendal (2002) report that connections with nature are perceived as calming. Ulrich (1984) reported that post operative stays were shorter for those patients who had access to a nature view from their room.

During the third interviews, which were done at the clients’ homes, several clients proudly shared their outdoor patios and gardens with me. This led to further conversation about why the rehab patio and garden area were so meaningful and healing to them throughout their stay. The clients spoke about being able to relax while outdoors, and being able to take a seedling and watch it grow over time despite unconducive weather conditions. One participant shared that she enjoyed gardening, watching the animals move in her garden and being able to share flowers and vegetables with her neighbors. Although she would not be able to do as much work in her garden as she did prior to her illness, she would hire someone to continue her hobby with her.

4. Meaningful To Me. Meaningful, semi-fixed objects varied among the study participants. Some clients had religious figurines, hand-held games, and homemade blankets. Each held special meaning to the client especially as they reflected back to their childhood years and currently to the support they have received from family and friends, as evidenced by the items in their rooms. Participants were not as concerned about where or how an item was placed. Just knowing an item was in their room and that they could have access to it anytime was deemed sufficient.

Flowers and plants were by far the most frequent items found in client rooms. All the participants shared that they appreciated the single white rose and written Bible verse they received from the staff at the beginning of their rehabilitation stay. This was seen as
a welcome and support for their recovery as stated by one participant, "Oh I was so happy, so beautiful. Oh I feel great being, them being so nice to me sending me flowers." Flowers and plants from family and friends held special meaning as several clients shared that seeing these when they returned to their rooms from therapy made them feel happy and supported.

Stuffed animals that were received during their rehabilitation stay were displayed in the client's home during the final interview visit. Three clients in particular found special meaning in these items sharing that when they saw them in their rooms they thought of family and friends, again stressing the importance of perceived support and a connectedness with others.

Pictures, cards, balloons, and music also held special meaning for the rehab clients. For one participant, seeing a picture of Jesus Christ made him reflect back on how much Christ suffered for us and that He would not leave the client alone during his time of need. Another shared, "If they knew they were going to stay or if they had somebody who could bring stuff from home, yeah it's nice to have some special things there because you always have some little something that you really like, either a picture of a pet, or a picture of a loved one or if they've got a little trinket that somebody gave them, like I had bird statues all over the house and stuff like that."

Music and a family picture was particularly meaningful to one client who shared that having these items helped him relax and feel better. For another client pictures of her son made her "happy" and upon her return home family had made a picture collage.
which they hung above her bed. She stated that she would have liked to have had the collage while hospitalized because she could wake up in the morning and see her family. Throughout the final interview she spoke of her son and of having him close “all the time, even if it is only a picture.” She was motivated to improve so she could return home and take care of her son.

5. Being Connected. Support from family and friends was very meaningful to each research participant. This support was manifested in a variety of ways – roommates, phone calls, cards, pictures, visits, etc. One participant, smiling broadly, shared that she felt like “Grand Central Station.” As noted earlier it was interesting that these participants did not feel control and choice were as important during their rehabilitation stay as having perceived support from others.

The importance of social support is well documented in the literature (Williams & Galliher, 2006; Cohen, 2004; Wenzel, Glanz & Lerman, 2002). Those with perceived high levels of support report positive well being and are more effective in dealing with stressful situations, such as is the case for the rehabilitation client. Also, it was interesting how much the research participants felt support and connectedness by having a variety of items in their rooms such as flowers, plants, stuffed animals, balloons, and pictures. Having a live person visit was wonderful but they didn’t feel unsupported because of all the meaningful things that were in their rooms throughout their stay.

The majority of participants also spoke highly of the support and respect they received from the rehab staff. As Heany and Israel (2002) state, clients need emotional support from friends and family and informational support from health care practitioners. The participants were kept updated of their status on a regular basis and discharge
planning began on the day the client was admitted to rehabilitation and involved staff, family, and friends.

One participant did voice frustrations, however, with a perceived lack of respect during her stay stating, “One of the things that they need to remember is the room that’s directly across the desk where everybody congregates they need to remember to shut the door” and “I don’t know why we have such a terrible time between physio and the dietary being punctual. It’s just you get your sheet for your rehab and it says maybe 8:00 or 8:20 and if they come by 8:30 or so you’re lucky.”

6. God’s Plan. Six clients commented on the importance of faith and hope in their lives. Although religious backgrounds varied, all were thankful for their blessings and each held a faith in God’s plan for their life. One participant stated, “I have always had confidence in God protecting me and keep me from harm and I knew He was going to take care of me.” This may go back to the prevalent feelings of support and connectedness that these participants experienced. The sense that someone was ultimately in control of their lives and that God provided the support that they had while in rehabilitation was of comfort to the clients. This support and control was from a higher authority which each valued and deeply respected and may have been unique to this client population.

C. Discussion

According to the literature the health promoting or healing effects of an environment are being emphasized and researched (Perdue et al., 2003; Diffendal, 2002; Stokols, 2000; Bloom, 1995). This study addressed some of the semi-fixed components of the environment and how these impacted outcomes for a specific group of
rehabilitation clients. Frumkin (2003) discussed a “sense of place” as an important public health construct as place evokes memories, arouses passions and emotion and ultimately affects how we do things everyday. He further states that one must remember that every person reacts differently in a given environment and situation and that the environment must be addressed as it may affect behavior outcomes.

1. Purpose. The purpose of this research study was to explore how and if rehabilitation stays were impacted by a client’s perception of control within their semi-fixed environment. Control is associated with effective coping, adaptation, and optimism and it requires that one have the resources to deal with a given situation (Dempsey & Dunst, 2004; Bruce & Thornton, 2004; Bandura, 1997; Peterson & Stunkard, 1989). According to the literature institutionalization can lead to feelings of helplessness and depression (Crist et al., 2000; Bandura, 1997; Weinberg & Chappell, 1996; Schulz, 1976; Langer, 1975). Interestingly, the research participant responses in my study indicated that having high levels of control was not as important as being supported and connected. Fiveash and Nay (2004) found that individuals feel vulnerable if they experience a lack of support from others. A sense of “temporariness” about their rehabilitation stay may have made it easier to cope with their current situation, especially since each knew that they would be going home with family (support) on discharge. Relinquishing control for a short period of time was accepted as the clients acknowledged that the rehabilitation staff knew what needed to be done to improve their function and support was available for the client as they progressed toward their goals. Control within the semi-fixed environment was not as important as just knowing an item was in their room and that someone had thought about them to bring it in. Thus, although the purpose was to identify perception
of control, the results indicate that perceived support and connectedness was of more value for this study population.

2. Theories. Social cognitive theory emphasizes a dynamic interaction between environment, person, and behavior (reciprocal determinism). The theory emphasizes the importance of assessing the environment and including environmental components in intervention planning because the environment, whether physical or sociocultural, is ever changing. This study supports the importance of assessing the environment (physical and sociocultural) as it relates to this specific rehabilitation population. Access to nature was clearly a healing component for these participants in addition to the varied social supports each participant experienced. They were motivated knowing that they would be discharged to home and what the implications of this goal meant (i.e., being able to do as much as possible for themselves). Self-efficacy is impacted by the level of social support one receives. As the rehabilitation client was able to effectively participate in components of a given functional task their self-efficacy about being able to do the entire task was enhanced. Support from others whether staff, family, and/or friends increased their belief that they could succeed in reaching their rehabilitation goals which is supported by other research (Fiveash & Nay, 2004; Baranowski, Perry & Parcel, 2002). Social support can also buffer stressors and facilitate new learning and performance such as modified self care techniques (Cohen, 2004; Baranowski, Perry & Parcel, 2002). From a SLT perspective these participants did relinquish at least some control to externals such as physicians in the acute phase of their injury and diseases. As they gained more confidence and the social support in a less acute medical treatment environment increased
clients were better able to participate in rehabilitation services and make treatment choices.

3. Healing Environment. Many health care facilities have made extensive modifications in an effort to promote a healing environment. According to Fottler et al. (2000), a healing environment offers control and choices, has access to social supports, connects with nature, and decreases environmental stress. For this study, participants were given choices of where to put personal items, all had frequent visitors, and all had access to the outdoors which several took advantage of throughout the day. The administrators of the setting utilized for this research project have embraced this concept for several years and client comments supported this transition. All clients had ready access to social supports which included family, friends, and staff. Multiple areas were provided for picnics and visiting. All clients had access to an outdoor patio area just off their rooms which included furniture and plants. Each client stated that seeing and being outdoors provided another source of “connectedness” and hope. They felt a “calm” when being outdoors and frequently requested that therapy be done outside. The literature supports the positive effects of nature and natural lighting in healing (Diffendal, 2002; Venolia, 1988; Ulrich, 1984). Music and outdoor access combined was calming and decreased feelings of isolation and loneliness among clients especially as these were engaged with their support systems. The physical environment was set up for function and healing such as the presence wheelchair accessible bathrooms, and ready access to assistive devices that facilitated modified function.

4. Social Support. All current study participants had caring and reliable social support systems which positively impacted their rehabilitation stays which may have
been unique to this client population. This positive relationship between social support and health behaviors is supported by the literature (Cooper & Guthrie, 2007; Chelbowy & Garvin, 2006; Williams & Galliher, 2006; Cohen, 2004). Participant comments included that seeing family was very important in their recovery; having family who visited frequently and who brought meaningful items for them was very special. Participants also felt supported by the rehabilitation staff. Their encouragement helped the clients to realize that there was potential for continued improvements.

Semi-fixed items were perceived as a connectedness with various support systems. Flowers implied that someone remembered them and took time for them. The many stuffed animals were taken home and kept as remembrances of their stay on rehab; people cared and loved them. Visitors brought a variety of items such as pictures, homemade objects, plants, and flowers, that they thought would be meaningful and uplifting to the client. In further reflecting on the results for this research population, support was sustained through positive staff attitudes, a connectedness with nature, and a sense that improvement was not an unrealistic expectation. Following individualized therapy assessments, functional goals were developed with the client and in consideration of the discharge destinations. The environment was positive and uplifting and support allowed the clients time to experience their own healing.

Lastly, faith and a belief in God’s plan for their lives provided a sense of hope and connectedness for several participants. Clients felt that God had ultimate control of life and that He would do what is best for them to fulfill His purpose in their lives. One participant stated that she doesn’t worry because she knows the Lord will take care of her. Another stated that God has kept her alive because her family still needs her.
5. Temporality. The concept of temporality, a sense that one can live with a situation because it is only short term was raised. Did having control really matter given that one would be in a situation for only a specific number of days while working toward discharge with the help and support of others who want to see them succeed? It is also possible that this overall sense of a “temporary situation” allowed the client not to get so emotionally involved with the environmental restrictions. Several participants stated that they were going home and acknowledged that they are in the hospital for therapy to get stronger. Dealing with hospital inconveniences was tolerable given that it wouldn’t be forever. From the first day discharge planning was in progress, providing a sense of direction for the client. This idea of temporariness likely impacted the client’s flexibility and expectations about their rehab stay - “this situation is only short term, I can deal with it.” Being discharged from rehab and hearing that one was progressing and would be at an improved functional level upon discharge meant that one was successful. All the clients were discharged within 14 days of admission to rehab and had active support systems. It is my belief that this is another reason why this group of research participants appeared so resilient and hopeful about their future, at least in the short term. With shorter length of stays there usually is continued progress, regular visitors, and a variety of new things to talk about. This gives the client a sense of movement. Further research should explore how client perceptions might change six months post discharge when recovery has slowed and support systems may not be as readily available. Murphy (1990) writes from personal experience that there are no miracle cures in rehabilitation, “just hard, agonizing work.” Without perceived support and connectedness it is questionable if one would engage in this level of hard work.
In summary, this study emphasizes the importance of assessing the environment in planning and implementing health care strategies that promote sustained health behaviors and positive outcomes. In 1991, Ulrich stated that to promote wellness, health care facilities must support coping by increasing patient control, allowing access to social supports and having positive distractions in the environment. This study supports and expands on Ulrich's comments. The research participants had a relatively high perceived sense of personal control and choice throughout their rehabilitation stay, social interactions which encouraged them, a facility that provided settings for these interactions to occur, and positive distractions such as access to nature, a healing garden on site, music and soothing colors. The TV can also be considered a positive distraction, one which all participants appreciated.
CHAPTER 6
CONCLUSIONS AND RECOMMENDATIONS

A. Conclusions

Throughout health care, clients are recognized as the “experts” about the quality of their experiences: what makes them feel better and what they need to help them recover, heal, and adapt to life changes (Picker Institute, 1997). To develop interventions that are meaningful and effective for their clients, health educators need to understand the “lived experiences” and interconnectedness of environmental factors that impact individuals who are struggling with disabling conditions, whether these conditions are apparent such as stroke and spinal cord injury or hidden such as heart disease and diabetes.

This study identified six themes from the data collected. Theme One was *Had Choices*, defined as having control and choice while receiving services. All 10 participants felt they had some level of control and choice during their rehabilitation stay which they perceived as adequate. This perception could have been impacted by the fact that their length of stays were short and relinquishing control for a short period of time was accepted given the projected functional outcomes.

Theme Two was *It’s In The Room*, defined as standard room items for this rehabilitation facility. Each room had a variety of semi-fixed items that had meaning to the participant. By far the most appreciated was the TV which provided distraction and a connection to the world outside of the hospital. We have heard many negatives about TV viewing but in this case it was a benefit at least in the perceptions of these clients. Theme Three was *View Of Nature*, defined as having access to and sight of the outdoors, which
all participants shared positive comments about. They were able to open curtains and go outside the health care setting when desired. This ability to interact with nature also encouraged positive social interaction throughout the facility. Theme Four was *Meaningful to Me*. In each client’s room were items that had special meaning to them and brought thoughts of support and connection with important social networks. It is interesting to note that it did not appear to matter if an item was in the client’s immediate view, just knowing an item was in the room was deemed sufficient. As related to Theme Three, flowers and plants were by far the most frequently found items and were meaningful to the participant as they implied a social connection.

Theme Five was *Being Connected*, defined as perceptions of consistent and valued support. Support from family and friends was very important to each participant. It is of interest to note that having control and choice was not perceived as important as being supported and connected to others perhaps because of the short duration of their stay or because of the value associated with the connectedness. Theme Six, *God’s Plan*, implied a connection to a higher power which a majority of the participants respected and welcomed. This connection to God also appeared to provide a hope that He would guide their recovery and that they did not have to worry because things really were under control.

These six themes demonstrate the factors seen as important to this sample of rehabilitation clients as they progressed through their individualized therapy programs in preparation for discharge to home.

B. Study Strengths

1. This study provides information about the “lived experiences” of the rehab
client and how the environment affected their inpatient stay. Three face-to-face interviews and two videotapes helped to explore these lived experiences. Participants were asked open ended questions during interviews and videotapes provided a visual means for each client to recall their rehabilitation experience and the semi-fixed environment. Multiple sensory experiences assist with recall of lived experiences and this was evident with this study population as well.

2. The information can be shared with rehabilitation administrators to better meet the needs of the rehabilitation client. Gathering qualitative data can help ensure that perceived client needs are being met effectively. If a concern is identified such as a lack of space for family interactions, plans can be developed to resolve the issue more efficiently. This study identified the importance of social support and connectedness. Rehabilitation administrators can be encouraged to provide as many opportunities to develop social networks as possible for their clients. These can include developing healing gardens, and social nights for rehabilitation clients, family and friends. Sometimes observing that they are better off than another client can itself be a motivating factor as well as provide an opportunity to be a support to someone else.

C. Study Limitations

1. Multiple environmental factors can impact a client’s perceptions and experience within the health care environment. It is difficult to identify a single factor that is more influential than another. A qualitative research design allows for a richer analysis of the many environmental factors that can and do impact client perceptions and outcomes but does not allow for the identification of the most important factor.
2. There is limited generalizability because the group studied is a specific population of rehabilitation clients in a particular rehabilitation setting and this one was mainly positive because of the philosophy of the East Campus administration. There was no random sampling or intent to generalize. The information gathered can raise the awareness of rehabilitation team members about the impact of the semi-fixed environment and client perceptions of the rehabilitation process. This information can also allow rehabilitation staff to better develop programs and environmental designs to facilitate functional outcomes.

3. The self-reports of client perceptions could have been biased. The clients may have said what they thought the researcher wanted to hear as most impressions were positive, not negative. Memory could have also impacted recall of their health care experience, but three interviews and viewing of two videotapes aided in the recall of the client’s rehabilitation experience. For a majority of the clients, the final visit was done within one week of discharge, which also aided with recall.

4. The nature of qualitative research identifies the researcher as the primary instrument for data collection and analysis. Mistakes could have been made and personal biases interfere with data analysis. In order to decrease researcher bias, triangulation with information and data from multiple sources was done. Field notes from every encounter with the participants were done, and shared with respected and experienced colleagues to gain their interpretations and insights.

5. Only clients who could give consent were included in this study. This implies a higher level of cognition and possible better overall health and available social
supports. This limits generalizability to the larger spectrum of rehabilitation client diagnoses such as traumatic brain injury.

6. A primary limitation of this study is that it does not represent perceptions of the long term inpatient rehabilitation population, those who may have limited support systems and prognostic outcomes. The participants in this study all knew they were going home and that their inpatient length of stays were going to be short. All had available and reliable support systems and the majority had stimulating physical environments. The current findings primarily apply to those rehabilitation clients who experience shorter rehabilitation stays.

7. The researcher was acquainted with several of the staff who worked with the research participants. It is possible that staff interactions were more positive given that a “research project” was in progress although staff did not know the project specifics and there was no study hypothesis.

Despite these potential limitations, the study findings indicate that the environment can impact a client’s perception of their health care experience.

D. Recommendations for Health Education Practice/Research

1. Health educators need to offer hope and empowerment to the clients they serve. For the rehabilitation population their special needs greatly depend on the degree of functional limitations. Health educators can help train clients to interact more effectively with health care professionals (Lewis, DeVellis & Sleath, 2002). With the emphasis on client-centered care, this open dialog between health care provider and client can enhance and possibly sustain health outcomes.
2. Health educators can help rehabilitation administrators realize that some environments are more health promoting than others. Simply providing a nature view may facilitate the healing process. If this is difficult, adding plants or pictures throughout the building is an option.

3. Health educators can assist administrators with suggestions on low cost environmental modifications that can positively impact outcomes. A simple shelf, placed within the client’s direct visual field, can hold pictures or artifacts. These items are frequently placed behind the client or in the drawer out of the client’s sight. The current study participants did not feel they had to have an item in direct visual view. Just knowing it was in the room appeared to be sufficient for them.

4. Health educators can educate staff on the importance of including clients in health care decisions and recognizing that multiple factors influence decisions and client perceptions. Health care providers can often provide informational support for clients (Heany & Israel, 2002). In this study each participant was regularly updated on their status. This open communication encouraged clients by providing a sense of support from staff for their well being.

5. Health educators can be effective role models of client-centered care, emphasizing the importance of collaborating with the client to develop the most effective and meaningful intervention strategies. Rehabilitation is all about collaboration between the client and staff to achieve specific objectives. In order to promote this collaboration, there must be a balance in communication between the two parties and a recognition that other factors such as family can participate in this collaboration.
6. Future research is needed to evaluate the impact of the semi-fixed environment on the long term rehabilitation population. It is felt that accessibility to social supports might be limited and that the semi-fixed environment may not be as stimulating and encouraging as it was for the short term rehabilitation client.

7. Future health education research should include continued assessment of the physical and sociocultural factors that affect health outcomes. This could include identifying how family members help someone to modify their lifestyle before and following a disease or injury. Also it could be useful to explore how health care professional perceptions of care impact health outcomes. In health education, it has been my experience that classes are often taught in rooms that are non-stimulating and non-interactive. Research could be done to explore how the environment in which health education is provided impacts health outcomes and sustains behavioral changes.

8. Future research, using mixed methods could further explore the concept of social connectedness. A survey could be completed by the family or primary caregiver regarding perceived social supports and the client about social connectedness perceptions. This could be followed with either a focus group or individual interview to further explore what was identified through the survey; similarities and differences identified and further assessed. Another possible research option could further explore the concept of temporality (time) and how this impacts perceptions of control, social support, and ultimately, outcomes.

In summary, it is important for health educators and health care professionals in general to have an understanding of how the environment impacts behaviors and outcomes and to use this information as interventions are developed. Although this study
utilized only a specific population of rehabilitation clients, it did increase awareness of how the environment impacts recovery and how important a sense of connectedness and support is to positive health outcomes.
REFERENCES


Garza, G. The science of qualitative research: Validity and reliability re-framed in terms of meaning. *Science and Qualitative Research, 1-14*.


APPENDIX A

REHABILITATION ROOM DESIGN

Grassy Area

Fenced Patio with Furniture and Plants

Sliding Door to Patio

Curtains

Wall Mounted TV

Chair

Table

Dresser

Bed

Curtain

Light

Bulletin Board

Wall Mounted TV

Chair

Table

Dresser

Bed

Curtain

Light

Sink

Cabinets

Closet

Bathroom

Door
APPENDIX B

INSERVICE FOR REHABILITATION PROGRAM COORDINATORS
OUTLINE

I. Introductions

II. Purpose of Study
   a. Brief literature review
   b. Research questions

III. Method
   a. Setting
   b. Participants/Inclusion criteria
   c. Study procedures
   d. Data collection and analysis

IV. Role of Rehabilitation Program Coordinator
   a. Within four days of admission, talk with clients who meet inclusion criteria
      about the possibility of study participation. I will also stay in contact with the
      program coordinator about new admits to the rehabilitation programs.
   b. The rehabilitation program coordinator will determine if the client is
      appropriate to participate in this study. For example, is the client oriented to
      person, time, and place, and can the individual attend to discussions for an
      extended period of time?
   c. Contact researcher about potential client. I will provide a list of contact phone
      numbers and email addresses.
   d. Researcher will then contact the client and set up the initial meeting.

V. Thank you and question/answer opportunity
APPENDIX C

INFORMED CONSENT

Study Title: A Qualitative Study of the Impact of Perceived Control within the Semifixed Environment on the Rehabilitation Process

Purpose and Procedure:
You are invited to participate in a research project because you have received at least two inpatient rehabilitation therapies at the LUMC Rehabilitation Institute, and had a minimum of 10 days stay on the rehabilitation unit. The purpose of this study is to understand how the rehabilitation environment affects your rehabilitation stay. Participation in this study will involve a total of about 4 hours over the next 2 month period. This will include two visits, each about 30 minutes in length, by the researcher while you are an inpatient on the rehabilitation unit. At the first visit, the researcher will videotape the objects in your room and answer any questions you may have about the research. The second visit will involve re-videotaping the objects in your room.

Within two weeks after you are discharged from the hospital, a face-to-face interview, approximately 60 minutes in length, will be scheduled at your convenience. At that time the videotapes from the hospital will be reviewed by you and the researcher and the researcher will ask you additional questions about the videotaped information, such as how you felt about your hospital room and the things you had in your room.

Risks:
This study poses no greater risk to you than routine day-to-day living.

Benefits:
While you will not benefit personally from participation in this study, your participation will provide researchers with a deeper understanding of how the hospital environment impacts health and behaviors. Your participation may enable health care staff to better serve the needs of future rehabilitation clients.

Participant’s Rights:
Participation in this study is voluntary. You may stop your participation at any time.

Confidentiality:
Any published document resulting from this study will not disclose your personal information without permission. The researcher will assign pseudonyms or codes to maintain the confidentiality of your information. Only the researchers and Loma Linda University faculty will have access to the audiotapes and videotapes. Upon completion of this research, the audiotapes, transcriptions, fieldnotes and videos will be stored for three years in a securely locked room in the School of Public Health, Loma Linda University. At the end of the three years, the audiotapes, transcriptions, fieldnotes and videos will be destroyed.

Date:  
Initials:  
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Additional Costs and Reimbursement:
There is no cost to you for participation in this study, nor will you be reimbursed for your time and participation in this study.

Impartial Third Party Contact:
If you wish to contact an impartial third party not associated with this study regarding any question or complaint, you may contact the Office of Patient Relations, Loma Linda University Medical Center, Loma Linda, CA 92354, phone (909)-558-4647 for information and assistance.

Informed Consent Statement:
"I have read the contents of the consent form and have listened to the verbal explanation given by the investigator. My questions concerning this study have been answered to my satisfaction. I hereby give voluntary consent to participate in this study. Signing this consent document does not waive my rights nor does it release the investigator or institution from their responsibilities. I may call Liane Hewitt during routine office hours at (909) 558-4628 x47327."

Consent Copy:
I have been given a copy of the consent form.

Signatures:

__________________________________________ Date
Signature of participant

__________________________________________
Signature of witness

I have reviewed the contents of the consent form with the person signing above. I have explained the potential risks and benefits of this study.

__________________________________________ Phone Number Date
Signature of investigator
APPENDIX D

DEMOGRAPHICS & OBSERVATION FORM

Code: __________ (gender-m/f; age; diagnosis – C=stroke, S=SCI, G=General, B=TBI)

1. Gender:
   a. Male
   b. Female

2. Race/Ethnicity:
   a. African/African American
   b. Asian/Asian American
   c. Caucasian/European American
   d. Hispanic/Hispanic American
   e. Native American
   f. Other

3. Age:
   a. 18-20 years
   b. 21-30 years
   c. 31-40 years
   d. 41-50 years
   e. 51-60 years
   f. 61-70 years
   g. 71-80 years
   h. 81+ years

4. Marital Status:
   a. Single
   b. Married
   c. Divorced
   d. Widowed

5. Primary Rehabilitation Program
   a. Head injury rehabilitation
   b. Spinal cord injury rehabilitation
   c. Stroke rehabilitation
   d. General rehabilitation

6. Number of personal objects in room (assessed during 2nd visit)
   a. 0-1 (low)
   b. 2-4 (medium)
   c. 5+ (high)

7. Number of objects
   _______ plants _______ photos _______ TV _______ books _______ audio
   devices _______ computer _______ other
   (specify)
APPENDIX E

FOLLOW UP INTERVIEW QUESTIONS

FINAL

1. What do you remember about your hospital room?
2. Think about your admission to rehabilitation. What were your impressions of your hospital room? For example, how did you feel about the color, lighting, furniture, etc?
3. Describe the physical characteristics of your hospital room.
4. Who visited you and how often?
5. Tell me what impact your visitors had on you during your stay?
6. What personal objects were in your room?
7. How did these personal objects change over your hospital stay?
8. Tell me about the objects in your room (looking at video).
9. Did you choose what objects you had in your room?
10. What would you have liked to have in your room and why?
11. How did having (object) make you feel?
12. How did it make a difference in your hospital stay?
13. How did the objects in your room encourage you?
14. Looking back at your hospital stay, how do you feel the environment (specifics) affected your participation in the rehabilitation program?
15. During your rehabilitation stay, how did having a choice of what things to put in your room make you feel?
16. Were there any objects that drew attention from the hospital staff?
17. How did you feel about this?
APPENDIX F
RESEARCH PROCESS CHECKLIST

Code:____________________

Inclusion Criteria:
___English speaking
___Age 18 or older
___Participate in HI, SCI, CVA, or General program
___Receiving at least 2 therapies
___Minimum of 10 day stay in rehab
___Live 1-1.5 hours from LLU
___Discharge to non-medical facility
___Referred by PC
___Able to do interview and give IC

Phase I: (in hospital)
___Admission Date:_____________________
___Day 4 of stay
___PC call investigator within 4 days of admission
___Make appointment with client
   ___Bill of Rights
   ___ICD
   ___Copy of ICD to unit secretary
   ___Questions about study
___Complete demographic/observation form; code participant
___Videotape objects in room
___Label DVD with participant code
___Write field note

___Day 10 of hospital stay:_____________________
___Videotape of client’s room/objects
___Talk with PC about possible d/c date
___Document #/types of objects on demographic form
___Get client’s address and phone number
___Write field note

Phase II: (personal interview)
___Discharge date:_____________________
___Call client to make appointment (within 2 weeks post d/c)
___Review video with client
___Interview questions; Length of _______ minutes
___Write field note
___Send thank you note

Transcription:
___Date sent:_______
___Date returned:_______