AFTER CARDIAC REHABILITATION:
EXPLORING LIFESTYLE CHANGE AS TRANSFORMATIVE LEARNING

THESIS

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ABSTRACT

Cardiovascular disease is the single greatest cause of death in Canada. Healthy lifestyle change is the cornerstone of treatment. In cardiac rehabilitation, theories of health behaviour inform interventions to promote uptake of lifestyle change. Although the science behind health behaviour theory is advancing, success in the area of maintenance of change remains elusive. The purpose of this study was to explore how the adult learning theory of transformative learning can inform health education strategies.

The study focused on 13 individuals situated one year after their participation in a cardiac rehabilitation program. To identify their experience of healthy lifestyle change, a mixed methods approach was used whereby quantitative parameters informed selection and classification of participants and qualitative interviews generated the data. Participants who had maintained healthy changes and participants who had been unable to maintain healthy changes were recruited.

The constructs of transformative learning theory focused the interview guide. Data analysis highlighted the main difference between both groups as being an engagement in trustful and collaborative reflective discourse. Participants who were able to maintain healthy changes described empowering interactions with both health care professionals and others that enabled them to clarify the meaning of their experience and enact positive and lasting changes. Participants who failed to maintain healthy lifestyle changes described anxious and disempowering interactions that impeded the development of trusting, collaborative relationships. Their subsequent actions were poorly developed and based on inaccurate understandings of their condition.

Reflective discourse is a well-documented and critical element of meaningful adult learning. The results of this study highlight the need to create health education strategies that include this vital learning component.

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My children, Jordan and Gillian, have grown along with me. Their evolving insights, comments, demands, and support have kept me grounded. I cannot believe how lucky I am to be a part of your ever expanding lives; I love you both.

Finally, my mother has been my biggest inspiration, confidante, and cheerleader. At the same age as I am now, you left your factory job and took a similar plunge back into the world of learning to become an accomplished health care professional. I do not think that any of us will ever really understand how courageous your decision was nor do we have any idea of the amount or complexity of the barriers that you faced along the way. Mum, I love you. You are my role model and my hero. Whenever I need to feel totally safe and totally loved, I know exactly who to call. I am so grateful for your presence, your wisdom, and your love and I am so proud to be your daughter.

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CHAPTER 1: INTRODUCTION

In this thesis, I explore how transformative learning can inform health education strategies. I describe my study which examines, through the lens of transformative learning theory, the experiences of individuals with heart disease who are one year past participation in a formal cardiac rehabilitation program. The goal of treatment for any individual with cardiac disease is to learn, and maintain over the long term, a heart healthy lifestyle and to identify and manage personal cardiac risk factors. Cardiac rehabilitation is an intervention designed to support cardiac patients in realizing this goal.

This study involved semi-structured interviews that explored the learning experiences of individuals diagnosed with heart disease. The main topics of the interviews focused on diagnosis, treatment, and long term healthy lifestyle change after cardiac rehabilitation. The study was important for two reasons. Firstly, it used a theory of adult learning to examine a long-standing problem in health care – the maintenance of healthy lifestyle change over the long term. Since the majority of care interventions in cardiac rehabilitation are based on cognitive-behavioural or health behavioural change theories, it was an opportunity to add some insights. Secondly, as a nurse with a background in health promotion and patient education, it was a key opportunity to explore the process of learning within the population that forms the basis of my practice. Subsequently, I am now able to use the insights generated to inform future development and evaluation of health education programs in the cardiac rehabilitation setting.

In this chapter, I elaborate on the problem, purpose, scope, limitations, and assumptions informing the study. Terms specific to this study are defined and the research methodology is explained and justified. The chapter concludes with an explanation of how the information is presented in subsequent chapters in this thesis. However, before I begin to discuss the research study, it is necessary to present the contextual background. It has been an unusual challenge to bring the ideals of adult learning into a behavioural research-focused health care setting. The next section, therefore discusses heart disease, cardiac rehabilitation, and evidence-based practice, and how they connect to my role as an educator of adults.

Background

The main function of the heart and circulation system is to carry blood, oxygen, and nutrients to every single cell in the human body. Diseases of the heart and blood vessels can cause a wide range of health problems including hypertension, heart attacks, heart failure, strokes, and peripheral vascular disease. Many of these conditions are immediately life threatening; all of them are life altering. Cardiovascular disease is an umbrella term for any condition that affects the heart or the circulation system. Cardiovascular disease is the single greatest cause of death in Canada (Heart and Stroke Foundation, 2007).

Cardiovascular disease is a chronic disease. The Public Health Agency of Canada (2006) describes chronic diseases as:

> Having an uncertain etiology, multiple risk factors, long latency, prolonged affliction, a non-infectious origin, and can be associated with impairments or functional disability. Although chronic diseases are among the most common and costly health problems facing Canadians, they are also among the most preventable. Examples include cardiovascular diseases (heart disease and stroke), cancer, diabetes, arthritis, asthma, and mental illness.

Although the treatment of heart disease and any other chronic disease is multi-faceted, the foundation of any treatment strategy is active management of risk factors. Although some risk factors such as age or family history are not modifiable, others, such as physical inactivity, obesity (specifically central or abdominal obesity), diabetes, hypertension, high cholesterol, and stress are controllable. Individual risk factor management requires an identification of one's own cardiac risk factors followed by a purposeful adoption and integration of one or more healthy management strategies into daily lifestyle. Thus, the treatment goal for any individual who has experienced an acute cardiac related illness or who has undergone an intervention related to pre-existing heart disease is the adoption and maintenance of a heart-healthy lifestyle.

Cardiac rehabilitation (CR) programs have been designed to facilitate the heart healthy lifestyle element of cardiac care. The Canadian Association of Cardiac Rehabilitation (CACR) (2004) defines cardiac rehabilitation as "The enhancement and maintenance of cardiovascular health through individualized programs designed to optimize physical, psychological, social, vocational, and emotional status" (p. 2). Cardiac rehabilitation programs have been shown to reduce death from cardiac disease, to decrease repeat hospitalizations, and to improve quality of life (Dafoe, Arthur, Stokes, Morrin, & Beaton, 2006). CR programs are now part of the routine recommendations made by the Canadian Cardiovascular Society in the care of patients who have experienced an acute cardiac related event (Dafoe et al., 2006).

According to the CACR (2004), "behavioural intervention and change is the essence or life-blood of CR" (p. 38). To be considered credible by scientific and funding institutions, any health care intervention must be supported by appropriate scientific evidence. In general, this means that the intervention has a positive impact on previously identified and measured target outcomes. In order to generate that kind of evidence on healthy lifestyle change interventions, the application of health behaviour theories that articulate specific intervention strategies and specific measurable outcomes have been employed by researchers in the field of CR. One such example is motivational interviewing. Motivational interviewing is a theory-based methodology developed to address a single behaviour that a patient may be ambivalent about changing (CACR, 2004). It uses four sequential principles to guide the patient/counsellor interactions, with the outcome measurement being an observable change in the identified behaviour. Other health behaviour change theories have targeted interventions based on the stage of readiness to change or on the assessed abilities of the patient to perform the behaviour. In summary, theories of health behaviour change focus on helping patients to develop behavioural strategies to adopt healthier lifestyles.

In contrast, the field of adult learning is attuned more to the development of programs that facilitate meaningful learning and understanding of experience. Research conducted in the field of adult learning focuses on increasing understanding of the learning process and how prior experiences, emotions, and relationships serve to shape and construct new learning (Taylor, 2000). Outcomes of adult learning tend to be focused on introducing new points of view and, through a process of critical reflection and interactive discourse, developing more dependable frames of reference on which to base future actions and decisions.

While endorsing motivational interviewing and other behaviour change strategies as potentially effective interventions, the CACR (2004) also recognizes that theories of health behaviour change have certain limitations in that they "do not refer to stable personality traits. Instead, in their application and validation, they generally rely upon very specific, concrete behavioural definitions and contexts" (p. 38). Other authors have also pointed to the focus of the majority of health research on the observable aspects of health rather than the way individuals understand their own health and wellness (Polipnik & Delevan, 2003). Increasingly, the process of continuous meaning-making is being recognized as conditional to successful behaviour change (Wise, 2001). Indeed, in an acknowledgement of these broader understandings of adult learners, the CACR recommends allowing opportunities for patients to reflect critically on information, to collaborate in learning, and to become empowered in their actions as a possible means of enhancing clinical outcomes.

I am a nurse working in cardiac rehabilitation. My role is health education and promotion. As a nurse, I recognize the need to qualify my practice interventions with evidence. As an adult educator and learner, I recognize the need to develop a rich understanding of patients as adult learners and of adult learning theory within the healthcare context. My goal as a health care professional is to blend these ideals in the application and evaluation of adult learning interventions that foster improved patient outcomes.

The Problem

Orleans (2000) observes that over the last 20 years the “impressive gains in the science and practice of health behaviour change” (p. 76) have woefully been matched by similar success in the maintenance of healthy change over the long term. Orleans also presents the need for new, “naturalistic studies to further illuminate the motivations, skills, and supports that distinguish people who are successful long-term maintainers” (p. 80). Although there is ample research to demonstrate the success of behavioural-based interventions to initiate positive behaviour change, the same strategies have proven less successful in maintaining healthy lifestyles over the long term.

Adopting and maintaining healthy lifestyle changes are important aspects of most health care interventions. Any intervention in this area includes education. Patients are adult learners who make health care decisions based on the way they experience their individual situation and how they process information. Given this premise, understanding healthy lifestyle change from the perspective of adult learning theory has the potential to lend important insights into this long-standing health care challenge.

Purpose

Transformative learning (TL) is a theory of adult learning that describes a process whereby an individual, faced with an unexpected and significant personal event, must critically review personal perspectives and assumptions, and subsequently enact parts of his or her life in a different way. The individual becomes different, thinks about the particular issue in a different way, and, finally, enacts the new perspective. Outcomes of TL include an empowered sense of self, changes in the way learners see themselves, more functional strategies for taking action and gaining control over their lives, and a better understanding of self within relationships (Christopher, Dunnagan, Duncan, & Paul 2001). The purpose of this research study is to use transformative learning theory to explore healthy lifestyle changes in individuals one year after their participation in a cardiac rehabilitation program. The intent is to identify how patients, as adult learners, experience healthy lifestyle change.

Scope

This research study focuses on healthy lifestyle change. More specifically, it focuses on maintenance of healthy lifestyle change. For this reason, all participants were situated at least one year after their participation in the cardiac rehabilitation program.

In order to gain a fuller understanding of how meaning-making occurs, participants who had maintained healthy changes along with participants who had been unable to maintain healthy changes were recruited for this study. Participants were classified as having maintained healthy lifestyle change if they were able to improve their identified cardiac risk factors and maintain the improvement over the long term—in this case, one year after participation in a cardiac rehabilitation program. Conversely, participants who were unable to achieve or maintain improvement in their modifiable risk factors were considered unable to maintain healthy lifestyle change. In total, 13 participants were recruited. Of the 13 participants, five men and one woman had achieved and maintained healthy improvements in their risk factors; six men and one woman had not. Since adult learning was the specific aspect of healthy lifestyle change being explored, transformative learning theory informed the design of the interview guide. The interview guide is presented in Appendix A.

Limitations

The participants in this study were among the very first group of graduates of a re-designed cardiac rehabilitation program in a health care facility situated in Canada. The facility will remain anonymous and, from here on, is referred to as the "institute." In order to place the study participants fully in context, it is important to understand that not every patient admitted to the institute chooses to participate in cardiac rehabilitation. Not every patient who participates in cardiac rehabilitation graduates, and of the graduates, not everyone completes the 1-year follow-up questionnaire and blood tests. In that respect, the population of patients that I was working with may have been a bit more informed and motivated than most.

Assumptions

My decision to use transformative learning theory in this study was based on two assumptions. First, the understanding of our personal health and physical body falls within the core of the frames of reference through which we define ourselves. Secondly, a sudden diagnosis of heart disease poses enough of a challenge to that frame of reference to be considered a disorienting dilemma. Given those assumptions, this theory provided an appropriate framework from which to guide the interview process.

Definition of Terms

The interview guide was designed based on the constructs of Mezirow's Transformative Learning Theory (2000). Definitions of the constructs of the theory used in the guide are given because they inform the plan of presentation. The terms defined are from Mezirow's (2000) core concepts of transformative learning theory. Each term being defined is in italics.

A *disorienting dilemma* occurs when an individual experiences an unexpected event that cannot be understood within his or her usual framework of beliefs, values, context, or self definition. The dilemma can be a significant personal crisis or it can result from small incremental changes over time. A disorientating dilemma initiates a cascade of cognitive processes primarily because the individual realizes that the assumptions and rules that have previously informed his or her view of the world are no longer applicable (Mezirow, 2000; Taylor, 2000).

Critical reflection encompasses internal and external processes that begin after the disorienting dilemma. Inwardly a *self-examination with feelings of fear, anger, guilt, or* *shame* occurs which involves recognizing, processing, and managing the associated emotions. Externally, through a process of *reflective discourse,* the individual searches for different interpretations of the experience, seeks out new knowledge and points of view, shares personal ideas, and compares alternate beliefs (Mezirow, 2000; Taylor, 2000).

Critical reflection requires *a critical assessment of assumptions* where the individual re-examines what he or she takes for granted about personal thoughts, beliefs, and points of view. The individual may look to others who share similar circumstances and consider the different perspectives presented in the discussions and use them to either justify his or her own beliefs or broaden personal understanding. *Recognition that one's discontent and the process of transformation are shared* provides an individual with the opportunity to develop new insights or interpretations which may challenge the existing point of view (Mezirow, 2000; Taylor, 2000).

In order for productive reflective discourse to occur, there must be access to accurate information, there must be room for other points of view to be expressed, and there must be awareness of one's own and others' assumptions. Conditions must be such that there are both equal and safe opportunities to take part in the discussions. Ideally, reflective discourse enables an individual to create a truer understanding of the meaning of the experience.

As new ideas and perspectives are considered, an *exploration of options* occurs where other identities, points of view, or roles are taken on and explored in comparison to existing ideas. As the broader outlook begins to redefine existing points of view, the individual begins *planning a course of action* to enact the new perspective. Part of the plan may include *acquiring knowledge and skills for implementing one's plans* or determining how to change and what to change (Mezirow, 2000; Taylor, 2000).

Mezirow (2000) states that "a mindful transformative learning experience requires that the learner make an informed and reflective decision to act on his or her reflective insight" (p. 23). Acting on new insights may start with the *provisional trying on of new roles* where the learner will begin to enact the new perspective within their existing context and evaluate the consequences. This may involve anxiety and what Brookfield (2000) labels incremental fluctuation or "1 step forward; 2 steps back" (p. 98). As the individual struggles to overcome the challenges experienced such as managing his or her own and others' emotions or learning new skills, a process of *building competence and self-confidence in new roles and relationships* occurs. Finally, there is a *reintegration into one's life on the basis of conditions dictated by one's new perspective.* This is where the individual begins to live life according to broader understandings and points of view.

Research Methodology

The qualitative research methodology used in this study was a semi-structured interview format with a purposive selection of participants. Participants were recruited according to criteria set for maintaining health lifestyle habits 1 year after treatment for cardiac disease. The full selection criteria are outlined in Appendix B. The interview guide was developed according to the constructs of TL. Using an already-existing theory to inform qualitative research helps to shape the information being investigated and can serve to add to the existing knowledge base (Merriam & Simpson, 2000). Similarly, it can also serve to enhance methodological coherence (Morse, Barret, Mayan, Olson, & Spier, 2002) and structure. The interview guide focused the design (Polipnick & Delevan, 2003), and provided the framework for both data collection and data analysis (Merriam, 2001). In summary, using the constructs of TL to guide data collection ensured a consistent format for the data collection.

The components of TL were used to help guide data analysis. Gilgun (2006) advocates the use of theory in data analysis to help interpret and situate findings. The use of the key concepts of a theory to structure the analysis is similar to directed content analysis (Hsieh & Shannon, 2005). In this method, theoretical constructs are given clear definitions and used to inform each coding category. This methodology is advocated when the purpose of the research is to conceptually extend a theory. Endacott (2004) describes early data analysis and presents the development of common codes and categories as a central tenet of qualitative research. The first allows for opportunities to amend or focus further data collection, and the latter is required in the reporting of the data to enable the reader to judge how the data have been used. Using a pre-determined framework for codes is appropriate for novice researchers looking to develop research skills (Endacott, 2004; Polipnick & Delevan 2003). Indeed, Endacott (2004) compares the use of a coding system in qualitative research to statistical significance in quantitative research.

Semi-structured interviews assume that individuals each carry a unique perspective (Merriam, 2001). In this research, the semi-structured interviews included specific open-ended questions as well as probing questions based on the participant's responses. This enabled the participant to present his or her particular point of view as well as providing the opportunity for new perspectives to emerge that could then be explored (Hsieh & Shannon, 2005).

Methods to Ensure Trustworthiness

Criteria for determining that qualitative research is reliable are often described as credibility, reliability, and dependability (Endacott, 2004; Smyth, 2006; Tobin & Begley, 2004). Credibility refers to the fit between the respondents' views and the researcher's interpretation (Smyth, 2006). In this study, two methods were used to augment credibility. Firstly, the initial clarification of the theoretical orientation of the study, both with respect to data gathering and data analysis, was outlined along with a clear statement about my own assumptions (Merriam, 2001). Secondly, the data interpretation was augmented by the addition of information from the patient's cardiac rehabilitation file, specifically, sequential cholesterol blood results, blood pressures, weight, waist measurement, and self-reports of minutes of exercise per week. The use of both qualitative information (the interviews) and quantitative information (measured data) is similar to triangulation methodology. Triangulation involves the use of different sources of data (Endacott, 2004) to add rigour to the research process and interpretation of findings. Tobin and Begley (2004) describe "between method triangulation" (p. 393) as a mixing of research paradigms. In this study, qualitative interviews were the dominant method with the use of specific measures and results as a means to add layers to the analysis.

Reliability refers to the ability to replicate research findings (Merriam, 2001). A well-defined and diverse sample, a well-articulated method that can be used in other settings, and a substantiated theoretical basis are some of the methods that can be used to confer reliability (Smyth, 2006). In this study, the sample selection was based on clearly-defined criteria. The criteria was determined based on the target outcomes recommended in current, national, evidence-based guidelines in cholesterol and hypertension management, weight, waist measurement, and physical activity. The research method was articulated and consistently adhered to throughout the selection, recruitment, and interview of each participant. Finally, the interview guide was theory-based.

Dependability means that the process of research is clearly documented and logical (Tobin & Begley, 2004). A pre-established interview guide and coding structure facilitated a traceable research and analysis process particularly around data documentation and analysis decisions (Morse et al., 2002). Additionally, all interviews were taped and fully transcribed and thus remained intact and situated within the particular individual's frame of reference.

Plan of Presentation

Following this introduction, I present a review of the literature in chapter 2. I have focused the review of the literature on some of the philosophies and theories that inform both adult learning theories and theories of health behaviour change. The comparison of these two philosophies is an important component of this study, where a case will be made for their complimentary potential in health promotion. In chapter 3, I describe how the study was carried out and present the findings. Since the interviews formed the basis of the study, chapter 3 is filled with rich passages of dialogue that are used to illustrate the various themes that emerged. In chapter 4, I present the analysis of the study based on the findings from chapter 3. I analyse the findings with respect to how they fit in and add to the current, relevant literature in health care. In the conclusion, I review the insights gained from this work and present some recommendations for interventions and ideas for further research.

CHAPTER 2: REVIEW OF THE LITERATURE

In today's health care environment, an individual who is diagnosed with a health problem finds him or herself faced with many new challenges. The new diagnosis and treatment options need to be understood. Managing intervention schedules and regimes, as well as associated treatment effects, must be part of the learning process. After treatment, an individual faces the need to change many habits of his or her present lifestyle in the name of secondary prevention. Finally, despite treatment, many health conditions result in altered levels of functioning that interfere with normal life activities and require new adaptations or altered expectations.

Throughout all of these experiences stemming from diagnosis and subsequent treatment, the individual must somehow integrate all of the information, physical changes, complex treatments, and lifestyle alterations into current roles, activities, and social environment. In order to achieve these tasks, a complex, multilevel, interactive, empowering, and meaningful type of learning that is central to the individual must occur. Although the purpose of patient education is often defined as an intervention to change human behaviours that cause ill health (Buchanan, 2006), the reality of the patient experience tells us that effective patient education must focus on facilitating a process of empowerment that enables the individual to understand the disease, interact with the health care system, strengthen the sense of self, and make his or her own determination of health needs based on a truer representation of the meaning of health and illness (Aujoulat, d'Hoore, & Deccache, 2007).

In order to gain greater understanding of the experience of the adult learner in the health care setting, it is important to start by understanding the experience of adult learning. The assortment of literature that informs this review was accrued by a variety of search methodologies. I started with classic books about adult learning and used the concepts within to inform my strategies for searching peer-reviewed adult learning, nursing, health care, health behaviour, and health education journals. The same search engines that explore the health and education literature also list health, education, and health behaviour websites. In the search for literature that connected adult learning to health care, I often found myself trekking through these websites, linking to articles, corresponding with authors, reviewing unpublished papers or theses, translating French research studies, and validating my developing impressions with other, more experienced scholars and researchers. My journey to find information about new ways of helping people to understand both their physical and mental selves has revealed an evolving trend in the literature that recognizes the need to move health education away from changing unhealthy behaviour and towards facilitating individual learning and decision making based on relevant and meaningful interpretations of health.

I start this literature review by developing a definition of adult learning that includes how context, experience, and self concept impact the learning process. With the working definition of adult learning established, in the next section I consider current learning theories and major aspects of adult learning. I finish this section with an overview of transformative learning theory which is central to this thesis. From there, I begin a review of health education which includes an overview of three theories of health behaviour change. I then identify some of the gaps in health behaviour change theories and then review studies of transformative learning in health care. The final section contains my discussion on the roles and connections between transformative learning theory and health behaviour change theory.

The separation of adult learning theories in health care and health behaviour change theories in health care is an important element for the beginning of this discourse. By the end of the thesis, I will have made some links between these two ways of thinking as each has a critical role to play throughout an individual's long journey from illness to health.

Adult Learning

The literature on adult learning is vast; therefore, I focus on areas that are most relevant to my study in the context of health care and lifestyle change. I begin with definitions and contexts and then I review some of the major adult learning theories.

Definitions and Contexts

Recently, the Council of Ministers of Education (Powley, 2005) developed an adult education policy framework which recognizes adult learning as part of a lifelong process, the means of acquiring "the knowledge, skills, values, attitudes, and understanding they will require throughout their lifetimes as individuals, citizens, and workers" (p. 49). Knowles (Knowles, Holton, & Swenson, 1998) defines adult learning as "the process of adults gaining knowledge and expertise" (p. 49). Physiologically, the brain formulates meaning patterns from the barrage of internal and external messages it receives on a continual basis. Learning occurs when the meaning patterns are processed into concepts that enable the adult to make sense of the events and experiences (MacKeracher, 2004). Further, the brain connects new stimuli with previous memories and thus creates unique meaning. Recent research indicates that the healthy adult brain maintains much of this neuroflexibility throughout the aging process (Hill, 2001).

Learning occurs as a normal activity, regardless of outside encouragement, and involves making sense of, and then giving meaning to, events that occur throughout life (MacKeracher, 2004).

Relationships and values are integral to shaping consciousness and new learning (Hill, 2001). Learning occurs in concert with the interactions, the culture, the environment, and the learning tools within the learning context (Hansman, 2001). Fenwick (2000) describes learning as being intertwined with context, that is, learning occurs within the current situation of the individual. The cultural context goes beyond the immediate environment, but similarly, may influence learning because of language barriers or other difficulties experienced by individuals who may have different customs and approaches (Davy, 2006). Some postmodernists hold that learning can be viewed as completely context-based, that is, the content and truth of the learning shifts as quickly as the context does (Kilgore, 2001). In summary, a description of learning cannot exclude the unfolding interaction that occurs between individuals and their surrounding community.

Just as context holds influence, personal experience also flavours adult learning. Previous experiences inform how a learner interprets new information (MacKeracher, 2004). Knowles (Knowles, Holton, & Swenson, 1998) contends that the variety of life experiences unique to each adult partly explains the dynamic learning styles and needs exhibited by adult learners. Gender, race, class, education, and language influence the development of knowledge such that it becomes unique to the individual (Kilgore, 2001). Life transitions such as career changes, marriage, or unexpected illnesses result in periods of instability, which influence, through attention and reflection, the learning that takes place (Merriam, 2005). Indeed, the influence of experience is a key factor that distinguishes adult learning from learning in childhood. Whereas a child is creating experience from learning, an adult is using his or her life experience to understand and create learning (MacKeracher, 2004).

Adults hold their own personal idea of self and sense of self within the world. New information collides with this self-concept in ways that can either promote or prevent learning (Sinnott, 2005). Just as adults use previous knowledge to aid in learning, the same previous knowledge can be a potential barrier to any learning taking place (MacKeracher, 2004). This can be in the form of deeply held beliefs, ideas, or opinions that serve as closed doors to different perspectives or approaches (Knowles, Holton, & Swenson, 1998). Conversely, the adult may search within his or her experience base and find nothing with which to connect the new learning. This may result in withdrawal into a more comfortable situation, thus completely avoiding the learning process (MacKeracher, 2004). The importance of the definition and protection of the self becomes a critical factor when considering the ways of helping adults to make new meaning from new information.

Concepts and Theories

Once the nature and definition of learning are clear, defining principles and frameworks is the next step. Theories help to organize the general concepts around phenomena, thus giving form and direction for analysis of data obtained during research. Although, in the past, adult educators have striven to develop one unifying theory of adult learning, Merriam (2001) posits that “a prism of theories, ideas, and frameworks” (p. 96) allows us to see different aspects of adult learning, which all add to the overall understanding that is as dynamic as adult learners themselves. Learning about caring for one's health occurs both formally as planned health education and informally through experience of illness and recovery, and through interaction with the various elements of the health care system and the community as a whole.

In this section I explore theories of learning that are both foundational, such as andragogy and experiential learning, as well as more critical and post modern theories which increasingly acknowledge the role of the dynamic relationship between the learner and his or her world. Although transformative learning theory has been portrayed as a foundational adult learning theory (Merriam, 2001), I introduce it at the end of this section and then discuss it later in relation to lifestyle changes. The use of the tenets of transformative learning theory are almost non-existent in health care practice and it is the cornerstone of this thesis to illustrate the role transformative learning can play in an individual's journey back to health and wellness.

Andragogy

Andragogy describes a series of principles around the ways that adults learn. The philosophical basis of this theory is humanist (Elias & Merriam, 1995). The value of freedom and dignity of the person is fundamental to humanism. The goal of humanistic education is to fully enable the learner to achieve his or her full potential in all spheres of living. A key element in Knowles' (Knowles, Holton, & Swenson, 1998) theory of andragogy is the self-concept that assumes responsibility for the self. Knowles refers to the self-concept as the psychological definition of adulthood. It is the time when individuals want to become responsible for directing their own lives. In this way, andragogy advocates a style of education that is student-focused rather than teacher-focused (Elias & Merriam, 1995). In order for fruitful learning to take place, an adult needs to understand the relevance of the learning within his or her own reality. The adult learner becomes the leader in choosing what and how to learn and the teacher becomes the facilitator of the student's learning journey.

Knowles (Knowles, Holton, & Swenson, 1998) also acknowledges the life experiences that adult learners bring to the learning process. Previous knowledge shapes adult learning in various ways. It is the basis as well as the bias upon which new learning is built and thus affects the amount and type of learning that occurs. Secondly, it is the fundamental core of the adult's self identity and is therefore held by the adult to be precious and in need of protection. As new information is introduced, the adult connects it to his or her current related knowledge. If the information resembles the adult's current perception, it is processed and given meaning; if it does not, it may be resisted. In this way, the adult avoids potential threats to the sense of self. Lastly, previous knowledge explains the variety of learning styles, learning needs, and, conversely, learning resources that adults bring to every learning situation they encounter.

Andragogy places adult learning in the context of real life situations. Adults' readiness to learn is related to problems they confront within their current life (Knowles, Holton, & Swenson, 1998). In health care, the individuals facing imminent cardiac surgery are ready to learn about the nature of the ordeal they are about to experience; however, they will not be ready to learn about healthy lifestyle change until their incision is well healed and their post operative pain is under control. Knowles (Knowles, Holton, & Swenson, 1998) attributes problem-centred learning orientation to adult learners. Learners become motivated to learn when they think that in doing so, they will be able to deal with a task or problem that currently confronts them. The same heart surgery patients described above are sent home, if all goes well, four days after surgery. The primary caregiver during those early days at home (usually the partner or spouse) is quickly confronted with the problem of managing a physically fragile and mentally fatigued "patient" sporting a fresh surgical incision, a host of new medications, and a long list of potential problems. Understandably, the caregiver is often very motivated to learn what to expect, and how to deal with any complications that may arise.

In the Dedication section of his 5th edition of *The adult learner*, Knowles' theory of andragogy is described as having "provided insight that will guide the professions dedicated to adult learning into the next millennium" (p. v). As a nurse working in health education, this theory fits with my values and my own philosophy around helping people to learn. It will continue to have profound influence on the way patient education is developed and delivered.

Experiential Learning

Experiential learning is such a significant part of how an adult learns that it bears further exploration in this review. Past experience plays an important role in how adult patients navigate their recovery from cardiac events; a solid understanding and respect for this aspect of adult learning is critical. In this section, I explore experiential learning from the perspectives of constructivist theory, enactivism, informal and incidental learning, and experiential intelligence.

Constructivism refers to the idea of "constructing" new knowledge through a process of reflecting on experiences (Fenwick, 2000). An adult learner comes to any learning situation with embedded networks of knowledge and experience within which the new information is considered and reflected upon before meaning is constructed. Knowledge takes on a personal and unique form depending on the way it has been filtered through the individual's internal structures and external interactions.

Enactivism is a different way of viewing experience. Enactivism refers to the continual interaction between individuals and their environments (Torrance, 2005). The context is viewed as a system within which all elements, inclusive of the individual adult, other adults, culture, expectations, and relationships, are all engaged with one another. In this way, the adult is seen as being a dynamic part of the contextual system in which he or she is interacting. In the process of the interaction, both the adult and the context change (Fenwick, 2000). Enactivism uses the term co-emergence to explain the effect of interaction between learner and context. In education, the dynamic discourse among a group of adult learners will result in a series of continual adjustments, adaptations, and interactions—all of which are in response to the learning context. Both the adult learner and the learning environment will continually modulate themselves in response to one another. The importance of this theory in health care becomes readily apparent. Asking a patient to enact a new lifestyle that requires changing eating patterns, quitting smoking, and becoming more physically active does not take into account the elements of his or her personal and social context or the role played within that system. The primary difference between the constructivist and enactive view of experiential learning rests with the constructivist premise that the individual learns through interaction with the environment whereas with enactivism the co-emergence of both individual and environment occur throughout their constant and dynamic interconnections.

Lessons that are learned from life experience fall into the purview of informal and incidental learning (Marsick & Watkins, 2001). Informal learning occurs through learner-initiated activities and not necessarily within a classroom setting. Incidental learning occurs unintentionally in the process of other activities. The objectives, learning processes, duration, and application of content in informal learning are determined by the individual rather than by any externally imposed criteria for outcome evaluation (Livingstone, 2001). Incidental learning can also be described as tacit learning and is differentiated from informal learning in that it occurs without any predetermined goal or any recognized acquisition of new or significant knowledge.

Both types of learning are pervasive in the health care system. Incidences of informal or incidental learning occur often in response to unexpected events which generate a need or motivation to learn. The learning is not planned and it is not a particularly conscious activity; rather, it is a process of reflecting on new information, actively seeking to understand, and linking to others seeking similar learning (Marsick & Watkins, 2001). Informal learning occurs irregularly and can be more life-shaping than planned formal learning because it often occurs during moments of transition or at times when significant life events are occurring (Livingstone, 2001). The process of this type of learning centres on the fact that the triggers for learning are generated from everyday contexts. As the trigger occurs, the experience is examined, interpreted, and the need to form solutions results in new strategies to learn, act, and then learn from the action (Marsick & Watkins, 2001). In health care, new problems and new learning need flow continuously and are based on the individual-specific illness, the treatment, and the specific point in the continuum of care. At these intense moments, it is not always easy to learn and it is difficult to ensure that learning outcomes are fully met (Livingstone, 2001).

Strategies for enhancing this type of experiential learning are important for health care professionals. Assisting patients to reflect critically on the trigger will bring out associated values and start the process of looking at options and solutions. Encouraging a scan of their environment helps learners to identify what may enhance their options, as well as what might cause barriers to learning. Lastly, questioning the social structures and biases may help with framing the problem and developing more connected solutions (Marsick & Watkins, 2001).

Experiential intelligence refers to an individual's ability to transfer knowledge from one context to another (MacKeracher, 2004). This is not a static state in that the ability to transfer knowledge remains unchanged; rather socialization, contextual influences, and opportunity will influence this ability. Fenwick (2000) discusses the idea of learning in experience—even though one may learn a set of skills in the classroom, the skill set is reinvented every time it is applied in a different context. Sheckley and Bell (2006) argue that lived experiences are building blocks of the human consciousness, which, in turn, is the architect of human learning. Applying learning to different contexts continues its integration into the individual's knowledge base. Eventually, the ability to imagine how the learning can be applied in future scenarios occurs. This use of experiences encountered across settings is sometimes an elusive component of the learning for cardiac patients. In the hospital and cardiac rehabilitation setting, patients learn a set of skills around healthy eating and exercise; however, taking those new skills and enacting them in their home setting sometimes poses overwhelming challenges.

In summary, experiences serve to set a foundation upon which new adult learning occurs. Both the adult learner and the learning context are shaped by their ongoing interactions. Much of adult learning occurs as an unplanned and incidental process according to contextual trigger events that are often unexpected. Lastly, the transfer of learning across contexts can be enhanced by using experiences as the basis of learning.

Critical and Feminist Theories

The purpose of discussing critical theory is to relate this type of philosophy to adult learning in health care. Much of the teaching that occurs with cardiac patients revolves around getting patients to change to healthier lifestyle behaviours, to take the medications prescribed by the physician, to attend nutrition classes, to do physical activity most days of the week, and to adhere to all treatment recommendations. The teaching remains medically focused, illness-driven, and paternalistic. The various health care professionals, including nurses, physiotherapists, dieticians, social workers, physicians, and pharmacists, are the experts and the patients are not. If patients listen to the advice of the experts and do what they are told, they will become healthier people. Although this is a simplistic picture, it still points to the fact that learning is controlled, power levels are clearly evident, and the culture is only very recently starting to consider a more patient-centred approach. In this section, both critical theory and feminist theory are discussed.

Critical theory looks beyond the individual when considering adult learning and education. It considers how individuals or social classes who hold power may influence what is being learned for their own ends (Kilgore, 2001). Critical theorists believe that adults are not in a position to choose what they learn; rather, learning techniques influence the development of the adults' beliefs and values (Elias & Merriam, 1995). Knowledge is seen to be socially constructed and to be serving the interests of specific individuals and groups over the interests of other individuals and groups (Kilgore, 2001). In cardiovascular care, evidence-based guidelines inform the practices of health care professionals across the spectrum, providing both treatment recommendations and behavioural strategies which purport to change or facilitate patient compliance with care and interventions.

Critical theory also uses the term emancipatory knowledge, which alludes to the freedom of adults to learn beyond their perceived constraints (Cranton, 2003). Cranton uses the example of an individual believing that any health problem can be solved by medical intervention. For this individual, the experience of emancipatory learning would require that he or she change that paradigm to believe that there are solutions for health problems other than medical interventions.

Feminist theory takes into account gender disparities and how they influence learning. Foundational to feminist pedagogy is the need to recognize the oppression of women in society and to use adult learning to emancipate and empower women from the pervading model of education that has been structured by a male-dominated majority culture (Belenky, Clinchy, Goldberger, & Tarule, 1997). Merriam and Caffarella (1998) describe the goals of feminist theory to be "emancipation through rational discourse" (p. 363). As an exemplar of feminist learning in action, a case study of the Boston Women's Health Collective (Birden, 2002) focused on a group of women who, seeking to understand some of their health issues, began a series of regular meetings to learn about their own bodies. They used the current medical literature on the female body—which is written primarily by men—as a basis for discussions relating the facts to their own personal experiences. They soon began to discover that many of the "facts" did not relate to what they had lived. Their discovery began a process of questioning the literature, the medical system, and the traditional doctor-patient relationship. The women's questioning culminated with a women's health clinic, a series of courses for women about their bodies, a lobby group that effectively brought about changes in attitudes, education, and healthcare, and finally, a book containing not only health information but advice on how to communicate with physicians and within the medical system in order to get health care needs met. To summarize, the feminist educator is aware of how power influences learning, values the contribution of experience and discourse, and seeks to use the knowledge created to foster inclusion and empowerment of less advantaged groups.

Transformative Learning

Transformative learning was first described by Mezirow (1978) as a type of learning that is unique to the adult. Early definitions of transformative learning explored how individuals' assumptions about themselves and their world acted as a filter through which new experiences flowed. Mezirow called these assumptions "meaning perspectives" (p. 101). Since that time, research and further theoretical development have elaborated the transformative learning process.

Mezirow's cognitive approach explains meaning perspectives, also called frames of reference, as an individual's unique view of the world, which has been shaped by experiences, values, and beliefs (Baumgartner, 2001). Cranton (2003) explains a frame of reference as having two dimensions: a habit of mind and the resulting point of view. A habit of mind describes the inclination to use a similar process and personal filter to interpret experience so that, as new experiences occur, a similar mode of interpretation occurs. An individual's habits of mind develop from different aspects. How one knows and uses knowledge, the influence of culture and language, the general personality and self-concept, the moral framework, and the personal philosophies are different elements of habits of mind. The frames overlap, serving as the way meaning is ascribed to an experience and the way the overall meaning scheme is expressed as the individual's point of view.

However, throughout life, certain events occur that traditional learning processes are not capable of resolving. This leads to a questioning of traditional methods of understanding experiences and a rational process of challenging and changing ingrained perspectives. When an old habit of mind is replaced with more open views that result in different actions, transformative learning has taken place.

Mezirow (as citied in Dirkx, Mezirow, & Cranton, 2006) acknowledges that much of the act of learning does not occur within conscious awareness; rather it involves "emotional, intuitive, symbolic, imaginistic, and/or contemplative modes of learning" (p. 124). Mezirow describes the process of transformative learning, however, as a more deliberate recognition that some aspects of existing frames of reference may not fit with an individual's current situation or context. In this case, the individual may start a process of critically questioning the basis of current meaning perspectives and reframing them based on the new information or problem that is presented. This is followed by a testing of the new perspective, which may involve discourse with others (Mezirow, 2000) and, finally, taking associated action based on a new meaning structure. Mezirow (as cited in Dirkx, Mezirow, & Cranton, 2006) concludes by saying that transforming awareness is an objective of adult education.

Merriam (2005) describes transformative learning from a developmental perspective. Throughout adult life, there are stages of development and change that occur both naturally and as a result of the various roles that are part of adult life. As an adult experiences a transition or a slow or sudden movement from one stage of life to another, he or she experiences disequilibrium and is compelled to deal with the change that accompanies the transition. Transformative learning occurs throughout adult life events when individuals actively "engage" (Merriam, 2005, p. 9) with the experience and flow through the related stresses and emotions and emerge with new meanings and new ways of being themselves.

The recognition of the connection between the individual empowerment and the forces of society is a component of transformative learning (Baumgartner, 2002). Lange (2004) elaborates the emancipatory aspect of transformative learning in an action research study of adults in a university extension course focusing on making a more meaningful work/life balance. The increasing awareness of and connection to the broader social concerns within the political and cultural context fostered a sense of their position and role in questioning current societal values and taking restorative actions towards a more sustaining society of which they were now a part. The subsequent action of this kind of transformative learning involves defining and enacting new, wider roles, which encompass responsibilities towards community and environment.

Dirkx (as cited in Dirkx, Mezirow, & Cranton, 2006) describes the spiritual aspect of transformative learning as the impact that the "inner worlds" (p. 126) of individuals have on the making of meaning. Learning is experienced both rationally and in a deeply emotional, unconscious way which challenges not only the mind, but the soul as well. A nurturing transformative learning experience serves to bring a richer and fuller connection to our own inner voices and workings of our world.

Outcomes of Transformative Learning

Transformative learning results in a revision of the self and the self in relation to the world. The ability to function through change and to interpret new experiences develops (Merriam, 2005). Empowerment and increased self confidence related to greater understanding of new roles and relationships occurs at a personal level (Christopher, Dunnagan, Duncan, & Paul, 2001). Gaining control over daily life, having compassion for others, and devising strategies to begin to live according to new assumptions and perspectives are part of the new connectedness to the community. Deeper awareness and connection to inner energies which nurture new, extra-rational knowledge and learning add the spiritual dimension of a greater self knowledge (Dirkx, 1997). Ultimately, individuals become empowered to change their reality and, from a health care perspective, improve both their individual and social health (Travers, 1997). Lastly, although a new meaning perspective is not necessarily static; the nature of transformative learning renders impossible the return to the former way of thinking and being (Courtenay, Merriam, Reeves, & Baumgartner, 2000).

Health Education

In the health care setting, most patient-focused education is directed towards helping the individual manage with new health conditions or new medical treatments. Specific to the cardiac patient, the bulk of patient education is focused towards adapting healthy lifestyle behaviours to prevent further development of heart disease. Over the years, health education has evolved to a model that specifies intervention and evaluation methodologies based on a need to measure its impact on health-related outcomes

(Allegrante, 2006). Currently, scientific guidelines that inform health education interventions are driven by health behaviour change theories. Buchanan (2006) calls this the "medical model" (p. 294) and describes it as a process of making an educational diagnosis that requires specific interventions that will produce specific behavioural outcomes. In this section, the philosophical underpinnings of behaviourism are described. This is followed by an elaboration of three major health behaviour change theories. I end this section with a brief overview of a few research results that demonstrate these theories in action.

Philosophical Underpinnings

Philosophically, behaviourism is based on the idea that an individual's behaviour is the result of his or her interaction with the world (Elias & Merriam, 1995). In this respect, an individual is a distinct element within a universe that responds according to various stimuli (Knowles, Holton, & Swanson, 1998). The behaviour of human beings can be studied and understood by directly observing responses to a stimulus and the behaviour of human beings can be influenced by manipulating their environment to achieve the desired responses. Interventions based on behaviourism include setting objectives, measuring and observing resultant changes in behaviour, providing positive reinforcements for desired behaviour and negative feedback for undesired behaviour. Learning is about changing behaviour that is directly observable rather than influencing personal convictions or greater understanding of that which must be changed (Friberg & Scherman, 2005). Patient education in the cardiac setting is primarily informed by three health behaviour change theories: Social Cognitive Theory, the Transtheoretical Model of Health Behaviour Change, and the Theory of Reasoned Action/Planned Behaviour (Wise, 2001). Each theory specifies how the individual, the behaviour, and the relationship between these two variables cause various behaviours and then specifies interventions to change unhealthy behaviours (Noar & Zimmerman, 2005).

Social Cognitive Theory

Social Cognitive Theory (SCT) has primarily evolved through the work of Albert Bandura (Stone, 1998). The basic tenets of SCT state that an individual's behaviour is a result of the bi-directional influence of personal factors, the environment, and previous behaviour. This dynamic is termed Reciprocal Determinism, which means that human behaviour is both a response as well as an influence on external environmental stimuli. An example of reciprocal determinism in the cardiac rehabilitation setting is the patient's previous exercise history. Based on reciprocal determinism, it is expected that a patient who has exercised regularly in the past will have more confidence or self efficacy to start another exercise program compared to a patient who has never exercised before (Tulloch, 2007).

Self-efficacy is a central focus of SCT. Individuals' perceptions about their abilities and characteristics with respect to performing a specific behaviour successfully influence their actual ability to perform the behaviour (Bandura, 2004). Level of self-efficacy is affected by direct experience, vicarious experience, judgement of others, and the person's already existing knowledge of the behaviour (Tulloch, 2007). Decisions to change behaviour are influenced by the perceived outcomes; that is, the benefit of the change must be perceived as having a worthwhile effect on health (Bandura, 2004). From a social perspective, the new behaviour must be seen as in keeping with existing social relationships. Lastly, the individual must experience the new behaviour in a selfsatisfying way; it must fit with goals that are valued. According to SCT, anticipated responses to behaviour change occur from a physical, social, and self-satisfaction response (Bandura, 2004). From all three perspectives, there are either positive or negative consequences. Interventions to increase motivation to initiate behaviour change include helping individuals to understand how the new behaviour is in their self-interest or helping individuals to recognize and overcome perceived barriers to adopting the new behaviour. Research on interventions to enhance self-efficacy demonstrates outcomes such as increasing confidence in the ability to perform a specific behaviour (Nieuwenhuijsen, Zerper, Miner, & Epstein, 2006). Self-efficacy has not been shown to be applicable to engaging in multiple health-related behaviours nor has it been shown to affect the sense of overall well-being commonly associated with adoption of healthy behaviours (Nieuwenhuijsen, Zerper, Miner, & Epstein, 2006).

Transtheoretical Model of Health Behaviour Change

The Transtheoretical Model of Health Behaviour Change (TTM) has been primarily advanced by Prochaska and colleagues and has undergone development and testing over several years (as cited in Nieuwenhuijsen, Zerper, Miner, & Epstein, 2006). TTM is an integration of several theories of psychotherapy and behaviour change (Noar & Zimmerman, 2005) and views behaviour change along a continuum of stages of readiness to change (Prochaska & Velicer, 1997).

Readiness to change is defined according to five stages: precontemplation, contemplation, preparation, action, and maintenance (Nieuwenhuijsen, Zerper, Miner, & Epstein, 2006). A person defined as being in the precontemplation stage may not be ready to quit smoking whereas someone in the action stage may have started quit-smoking classes and nicotine replacement therapy. Precontemplation denotes not being ready to take any action towards adopting healthy behaviour. Individuals in precontemplation may be viewed as unmotivated or resistant to change. Contemplation involves moving to intent to change over the next few months. In this stage an individual knows that change is necessary but is more aware of the barriers at this point. Preparation involves planning to make the change by anticipating and strategizing to manage barriers. Action involves making the healthy lifestyle behaviour changes. Maintenance involves working to prevent relapse (Prochaska & Velicer, 1997).

TTM theory also identifies processes of change that individuals will use according to which stage of change they are in. Processes of change are either experientially-based and include activities such as consciousness-raising or self-re-evaluation, or behavioural in nature and include activities such as stimulus control or contingency management. Planned interventions to assist individuals to make behaviour changes are based on the identified stage of change. In the precontemplation stage, consciousness-raising such as increasing awareness of the options available to help with behaviour change or specific information about the health related risk factor is used. During contemplation and planning, self-efficacy support may be provided. During action phase, specific directives can be provided to help with stimulus control and management of relapses. Positive reinforcement accompanies the maintenance stage to increase confidence and belief that the new behaviour will have a positive health outcome (Nieuwenhuijsen, Zerper, Miner, & Epstein, 2006). Application of this model of behaviour change results in a more individualized approach to facilitating behaviour change. TTM articulates specific interventions based on the identified stage of change that have been instrumental in the success of smoking cessation and cardiac rehabilitation programs (Nieuwenhuijsen, Zerper, Miner, & Epstein, 2006).

Theory of Reasoned Action/Planned Behaviour

The theory of reasoned action/planned behaviour is predicated on the influence of individual attitudes and how they inform health behaviour (Noar & Zimmerman, 2005). Beliefs about behavioural outcomes and the value placed on the outcomes coupled with how others perceive the behaviour, influences the individual's intention to perform the behaviour. Additionally, how much individuals perceive that they have control over the behaviour will also influence their intention to perform the behaviour. In summary, the theory of reasoned action/behaviour predicts an individual's intention to perform certain behaviour by considering how much the individual perceives it will have a positive result, how much it is accepted by others, and how much control the individual has over performing the behaviour.

The success of the theories described above in initiating behaviour change is well documented throughout the literature (Noar & Zimmerman, 2005). However, despite ongoing development and research, the ability to maintain healthy changes over extended periods of time remains elusive (Nieuwenhuijsen, Zerper, Miner, & Epstein, 2006). Moore (2005) observes that the one-dimensional focus on specific behaviours misses the opportunity to help individuals make meaning from their change experience. Making meaning facilitates the development of new perspectives that can lead to multiple changes. Behavioural researchers point to many different questions that need to be answered in this rapidly growing field.

Transformative Learning in Health Care

Within the adult lifespan, it is almost universal that, at some point in time, a health-related crisis is going to occur (Wise & Owens, 2004). In this section I review studies where transformative learning has been the basis of the learning intervention. As discussed earlier, the emerging literature on learning in health care acknowledges the change to a more client-centred, holistic approach (RNAO, 2006). Of note, some of the studies presented are from an adult education perspective and describe transformative learning, whereas others are accounts of similar changes but use different terms. In these studies, the results are described in ways that sound similar to transformative learning and, where appropriate, I comment on the similarities.

In a study of clients with rheumatoid arthritis, Dubouloz, Laporte, Hall, Ashe, and Smith (2004) explore the transformation of meaning perspectives. Rheumatoid arthritis (RA), like any chronic illness, interferes with an individual's ability to function across the entire spectrum of his or her life. Living with RA requires making changes as per advice and prescription by health care practitioners. The particular example explored in Dubouloz et al.'s study is that of having to employ help-seeking strategies such as social support, or using various aids such as walkers and how, in order to meet those recommendations, the patients have to change their fundamental self-concept. They examined the process of changing meaning perspectives during a home-based occupational therapy intervention which entailed giving information, providing opportunity for self-reflection, and physically adapting the individual's living environment to facilitate health management. The primary questions explored by Dubouloz et al focused on identifying whether the participants' meaning perspectives changed throughout the intervention and, if so, determining if the change in meaning perspectives was related to a change in their ability to manage their daily lives through the use of the support aids provided. Their findings highlight three core meaning perspectives: independence, activity, and altruism. At the beginning of the study, these perspectives were part of the basis of the participants' self definitions, for example: viewing seeking social support as demeaning because it threatened their idea of their independence; or seeing the need to pace activity as self-diminishing because they saw themselves as very active and busy people; and, lastly, altruism, how taking care of other people was part of their self-definition and so, to ask for help themselves was an extremely negative experience. Throughout the intervention, the participants began to express new perspectives that highlighted their relating what they were learning about the disease and how seeking help, pacing work, and focusing on caring for the self resulted in a new definition of self-respect within which interdependence became the means of remaining productive, active, and independent. The findings and discussion part of this study explore perspective transformation using the idea of a deconstruction and subsequent reconstruction of meaning perspectives. The negative impact of the disease caused a conflict between the existing meaning perspectives and the actual actions of the individuals, resulting in their deconstruction. New awareness of their condition and critical reflection on new ideas of self-respect prompted a reconstruction of their core values based on modified meaning perspectives.

The rational and extra-rational process of transformation was the focus of Polipnik and Delevan's (2003) collective case study of individuals making the transition into a natural health lifestyle. The researchers explored perspective transformation through the participants' greater understanding of health to include the recognition that physical, mental, and spiritual health was inseparable and, from an ecological perspective, in continual interaction on many different levels as changes and adaptations occurred. A relevant finding was the nature of the critical reflection that participants experienced. Both rational and extra-rational processes occurred and the complex interaction between them resulted in new ways of knowing and understanding. The authors include rich descriptions of discourse and relational learning, yet also document that participants felt their decisions to change started from deep within, gradually permeated through to relationships, and ultimately, became a drive to start enacting social change. Finally, throughout the process of transformation, core values seemed to remain unchanged; rather, participants challenged and evolved their interpretation of these values in truer and more global ways.

Fundamental to transformative learning is the inability to go back to the old way of thinking, to the old perspectives. This was explored in a series of 3 studies over a period of 6 years with members of the same cohort of HIV-Positive adults (Baumgartner, 2005). In the original study, the process of making meaning and developing new perspectives was highlighted including the influence of emotions throughout the various phases and the positive role that support networks played (Courtenay, Merriam, & Reeves, 1998). The second study explored the stability of the meaning perspectives over time (Courtenay, Merriam, Reeves, & Baumgartner, 2000). In the original study the participants described wanting to make their life meaningful, developing an appreciation of their lives and world, and having a desire to be of service to others. The follow up interviews 2 years later demonstrated the same perspectives remained in place but, additionally, new meaning schemes that brought a future orientation, a need to care for oneself, and an integration rather than domination of HIV status over other aspects of life into the foreground were also developing. Courtenay, Merriam, and Reeves conclude the enduring nature of perspective change, and caution that, by this very virtue, adult educators who focus their practice on fostering perspective transformation need to be aware of the ethical implications of such an action.

As a further demonstration of the real implications of transformative learning, members of this same cohort of HIV-positive patients were followed up in a third study to look at meaning-making over time and stability of perspective transformation (Baumgartner, 2002). Baumgartner found that the perspective transformation from the first study remained stable and continued to be enacted. New meaning schemes, which came out during the second study (Courtenay, Merriam, Reeves, & Baumgartner, 2000), were also stable, and the results demonstrated an ongoing and continuous process of meaning-making, which include developing a greater understanding and tolerance of their fellow citizens over time. In a summary of the three studies, Baumgartner (2005) raises the social discourse aspect of the transformative learning process and its vital contribution to the solidifying and enactment of the change in world view. From the perspective of adult education, particularly in the health care setting, the findings from these three studies demonstrate that fostering transformative learning in patients can result in positive changes in personal health meanings and changes towards positive health practices.

With the prevalence of health care problems now arising from chronic conditions (Ontario Ministry of Health and Long Term Care, 2005) the nature of carrying out health care is requiring a more holistic approach—in many cases, the very difference between surviving or not is dependent on how individuals can change their health perspectives. It is evident that creating conditions to promote perspective change has a large role to play. And yet, the findings are sobering as well. Baumgartner (2005) continues to question how ethical it is to create conditions that will result in changing the way an individual views the world and how responsible will the facilitators of perspective change be for the changes that occur.

Ashe, Taylor, and Dubouloz (2005) further elaborate the influence of social discourse on transformative learning in their study of adults with arthritis in health education groups. They explored two different arthritis education groups to see whether the group experience contributed towards the transformation of acquired knowledge and skills to actual desired health outcomes. In their research analysis, Ashe et al. used the lens of transformative learning theory and ultimately isolated three themes: validating through connection, restructuring of the illness identity, and changing perceptions of the self and the symptoms of the disease. Under all three themes, the group discourse enabled participants to reflect on their disease and its severity and begin to understand that other management strategies were possible that, through an increasing sense of empowerment, they were able to start enacting themselves. In their conclusion, Ashe et al. describe one of the most important outcomes as occurring when "meaningful experiences defined new directions and understanding that encouraged participants' reflections on coping strategies that could lead to a more acceptable and liveable relationship with disease symptoms" (p. 287). The authors also reflect on the need to explore other education interventions through the transformative learning lens as a means to gaining a greater understanding of the nature of the lived experience of chronic disease.

An example of a health intervention designed and evaluated based on transformative learning theory is described in the Montana Educating Families to Achieve Independence in Montana (EDUFAIM) program (Christopher, Dunnagan, Duncan, & Paul, 2001), which was developed as part of a welfare reform strategy. EDUFAIM's methods involved using combinations of professional family educators and para-professional aides, who brought experience of living within the public assistance realm. Educational offerings were varied and participants in the program chose courses based on what they felt would help them to move towards a more independent lifestyle. Christopher et al evaluated the EDUFAIM program from a transformative learning perspective using open-ended interviews with 34 participants. Analysis of the interviews provided evidence that participants felt their own sense of empowerment developing and perceived fundamental changes in their self-perspectives within social relationships. Participants were able to articulate functional strategies for gaining agency, and described feeling a new connectedness with others in their learning community. However, evaluations were conducted at 3 months after completing the EDUFAIM program, so the authors may not have captured the breadth or depth of change given the short time. In summary, the researchers of this evaluative study found that authentic and caring facilitators were able to assist participants to develop new ways of being themselves and connecting to their community.

One of the outcomes ascribed to transformative learning theory focuses on increased empowerment. This was illustrated in a practical action research study with chronically ill seniors living at home (McWilliam, et al., 1997). It was a 12-week intervention consisting of 12 to 16 home visits where the professional and the individual participated in a reflective dialogue with the intention of creating new beliefs, values, understandings, and expectations about life and health. The ultimate goal of the study was to assist the individual to create a new meaning of health that involved new ways of being and doing. The target outcome of this intervention was to reduce hospitalization rates of chronically ill senior citizens. The findings brought out two themes described as "inextricably linked components of health promotion" (McWilliam, et al., 1997, p. 114). The first was evolving a therapeutic relationship and the second was bringing definitions of health into consciousness along with how each individual could reframe life and health conditions in more positive directions. The health professional and the participants interactively created a health promotion process that emerged through building trust and meaning, connecting, caring, mutual knowing, and mutual creating. In this way, both professional and participant together created new ways to pursue an individual fulfillment of health. The participants went on to experience a stance of empowerment that enabled them to start mobilizing resources and directing their own actions towards health. McWilliams et al. (1997) related the evolving empowerment not only to increased self understanding and not only to relationships but to the "holistic focus on the content and processes of conscious thought and relationship" (p. 119). The authors conclude by suggesting a connection between health promotion and empowerment through the creation of collaborative relationships and facilitation of self understanding.

Changes in behaviours were documented in this pilot study of an online, self-directed, computerized heart disease education program (Wise, Yun, & Shaw, 2000). The program was developed by a multi-disciplinary team of researchers and clinicians including the main author, Wise, who was the lone adult educator. The underlying assumption was that the cardiac event was a disorienting dilemma, which would serve as the basis for reframing meaning perspectives, and realigning actions to fit with new meanings. There were three components within the program: information, interactive tools, and communication opportunities with both peers and experts. The initial prototype was evaluated using statistical correlation tests, demonstrated that the only component that correlated positively with behaviour change was the tool that facilitated communication with peers and experts. When reviewing the quality of some of the peer interactions, the smoking cessation group tended to focus on how having a heart attack added to the intensity of the meaning of quitting smoking. The authors compared the effectiveness of social interaction to information-giving for helping adults address the many levels of change required to adopt a healthy lifestyle. They conclude that the facilitation of transformative learning into online learning environments would be a critical element and an ongoing challenge of online health learning. Beyond the pilot intervention, and with ongoing quality improvements to the program, ongoing randomized studies have demonstrated an improved quality of life, more efficient use of health care services, and a positive impact on integrating living with a chronic disease into daily life (Wise & Owens, 2004). Although the education program also includes health behaviour change strategies, it is the existential realities that patients state are their most pressing concerns. An ironic example is provided in the study where learning outcomes are measured after participation in the low-fat diet intervention, which, among other behaviour-focused interventions, includes a social support aspect. When the learning experiences were studied from a qualitative perspective, the results showed that, in many cases, the goal of the learners was not related to getting more information about diet; rather they were more concerned about having a means of sharing their fears, listening to ideas of other participants, and using the discourse to help them make meaning of their heart attack and of the new changes in healthy living. The purposeful seeking of discourse is similar to the results from the previous studies mentioned (Dubouloz, et al.,2004; Polipnik & Delevan 2003; Baumgartner, 2005; Ashe, Taylor, & Dubouloz, 2005; Christopher, Dunnagan, Duncan, & Paul, 2001; McWilliam, et al., 1997) in that, again, social support and dialogue becomes a key element of the meaning-making process in health and illness experiences.

Kearney and O'Sullivan (2003) completed an important literature review that used grounded theory analysis to synthesize the findings of fourteen different qualitative studies around health behaviour change. In this review, the behaviours studied were smoking cessation, exercise, dietary change, and substance abuse recovery. Both authors are Ph.D. nurses with no formal background in adult education. Their decision to complete this task centred on their observation that "despite the range of available models that have inspired health-focused interventions, nurses and others working in health promotion can observe that, for many clients and for nurses themselves, untapped influences persist in thwarting successful behaviour change" (p. 136). In their analysis, they sought to identify common key elements in each study that influenced and enabled lasting health behaviour change.

The results are a fascinating read for an adult educator and are presented as "key moments" (Kearney & O'Sullivan, 2003, p. 141). Initially, participants identified either a sudden or a growing awareness of distressing accumulated evidence that was incongruent with long standing values and goals. This ultimately resulted in a critical self appraisal that the authors labelled "Taking a hard look at myself" (p. 144) and was often augmented by the addition of appraisals from others. Testing the healthy behaviour followed after which participants would evaluate what their life or their identity might be like if they kept up the new behaviour. The sustaining factor in behaviour change was the consistent description of "seeing myself in a new light" (p .146). Lastly, the participants described building on the original behaviour change by adding new healthy changes such as "reading food labels" (p. 148) or examining other aspects of their lives and bringing them in synch with the revised identity. In summary, Kearney and O'Sullivan define "identity shifts" as constituting "turning points in behaviour change" (p. 134).

The description of the process of transformative learning provided in Chapter 1 includes the recognition of a disconnect between current frames of reference and an existing situation, followed by a critical questioning and reframing of current meaning perspectives, testing new perspectives through discourse with others and, finally, basing new actions on revised meaning structure. It is similar to the results of the grounded theory analysis (Kearney & O'Sullivan, 2003) and, again, points to the essence of changing the way one views oneself and acting on the new self definition. It is also in keeping with Moore's (2005) observations that when an intervention focuses solely on the particular behaviour, it loses the opportunity to help a person critically question and re-develop some of the more fundamental aspects of their values and beliefs.

As a concluding example, a group of cardiac patients undergoing an occupational therapy intervention were followed over a 6 month period to explore their processes of change (Dubouloz, Chevrier, & Savoie-Zajc, 2001). The authors interviewed 9 participants throughout the 6 month period and conducted an inductive analysis process on the results. The meaning of "work" was seen to have changed the most. Work became to seem less vital in and of itself; rather, the focus of the work became taking care and control of one's life. The process of critical reflection became a pivotal element within which the participants began to change their habits of mind and consequent points of view. In fact, the researchers in this study found that it was only after participants began a real process of critical reflection were they able to start deconstructing their old values and creating new ways of valuing themselves and their lives. As the participants created new meaning schemes around their health, their old habits of mind were changed to include more open definitions of their self concept that included re-balancing their lives.

Traditionally, occupational therapy interventions with cardiac patients focus on developing programs around energy conservation and counselling around healthy physical activity in the face of cardiac disease (Dubouloz, et al., 2001). Interestingly, the authors conclude this study by doing their own critical reflection on the role of the occupational therapist with respect to cardiac rehabilitation patients. They began to change their own ideas of the value of the occupational therapy intervention to becoming one of helping patients re-conceptualize the perception of work (occupation) to be that of modifying and balancing the activities of life. Secondly, they felt the role of the occupational therapist could help patients begin to construct new meaning schemes around personal change such that new perspectives could develop around supporting and maintaining the value of life, followed by self definitions and concepts of health.

Adult Learning Theory and Health Behaviour Change Theory

The primary goal for applying theories of health behaviour change is directed towards facilitating healthy lifestyle choices—whether they are management of cardiac risk factors or promoting adherence to taking medications. In keeping with the general philosophy of behaviourism, the success of these theories is based on measurable, observable outcomes such as quitting smoking or modifying cholesterol levels. However, it is important to mention that while the underlying philosophy of these theories is to change behaviour, there is frequent mention of the individual's beliefs and values as well as the social connection or bi-directional impact that occurs between the individual and their context. Van Dulmen et al. (2007) raise this point in a meta-review of studies related to facilitating patient adherence to care recommendations. In this extensive review of research, the authors are unable to conclude the effectiveness of any one health behaviour theory over another. However, in their discussion about the educational aspect of the adherence interventions studied, they note that patient education is a complex concept that is not aligned to a specific "cognitive or didactic theoretical model" (Van Dulmen, et al., 2007, p. 10). Instead, patient education seems to be part of most theory-based interventions but to varying, and often unstated, levels of intervention. Finally, Van Dulmen et al. conclude that conditions of education such as the quality of the relationship between the provider and the patient, the acknowledgement of the patient's subjective perceptions and affective components, and the involvement of the patient in the problem solving process seem to enhance the behaviour-based interventions. Other reviews (Bervin, 2005) point to the criticality of engaging through empowerment, fostering genuine dialogue, and making meaning as key approaches to fostering healthy behaviour change. In considering the elements of adult learning theory along with the behaviour focused approaches of health behaviour theories, it becomes clear that there is opportunity to harness elements of both in the domain of adult learning in health care.

Summary

At the beginning of this literature review, I wanted to develop a greater understanding of adult learning. In the health environment of today, the need to engage with adults around their health care activities is becoming an urgent and critical element of virtually every care strategy being currently used (Willison, 2006). The unique element of adult learning which differentiates it from learning in childhood is the use of the adult's experience as a means to understand and ascribe meaning to new information. In contrast, for a child, new learning is the means of creating an experience base. Once adult learning was defined, I discussed various theories of adult learning. In order to study phenomena, using the lens of a theoretical framework helps to organize and analyze information. Andragogy, which is based on a humanistic philosophy of learning, was explored along with other theories of experiential learning. I concluded this section with the presentation of transformative learning.

In the proceeding section, I discussed theories of health behaviour change. Using the philosophical underpinnings of behaviourism, I examined Social Cognitive Theory, the Transtheoretical Model of Behaviour Change, and the Theory of Reasoned Action/Planned Behaviour from the perspective of helping patients to change to healthy lifestyle behaviours. Social Cognitive Theory emphasizes the influence of an individual's sense of self efficacy when it comes to perceiving whether or not he or she will be able to successfully change his or her behaviour. Interventions to promote behaviour change focus on increasing the self efficacy perceptions. The Transtheoretical Model of Behaviour Change places behaviour change along a continuum of readiness to change and structures interventions according to the identified stage of change. The Theory of Reasoned Action/Planned Behaviour identifies the influence of beliefs about the behaviour, the influence of social context, and the perceived control as being pivotal to intention to change behaviour.

There is ample research to demonstrate measurable aspects of behaviour change using these theories as the basis of interventions but what is lacking is the ability of these types of interventions to sustain behaviour change. The point was raised at the end of this section that interventions strictly focused on the behaviour itself, rather than on the meaning of the behaviour for the person—thereby including his or her frames of reference and habits of mind—miss opportunities to help the person make new meaning structures. In the last part of this section, I explored what meaning making looks like in health care. Several qualitative studies that explored transformative learning, based interventions on transformative learning, or evaluated outcomes from a transformative learning perspective were presented. To describe the results, authors used adjectives such as empowerment, community connection, new identity, reconstructing perspectives, and reframing actions and ideals according to new interpretations of values. For most participants, changes seemed to occur on a fuller, deeper, richer level, that is, a sustained level, and functioned to promote more fundamental and sustaining actions which, in their own way, became the basis for even more, wider reaching and complex changes.

The potential of adult learning theory—especially transformative learning theory— to compliment interventions intended to influence health behaviour will be explored in the research project with respect to the ubiquitous presence of an adult educational component within health behaviour change theories. When habits of mind become more open and when reflection on the meaning of personal health occur, the possibilities for integrating healthy change into daily life become more apparent. This has many important implications for health care and needs to be placed in the forefront of future planning around more patient-centred, holistic, and, indeed, more effective forms of care.

CHAPTER 3: DESCRIPTION OF THE STUDY

The purpose of this thesis was to explore how transformative learning theory can inform health education strategies. The study focused on the experiences of individuals after participation in a cardiac rehabilitation program and their success or failure in maintaining healthy lifestyle change over the long term. The participants were all at least one year after their participation in the cardiac rehabilitation program. The research methodology included purposive sampling and semi-structured interviews. A full description of the methodology is presented in chapter 1. The interview guide was developed according to the constructs of transformative learning theory and is attached as Appendix A. The research question for this study was: How do patients, as adult learners, experience healthy lifestyle change? In this chapter, I will describe the process of participant recruitment and data gathering. I will follow with a presentation of the findings.

Recruitment Method

Once ethical approval was obtained both from the institute and the Research Ethics board at St. Francis Xavier University, selection of participants who had graduated at least one year earlier from the cardiac rehabilitation program commenced. In this particular program, "graduates" are followed up by a mail-out questionnaire and by blood tests one year after their participation. The institute uses a comprehensive database to document and track patient activity. The database contains the questionnaire responses, blood results, exercise test results and other relevant patient-related information such as weight, waist circumference, blood pressure measurement, and medication lists. I used the database to review patients for eligibility, to obtain all relevant measurements and results, and to obtain contact information. Participants were recruited based on the returned questionnaires and blood results: half of the participants were selected according to the data that showed they had maintained healthy lifestyles since graduating from the cardiac rehabilitation program and half were selected according to data showing they had not maintained healthy lifestyles since graduating from the cardiac rehabilitation program. The complete selection criteria are presented in Appendix B.

Once questionnaires and blood results were reviewed, I contacted potential participants by telephone. In order to prepare for these phone calls, I consulted with the Communications Department at the institute. We prepared a telephone script (Appendix C) that conformed to the institute guidelines and which was based on well-established principles of marketing communication. The goal of the telephone call was to introduce the study, to ask permission to mail out an information sheet and consent form, and to arrange to make a follow up phone call to answer questions and decide whether or not to participate. All 17 individuals contacted agreed to have the information sheet and consent form (Appendix D) mailed out to them.

After mailing out the information sheet and consent form, I contacted each potential participant again, answered any questions and, if they decided to participate, made arrangements to meet for the interview. Of the 17 potential participants contacted, 13 gave permission to be interviewed. Their characteristics are presented in Table 1.

Table 1
Participant Characteristics

Participant	Age	Sex	Diagnosis
Anna	58	F	Unstable Angina; Angioplasty/Stents
Andy	68	M	Unstable Angina; Angioplasty/Stents
Aiden	58	M	Unstable Angina; Angioplasty/Stents
Axel	58	M	Myocardial Infarction; Angioplasty/Stents
Arnie	61	M	Unstable Angina; Angioplasty/Stents
Allen	74	M	Unstable Angina; Angioplasty/Stents
Brian	57	M	Heart Failure
Bob	71	M	Coronary Artery Bypass Graft surgery
Bernard	67	M	Unstable Angina; Angioplasty/Stents
Bert	64	M	Coronary Artery Bypass Graft surgery
Brenda	62	F	Stable Angina
Bill	68	M	Myocardial Infarction/Coronary Artery Bypass Graft surgery
Ben	57	M	Coronary Artery Bypass Graft surgery

Note *Pseudonyms were used

Data Collection

There were two sources of data collection. The quantitative component of the data collection was obtained through the patient database housed in the cardiac rehabilitation centre. I recorded each participant's blood cholesterol level, blood pressure, weight, waist measurement, minutes of exercise per week, and, for the participants who were diabetic, the haemoglobin A_{1C} (HbA_{1C}) results. The HbA_{1C} is a blood test that reflects the stability of the individual's circulating blood sugar levels over prolonged periods of time. It is a more accurate reflection of the stability of the individual's diabetes than just a random blood sugar test. Each measurement was recorded for two different time points: the first time point was the time of entry into the cardiac rehabilitation program and the second time point was at one year after participation in the cardiac rehabilitation program. The quantitative values for each participant are presented in Table 2 along with the "healthy target parameters." These are the values that indicate that the result is within current recommendations.

In order to situate the values in Table 2, I will elaborate by giving a short description of two participants, one from each group. In Group A, Allen entered cardiac rehab a few weeks after his diagnosis of unstable angina and intervention of angioplasty and stent placement. Allen was assessed at the beginning of the program as being physically inactive; he did not do any kind of formal exercise on a regular basis. Allen's weight was documented as being 109.6 kilograms (kg) and his waist measurement was 122.5 centimetres (cm). Although the body mass index is not documented in Table 2, Allen's weight compared to his height put him past the "overweight" range into the "obese" range and his waist measurement placed him well above the normal for adult males (< 102 cm). Allen's cholesterol profile was measured as a low-density lipoprotein (LDL-C) of 1.7 mmol/L; high-density lipoprotein (HDL-C) of 1.8 mmol/L and a total cholesterol/HDL-C (TC/HDL-C) ratio of 2.9. These values fall within the range of normal and were at this level due to the cholesterol medications that were started a few weeks prior to his enrolment in cardiac rehab. Allen's blood pressure measured 140/70 millimetres of mercury (mmHg) which placed him at the high end of normal despite being on three different blood pressure lowering medications. After completion of cardiac rehab and continuation of healthy lifestyle activities, Allen's physical activity levels increased to 230 minutes of exercise per week. This translates to an average of 33 minutes per day of moderate physical activity (brisk outdoor walking and use of the treadmill on foul weather days in Allen's case) and falls within the recommendations for heart healthy physical activity. As a result, Allen's weight dropped by 12.4 kg which is greater than 10% of his body weight and over double the recommended weight loss of 5% of body weight. Allen's waist circumference decreased by 12.5 cm which still placed him outside the recommended maximum of 102 cm but, again, was a remarkable decrease. Allen's cholesterol profile remained stable and he even managed to increase his HDL-C which may be a result of both medication and his regular exercise regime. Allen's blood pressure also lowered to 115/65 which placed him at an optimal level. Allen's blood pressure medication remained unchanged from when he started cardiac rehab and yet his blood pressure dropped significantly. Allen reported an almost complete removal of salt from his diet which, along with his regular exercise regime, may have played a role in this result.

From Group B, Bill was admitted for coronary artery bypass graft (CABG) surgery and enrolled in cardiac rehab about six weeks after discharge. At the beginning of cardiac rehab, Bill reported 160 minutes of moderate exercise activity per week. This is below the recommended 210 minutes. At the end of 1 year, Bill's activity level had dropped to 45 minutes per week. Bill's weight started at 118.3 kg which, when compared to his height, placed him in the obese category; his waist measurement was 130 cm which was above the recommended 102 cm for men. At the end of one year, Bill's weight had increased to 123.6 kg and his waist measurement remained unchanged. Bill's cholesterol profile started out within the recommended target range and that was maintained one year later although both his LDL-C and his TC/HDL-C ratio increased slightly despite the cholesterol lowering medications. Bill's blood pressure started out being well controlled at 120/68 mmHg however at the end of one year it was measured at 142/80 mmHg which is dangerously high for an individual with both heart disease and diabetes. Lastly, Bill's HbA_{1C} started out being 5.7 which is within the recommended target of below 6 if possible. At the end of one year, it had risen to 6.2 indicating that his blood sugars were not being controlled on a regular basis and considered dangerous in an adult with both diabetes and heart disease. Bill reported that he had not felt the need to change his diet very much but that his increase in weight had made him consider joining a gym at some point in time.

In both Allen's and Bill's situation, the lifestyle changes they made, or not, were reflected in the quantitative data. Allen started and maintained a regular regime of moderate intensity exercise, consistency with his medications, and a healthy dietary intake and the outcomes of these changes were reflected in his weight loss, decreased waist circumference, healthy cholesterol profile, and optimal blood pressure. Bill reported no significant change towards a healthy lifestyle and subsequent measurements reflected an increase in his weight, no change in his waist measurement, a slight increase in his cholesterol profile, and what could be considered dangerous increases in both his blood pressure and his HbA_{1C}.

Table 2

Quantitative Values for Each Participant

Participant	Physical Activity (min/week)		Weight (kg) Waist (cm)		LDL-C (mmol/L) HDL-C (mmol/L) Ratio		Blood Pressure (mmHg)		HbA_{1C} (%) If diabetic	
Healthy Target Parameters:	> 210 min/wk		↓weight by 5% Waist: <88cm♀ <102cm♂		< 2.0 Increased < 4		< 140/90 < 130/80 if diabetic		< 6 if possible	
Time Points	Entry	1 yr	Entry	1 yr	Entry	1 yr	Entry	1 yr	Entry	1 yr
Anna	*140*	420	*72* *90*	68.4 86	1.3 0.9 3.1	1.5 1.2 2.7	104/ 60	128/ 70		
Andrew	*0*	480	*103.4* *110*	93.2 100	1.9 0.9 3.8	1.8 1.1 3.1	130/ 70	130/ 78		
Aiden	*100*	390	*94.5* *102.5*	90.0 96.5	1.9 1.4 2.7	1.7 1.7 2.3	130/ 80	113/ 81		
Axel	360	300	*95.4* *115.5*	88.0 *102.5*	1.1 0.9 2.8	1.1 1.2 2.4	110/ 80	102/ 54		
Arnie	240	400	*77.7* 100	72.9 89.5	1.3 1.3 2.1	*3.5* *1.9* *2.9*	106/ 54	122/ 61		
Allen	*0*	230	*109.6* *122.5*	97.2 *110*	1.7 1.1 2.9	1.8 1.2 2.9	*140/* *70*	115/ 65		
Brian	*0*	*180*	*97.7* *106*	*94.3* *102*	*4.1* 1.0 *6.0*	*3.8* 1.4 *6.0*	98/ 54	126/ 64		
Bob	450	315	59.1 80	60 *87.5*	1.3 1.1 2.5	1.2 1.5 2.1	124/ 74	*149/* *78*	5.7	*6.5*
Bernard	*100*	*0*	*98* *110*	*96.8* *111.8*	*2.4* 1.3 3.6	1.6 1.5 2.3	134/ 74	126/ 76		
Bert	210	265	*91.0* *111*	*93.2* *108*	1.4 1.3 3.4	1.6 *1.0* 3.4	114/ 60	130/ 74		
Brenda	*150*	*195*	64.3 75.5	*66.1* 74.5	1.7 1.5 2.3	1.9 *1.5* 2.5	*152/* *96*	120/ 86		
Bill	*160*	*45*	*118.3* *130*	*123.6* *130*	1.6 1.2 2.6	1.7 1.4 2.8	120/ 68	*142/* *80*	5.7	*6.2*
Ben	350	375	*85.8* *105*	*88.5* *105*	*2.1* 0.8 *4.5*	1.5 0.9 *4.5*	106/ 72	*125/* *85*	6.0	*7.2*

Note Regular font values indicate within target outcome; *Italic font value indicates outside target outcome*

The second source of data was the qualitative data that was generated during individual interviews with participants. The information sheet informed participants that the interview would be conducted in a location convenient to them. Eleven of the interviews were conducted at the institute and the other two were conducted in the participants' homes. For most of the participants the institute was easily accessible but 2 participants who lived an hour's drive away chose to be interviewed at home. Recorded interviews lasted from one hour to one and one half hours in length. They were transcribed verbatim and analyzed.

Findings

I present the findings according to the constructs of transformative learning theory. Within each construct, I present the findings first from those in Group A, those who maintained healthy changes, and then Group B, those who did not maintain healthy lifestyle changes. Participants in Group A either met or maintained the healthy target parameters at the one year time point or showed a trend towards meeting the healthy target parameters. Participants in Group B either did not meet the healthy target parameters at the one-year time point or showed a trend towards falling outside of the healthy target parameters.

In order to protect individual privacy, real names are not used, but in order to capture unique experiences and weave them through the analysis, individuals in Group A were assigned pseudonyms that started with "A" and individuals in group B were assigned pseudonyms that started with "B." Although the constructs of transformative learning inform the basic presentation template, there is one exception: the initial comments on participants' definitions of health. There will be a composite of the two groups for their definition health before the cardiac event.

Definition of Health

Since 1948, the World Health Organization has defined health as "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity" (WHO, 2008, FAQ section). Although participants in this study tended towards more operational descriptions, their views were similar to this definition. "Just being able to do the things I enjoyed doing" or "Having lots of energy to get up in the morning" were the kind of phrases most frequently used by participants to define health. Some participants described their status before the diagnosis of heart disease as being unhealthy and used that to articulate their view of health. For example, Axel started his definition with "why I say I was not healthy, I could not run say 100 meters; I was overweight; I used to call myself healthy instead of fat. Basically, I was not what a healthy person should be; I was not." Bill stated that he "wanted to be less big. I'd like to ensure I'm not going to hurt myself doing whatever it is I'm doing." Ben related his definition of health to the ability to carry out his roles, saying, "[In] about 25 years of work, if I could trace it, I think I missed four days because of illness. That's how I describe healthy." Similarly, Andy talked about his grandfather commitment, explaining, "I was looking after the grandkids everyday since 1994, the year I retired." Despite having other health problems, Bob described his health, saying, "I've had a prostate problem for almost 30 years now...I've been diabetic for about 12 years...but, in retrospect, I worked 35 years and only missed one day of work in 35 years." Allen's quotation sums up the general points of view expressed about health:

> I didn't consciously think of lifestyle or anything; never thought of nutrition; never thought of any of that kind of stuff. You just lived your life and that was all.

> You raise your kids, you go to work; you come home. I know the job was sometimes stressful for me, I knew that, because I was uptight a few times, but for the most part you know, even when I was under stress, I wouldn't think about that as a health problem. It just never occurred to me that that was a health problem. It was just something that would go away. I just have to stop doing this and it'll disappear.

Participants in both Group A and Group B understood their health as part of the spectrum of factors that enabled them to live independently, carry out their roles, and enjoy an acceptable level of quality of life. It was not in the forefront of their daily considerations, it was more an integrated component of their foundational character.

A Disorienting Dilemma: The Diagnosis of Heart Disease

The opening question for each interview focused on having the participant tell the story that culminates in a diagnosis of heart disease. For both groups, the experience of symptoms and diagnosis was unexpected and left them feeling fearful, anxious, and unable to understand how to be or what to do. In essence, they were faced with something outside of their usual system of responses. In the following paragraphs, I present first the dominant themes that emerged with Group A and then the dominant themes that emerged with Group B.

In group A, Axel and Anna were admitted to the emergency department with chest pain and received an urgent cardiac intervention. The other 4 participants experienced progressive bouts of chest pain which ultimately lead to medical consultation, diagnostic testing, and a diagnosis of heart disease, followed by an intervention plan. In describing the process of diagnosis, three dominant themes emerged in this group:

1. A sense of being confronted with something completely unexpected,
2. Not knowing what it meant to be ill, and

3. *An increasing feeling that they were unable to manage this event.*

As their conditions worsened and their symptoms became more pronounced, the participants remained completely unaware that there was anything wrong with their heart. As Anna explained, "I had lots of indigestion and I was taking all kinds of indigestion pills. I got to a neurologist for what I thought was another episode of vertigo, because I had vertigo episodes other times." Not surprisingly, the unexpected diagnosis led to immediate reactions of shock, fear, and even outright disbelief as in Arnie's case. He explained:

> I get this burning here a little bit. That was it. I knew there was nothing wrong with me you see. And even when they sent me here, for the first time, I knew we were wasting everybody's time...but I guess we weren't.

Having awareness of increased personal risk factors for heart disease did not lessen the surprise for Aidan:

> My mother had had heart problems and so my family doctor kept a closer watch on things. My cholesterol had always been high but my good cholesterol was always very high as well because I had always exercised fairly regularly. So I took a stress test and I guess 8.5 minutes into the stress test, they took me off the treadmill and said, "Sit down," and the next thing you know, the nurse runs out and grabs the doctor and he writes a prescription for nitroglycerin. I knew that wasn't a good sign.

The urgent nature of the diagnosis immediately impacted participants. Andy described his own impact as follows: "For the most part, I was scared – the unknown – not realizing what you're dealing with type of thing, and not really realizing where to go or what to do." And, finally, Anna felt the potentially imminent threat to life, saying, "It's a lot of worry, like, can they fix this or you know, is that it for me, like I'm never going to be able to do things. Am I going to wake up tomorrow morning?"

The second dominant theme for group A during diagnosis was a feeling of not knowing how to be ill or how to be a patient. Axel prefaced his story by explaining, "I should mention that me and the doctors do not have the best relationship." He went on to say, "I never thought there was a need to go see a doctor. I thought I would never get sick or I would think nothing of it, this little madness, this little pain that I had."

Having no experience with health problems left participants not knowing what steps to take. Arnie described his first consult with the physician, "He [the doctor] said that, 'Sometimes if you tell us stuff, it helps.' So, I am sitting there thinking, we have to tell him some things." When booked for the angiogram, Andy was told to shave his groin. He explained his reaction, saying:

> I did not have a clue as to what they were going to do…I said "like, whereabouts?" I'm serious…I asked, how will he know and what's he going to do, run something all throughout my body – running from my leg or my arm?

Axel described his increasing confusion as his chest pains became worse, explaining, "I started thinking, what should I do here? Should I go to the hospital, what should I do? Should I call an ambulance but no, that was way out of the question."

The final dominant theme from this group during diagnosis was the realization that they were not able to manage what was happening to them. Immediately after his angiogram, Allen asked about enrolling in cardiac rehabilitation because, "I have a problem here of some kind that I can't do anything about." At the same juncture, Arnie asked his doctor:

> So, I'm fixed? "No you're not fixed." [replied the doctor] So I knew that was a good start there. I knew I had to do something from now on because I'm not fixed but I've had a little repair and I have to keep it in working order.

Aidan described that feeling as, "I got the 'better take things seriously here" This came out more dramatically with Anna at discharge, who described her experience, saying:

> That night I guess, you're fine, you're home and everything you think is all going to be fine, and then I started to go into a sweat and I didn't feel good. ...and my husband phones 911 and he sort of just wanted to ask them if this was kind of a normal thing. They were going, okay, the ambulance is on the way. So, they came in and boom, I got back in the hospital but once they got me there and, I guess, calmed me down, everything went normal...so I don't know if it was just, you know, you're back home but you're afraid because you had nurses looking after you and now, all of a sudden, nobody.

In group B, Brian was diagnosed via a visit to the emergency department. The other 6 participants went through a similar experience to those in Group A: progressive symptoms, a planned diagnostic process, and an intervention plan. However, the dominant themes that emerged for Group B were somehow different:

1. A nagging anxiety, frustration with the process, and
2. A loss of trust in both the health care system and the health care professionals with whom they interacted.

The pervading emotional responses from this group during the diagnosis phase were more in the form of a nagging anxiety and an evolving disillusionment and frustration with the process. Bert described several episodes of shortness of breath related to panic attacks, saying, "The biggest thing was panic and it took a long time. It took me about a year to get over the panic." Brian described trying to cope with the diagnosis, explaining:

> Everything about it sort of caused me worry, not panic particularly, because once you know you're still alive there's no longer any panic, but there was a fair amount of worry because I had associated heart failure with being 90 years old and having to use a walker, and I had great difficulty conceiving of myself that, at the age of 56, being someone who would have to walk around using a walker and wheezing between sentences.

After being sent urgently to the hospital from his family doctor's office, Bob was then sent home with an appointment for a stress test:

> They did some tests, but they could not do the stress test because they were all booked up. So they said go home and if you have problems, call 911 and we will call you for a stress test. It took a week and during that week, I was a bit leery.

Similarly, Bernard was waiting to be contacted with his procedure date and received different phone calls giving different dates and instructions, “It’s a little disconcerting and when that happens I guess with the experiences I’ve had, the first thing you question is, does this person know what they’re doing?”

Bernard’s example above also illustrated his evolving loss of trust in the health care professionals that he was dealing with. Similarly, while in the hospital, Bob recounted an experience where the nurse was injecting a medication into his intravenous line that caused him sudden severe pain because, as it turned out, the intravenous had slipped out of his vein, “It hurt so much but I still reacted; I told the nurse to stop, stop, stop! Three days later I was really bad, I had a swollen arm with inflammation” Brenda described the dissonance between feeling that something was wrong and all the tests coming back normal, “So I went back to him and I said, ‘I really do feel this is angina, I know the ECG is normal but it’s just so typical of angina.’” Similarly, Bert described repeated doctor appointments, “I came back, I talked to the doctor and the doctor said, ‘there’s nothing wrong with your heart.’” Finally, Brian described his disillusionment after being re-admitted to the emergency department with an acute exacerbation of his condition. He questioned:

> that I could be turned loose and turned out onto the streets and not have been told, because as a layman, how am I supposed to know this, not have been told that this could recur and, in my case, recur without any warning…I was not told.

Brian began to lose trust in not only his physician but, also, in the whole way that the ways of communication within the health care system.

In summary, participants in Group B experienced prolonged bouts of anxiety and frustration that they were unable to obtain help from health care providers for management or support during the phase of diagnosis.

During diagnosis, Group A participants felt anxious because they were confronted with a completely unexpected event which they could not understand. They subsequently began to realize that it was beyond their ability to manage and were compelled to ask for help. In Group B, participants felt overwhelmingly anxious and were unable to receive the help that they needed when they needed it and, consequently, began to lose faith and trust in the system that was supposed to be there to help.

Critical Reflection

Self-examination with Feelings of Fear, Anger, Guilt, or Shame

Trying to process the event and acknowledging and responding to emotions is an integral component of the self-examination and critical reflection components of transformative learning (Taylor, 2000). Participants were asked to recount their own thoughts, emotions, and associated responses that occurred throughout their illness and cardiac rehabilitation experience.

A dominant theme that emerged from group A centred on participants not knowing and caring for their body. This was associated with emotional responses such as shame and anxiety. Participants tried to understand what caused their heart disease and this included critically examining lifestyle habits. Aidan described his creep in weight, explaining, “Because I would be exercising, I would have two helpings of things and feel justified.” Axel looked back at some of his eating practices, and described how:

> I used to love this ice cream, Rolo ice cream it’s called. I used to get a bucket and I’d taste it and by the time I finished tasting it, half of it was done. Why did I do

> this? Could I not settle for 2, 5, 10 spoons – did I have to eat half of it? That's a huge thing. So I don't know what you call that. What is that? Is that being a pig?

Acknowledging a weight problem was a common theme. In Allen's case, he "knew that I was overweight; I didn't do a damn thing." Or as Arnie stated, "Until I got this size, I knew I wasn't obese, but I was." Participants acknowledged an emotional component; Axel "said to myself, 'what an idiot you are, you don't do this, you don't do that, you eat like a pig, you drink like a pig." Participants also examined their methods of handling stress and came to conclusions similar to Andy. He admitted, "the stress, I never handled it well, I never did. I always thought I was over-employed, as the job was too much for me… I've had experiences with road rage and so on, and I've thought about that."

Participants also acknowledged not understanding their health, for example, Aidan commented, "Maybe in retrospect, perhaps I was tired." This prompted a critical examination of how they traditionally managed their symptoms, described by Axel:

> I would take Tylenol, 6-8 every day because I had a headache, or, I thought I had a headache; after the stent was put in, I haven't taken a single Tylenol…When I used to bend down, I used to get a bit of dizziness; I don't get this dizziness any more…the artery was being blocked and not putting through enough oxygen, but I would never have thought that way with just a headache. I was just plain ignorant about health.

Arnie had a similar insight:

> When it was over, I am sitting at the table and I am saying to my wife, 'that pain in my jaw is gone.' I had pain in my shoulder all the time, but I always thought it was just the dog pulling. Another thing I had was a hip. I knew they were going to have to give me a hip replacement because three years ago I started limping really badly. They gave me two stents and my hip and shoulder got better. You have to get blood there; you don't make the connection, you have no idea.

Anna described the development of a sense of urgency, whereupon she began to feel she might not have a tomorrow. She described this feeling of impending mortality as an ongoing and pervasive anxiety that has not abated to any great extent:

> Now I just feel like I have to be fast. I have to get it all in whereas before, I didn't have that. Now, it's like, no, I've got to do it now. I've got to get it done...I don't think it's good. I think I should kind of not think that way...I think I'm putting stress on myself because I think I have to hurry.

In group B, participants also examined their current and past lifestyles, looking for what may have caused the heart problem. Two distinct themes emerged which separated the group. The first was acceptance of their role in causing the problem. Conversely, the other part of the group rejected viewing any of their own actions as being problematic. However, both groups acknowledged feeling disappointment either in themselves, their bodies, or, in some cases, their beliefs about getting help.

Bernard and Bill, who were experiencing their second intervention and cardiac rehabilitation, acknowledged and accepted their role in the progression of their condition. Bill noted that his propensity to become bored with exercise was part of the problem:

> That's where I come back to what I said before about sustaining the motivation. If somebody gave me a bunch of things to do, I would do it. If somebody was there to reinforce them then they would get done. Just virtually every time, it gets to a point where I just don't want to. Not today, I'm not going to do it today, and then not today means not tomorrow, and then that chain is broken.

Bernard identified that he did not perceive that his health was threatened, saying, "I didn't see it as an earth shattering event. It should be a life changing event, but I didn't see it that I now have one foot in the grave and stuff like that." His associated emotional response was one of disappointment in self, evident as he said, "well, sort of a general feeling of disappointment that I let myself get into this."

The other participants underwent a similar self-examination and concluded that their own actions had not been problematic in the development of their heart problem. As Ben stated:

> I didn't feel like, oh my God, I've got to change the way I live...I'm convinced

> that my lifestyle, my life choices are within reason and I guess maybe making a drastic change meant somehow acknowledging that I was doing something wrong, and I didn't think I was.

Thus, they looked for other factors to attribute cause. Bob described his heart problem as being caused by the angioplasty, describing, "So, within a few minutes, they changed rooms and operated right away. I didn't have any damage though, but they caused the heart attack." The acknowledgement of having a family history of heart disease made Bernard render the diagnosis as inevitable, saying, "In some ways, I figured I should have expected it given the family history." Bert said, "I suppose it goes back to my father. My father had angina when he was about 62." Family history, coupled with co-morbidities, also contributed to that feeling of inevitability for Bob. "I blame it 90% of course that genetics doesn't help. Take the family history, take the diabetes, put that together and you're a candidate." Interestingly, Bert and Ben separated the coronary arteries from the heart and blamed the arteries for causing the problem, "My veins had been like that for 10 or 15 years but my heart is as strong as a horse...I was in real good health." Ben corrected a comment from the staff at the hospital, "Somebody said to me, 'you've gone through open-heart surgery.' And I said, 'Bullsh*t, I've gone through open-chest surgery; they didn't touch my heart, this is just a plumbing problem" Ben's following comment sums up this part for group B: "It took a long time to kind of recognize (a) I was not guilty of anything, and (b) that, hey, sh*t happens."

Disappointment that their bodies were not healthy was expressed in Brenda's words, "I felt like my body was breaking up...I lost confidence in my body." Brian used his schoolteacher background to describe his disappointment, saying "It took a while for me to get a clear understanding of what it [heart failure] meant – that my heart had failed." Bill expressed disappointment that he had not received the help he had expected from his health care team, complaining about the:

> Failure of the [name of the hospital] to deal with me adequately the first time…All the things they said they were going to deliver in terms of advice and counselling and all the rest of that, didn't happen – bottom line, I ended up with a triple bypass.

In Group B, the illness experience started out with feelings of frustration and anxiety. As they tried to understand what this new diagnosis meant they experienced emotions such as disappointment in themselves or in the health care system. In some cases, this led to blaming the health care system for their problems rather than critically examining their own role in the management of their health.

In Group A, participants reflected on their lack of knowledge about their bodies and about knowing how to care for their health. Emotions such as shame and anxiety were articulated. Group B acknowledged both acceptance in how they may have contributed to the development of heart disease or, conversely, a rejection of a cause and effect relationship between their lifestyle and the development of their heart problem. The emotional response of both elements in Group B was one of disappointment in themselves, their bodies, or with the support they received from the health care system.

Reflective Discourse

In transformative learning theory, the process of reflective discourse involves questioning one's own and others' assumptions and developing a more reliable and functional understanding of how to think about, and respond to, the initial presenting dilemma. This section of the interview included questions about interactions with family, friends, and health care professionals, what information they sought out, and how the interactions played a role in their understanding, planning, and decision-making.

Using discourse to clarify values about life and lifestyle, and finding and sharing information to broaden their understanding of how to be healthy were dominant themes in group A. Seeking empowering discourses and actively avoiding disempowering discourses was a common approach. In this way, participants were able to plan actions that they felt would fit with who they were. Andy began his recovery with a clarification of a critical value, explaining, "I said to myself that I would not live a life that won't let me live the quality of life I expect or be able to enjoy." Aidan reflected on where his sense of accountability fit in, stating, "I certainly don't want to be in the position where I'm carrying around an oxygen tank and having regrets about the small decisions that I should have made." Some participants translated this into specific outcomes that were important to who they were as in Arnie's case, who said,: "The physiotherapist said I couldn't play hockey again because my stress test METS weren't high enough, so my goal was to play hockey." The connection to family also became an important value for Anna, who said she wanted to enjoy her grandchildren. Similarly, Aidan said:

> My wife and I just celebrated our 35th wedding anniversary; the kids are all through school...so I look at that and say, "with all the support I have and things have been good so I'd kind of like to stick around to see how everything ends here."

Participants tended to seek out interactions that were positive and empowering. Arnie described his family support, explaining, "It made me feel good. They're not afraid of anything and so I'm not afraid of anything." Recognizing the critical need to share and interactively learn, Allen made his wife join the program with him, He explained, saying, "I got the GP to refer her and I said, 'I'm not going to do this unless you do it too because it would be kind of silly for me to go twice a week and you sit here waiting.'" Aidan talked about how he developed a tendency to socialize with other people who lived healthy lifestyles, saying:

> When I go out for a walk at lunch, there's certain people I know I can go to and they would be quite interested to go for a walk...maybe that's part of it, that you start choosing people to associate with that have a healthier lifestyle.

Andy connected with his group in the rehabilitation program, "There were about 20 of us there and it was nice to compare their experience to yours and so on." In the course of this interaction, Andy listened to other patients' stories and related them to his own experiences and strategies. He noted their approaches that were not "him" but suspended judgement and connected with others who he felt were more inspiring. He described this connection, saying:

> There was an individual, who I think was a serious diabetic. He walked with a cane and was very, very heavy. I remember seeing him eating a chocolate bar at snack time – maybe they have to do that, I don't know...One lady there worked hard, faithfully, she was so determined. She was kind of a role model because I liked her approach to things – she said, 'this is the best tool I can use, and I've got to use it.' That's the approach I took.

It was the same with interactions with health care professionals as Andy commented, "I worked out in her class all the time...and of course they would monitor your progress and evaluate your situation and it was improving" Developing a trusting relationship with a staff member enabled Anna to have an important sounding board. Anna described this relationship with a staff member, stating, "She would take the time and talk and listen. If I asked her some kind of advice, she always gave it. It was a real nice relationship." Seeing the cardiac rehabilitation staff as credible resources was important because as Allen stated, "These are professional people. They believe in what they're doing. They're not just paying lip service to it. They're talking the way they live themselves, and I think, 'Where have I been?'" Similarly, Andy perceived interactions with staff as empowering. He explained his interactions:

> They would challenge you and of course encourage you at the same time in regards to physical activity or your diet but, as I said earlier also, it went unsaid that they couldn't do it for me, we obviously have to do it for ourselves. They give us the tools to do this.

Conversely, participants talked about actively avoiding disempowering or negative conversations. Dealing with over-protective family members came up, as in Andy's case:

> I think they were very worried…I think sometimes probably to the point of worrying too much and trying to do too much for me and, all of a sudden I should change my lifestyle and just become, as I said before, officially a senior.

Andy went on to describe how the different messages he was receiving in cardiac rehab enabled him to "take control, I think, of the situation and asked them to kind of back off I guess, in a nice way." Aidan described ongoing attempts to get his spouse to exercise with him, "she thinks diametrically, she's opposed when it comes to exercise and I find that difficult because I say, 'let's put the bikes in the car and we'll go on some of the bike paths' and it's always no." Finally, in this category, participants avoided interactions with people who thought that they were looking for sympathy as Axel stated, "I think by telling someone, they probably think I'm looking for sympathy and that was definitely not the case."

Seeking knowledge about diet, exercise, and stress led the participants to plan how they were going to change and what they were going to change. Discussing options with family, friends, and staff enabled them to think about changes that would work for them. Even Axel who described himself as "not much of a talker" was able to effectively explore new ideas and different points of view. He explained, "I'm a listener, so someone talks and I listen and I hear things and out of everything they have to say there are some points that are good for me." Anna talked about interacting with fellow patients to exchange ideas and problem-solve: "We joined this new commerce club and there was another gentleman in the club who had an episode after me…when we get together we talk about the program because he was in the same thing." Aidan, who went back to a busy and stressful job after surgery, summed up this phase of exploring options and planning action:

> I think it's what you're aware of. What you're doing wrong or what you can change. That consciousness takes you to the small decisions you make…I'll make changes but I'll make them work where I feel I can best accept those changes.

Participants in group B were equally concerned about finding information and thinking about new ways of managing their new health condition; however, the dominant theme that emerged in this group was the lack of participation in meaningful and productive reflective discourse.

Several participants in this group felt they already knew what they needed to do or were already doing it and did not see a need to consider new information, as in Ben's situation, "I skipped the nutritional workshop because I had just recently done one related to diabetes. I'm also cognizant of all that stuff." Similarly, Bernard stated, "I think I had pretty much figured out what I wanted and I seemed to be getting it… there may have been things that I wasn't aware of or that I didn't appreciate, but I don't really think so." Bob was a little blunter:

> Nothing much; probably just the satisfaction from the people who asked me to come here. All I did here was walk around the thing…I understand that, for them, it's important because they do everything, they check your heart rate and all that, so I did it to carry on with the recommendation… but I didn't really learn anything from it.

Other participants were unable to find the kinds of conditions they needed in order for meaningful discourse to occur. For example, Brian had a different diagnosis than the majority of patients in cardiac rehabilitation and was unable to share and compare common information:

> It was a weird sort of caste system. It truly is. There was only me, the heart failure guy, and I would come up to people or they would come up to me and, you know, make small chat as you do, especially with your warm-up laps when everybody's walking; and the first question everybody asks you is, 'Well, how many stents?' If you don't have any, the conversation ends. All the stent people go and talk to the stent people because it's interesting.

Ben began the cardiac rehabilitation program but subsequently felt that he could not be part of this group of patients: "In looking around, most of the people were older than me and I kind of went, I'm not one of them. I don't want to be part of that club. These people are sick; I'm not."

In a similar vein, participants described being unable to engage health care professionals in any kind of meaningful dialogue. Bernard read extensively on diet because he became concerned about the possibility of developing diabetes. As a result of his reading, Bernard got caught up in several details that he could not sort out and his attempts to clarify with staff were frustrating, "They were answering my questions and they were going overboard sometimes if I asked a question…that was one of the information overload things." Bernard ran into another problem in that he was basing his understanding of heart disease on his mechanical engineering background, "When they started describing what was going on here, I was looking at this as a plumbing system and there is something gumming up the pipes." In that context, Bernard could not get his head around using a stent to flatten the plaque build up as opposed to "going in there and drill it out and draw it back the way a drill bit does and so it eventually it all comes out." Not being able to clarify that with the rehabilitation staff continued to bother him in that he did not feel that he had received the best type of intervention. I built on the plumbing analogy and talked about pipes being damaged by drills and being left with rough edges which ultimately causes a build up all over again. His immediate understanding or "ah ha" moment was gratifying to see but also concerning—he had been living with this confusion for 18 months.

Brenda, an experienced critical care nurse, was unable to connect with rehab staff using the type of terminology and interaction that she felt comfortable with:

> I was concerned because I had never been in bundle branch block [an abnormal heart rhythm] before. But I was told not to be concerned about it. Well, you know, having worked in Cardiac Intensive Care for ages, knowing I do get PVC's [abnormal heart beats], knowing that I did have angina...You know? I'm not your regular patient, I understand what's going on...I'm not trying to impress you with my knowledge, it's just the way I talk. I don't speak like a layperson when it comes to heart problems because I understand it and I want to use those words.

Brian described trying to initiate discussions with rehab staff about heart rate during different levels of activity and being unable to get the information, explaining, "Nobody would define that part for me, so here I have this beautifully, specifically defined number limit and then the parameters surrounding it are undefined."

In many cases, participants described dialogues with health care professionals that were positive and empowering and gave them new ideas and strategies that they began to consider and process. However, they were unable to take the new thoughts to key members in their life and plan how to operationalize them. In some cases it was spouses who were unable to participate productively in discussions about new ways of seeing the illness. Anxiety was one reason. As Brian said, "So, my wife was the person I spoke to and she was the person I would bounce things off of. Now I know it's very difficult for her and very stressful for her because it's an ongoing issue." In some situations it was illness, as with Bill's wife. Bill explained:

> Until she was having some problems with her feet, she would haul me out and we'd go for a walk. But, as her knees are not as strong as they used to be and she has plantar fasciitis and other problems with her toes.

Brenda felt unable to engage her spouse in talking about different ways of doing things because of her guilt about placing restrictions in what they did together:

> I feel guilty because what I want him to do is go off with our friends so that he doesn't feel like he's not enjoying himself to the fullest. I don't feel that he should have to live like I have to live because of my disease, whatever, because he doesn't have it. So, I'd really like him to continue to enjoy the activity that we're doing as much as he can do it; but he prefers to be with me.

Participants in Group B described a variety of situations that diminished their ability to engage in reflective dialogue with health care professionals or family members. This diminished the opportunity to clarify their knowledge base and make informed decisions about their health.

Participants in Group A were able to seek out empowering reflective discourse that enabled them to plan new actions, seek support for their decisions, and clarify their knowledge about their health and their heart problems. In Group B, participants were not able to maximize the opportunities provided by engaging in reflective conversations with family, other patients, or health care providers. This resulted in mis-information, isolation, and inability to make positive plans and decisions about their health.

Action and Change

Transformative learning cannot be said to have really taken place if there is no associated action. Although taking action can be fragmented and gradual, and may occur inconsistently, confidence in the new roles builds and the new way of thinking and being is integrated into everyday life. In this part of the interview, participants were asked about some of the changes they had actually made, how they made the changes, any problems they encountered along the way, and how the changes had affected both themselves and members of their family or personal community. The interview finished with participants articulating their definition of health.

Group A primarily wanted to make changes around diet and exercise so that they could lose weight and become fit. Only Arnie identified at the beginning of cardiac rehabilitation that he had trouble coping with stress; however, during these conversations, each participant articulated the role stress had played in their lives and that they had taken active steps to learn more about how to manage their stress.

In changing diet, Allen and his wife used an informed and critical approach to grocery shopping. Changing volume and type of food intake were the two dominant themes, as Allan described:

> We'd sit down and do a kind of a shopping list of things. When you actually get to the store you stick to that shopping list. One of the interesting things that the nutritionist said was that all supermarkets have the same light [layout]. If you walk around the outside perimeter of the supermarket, you get the healthy stuff. If you go in the middle, you get the crap...but here, you get the fruits and vegetable, the chicken, the dairy, and then you can come right back out.

Reading nutrition labels became part of grocery shopping. Participants expressed a heightened consciousness of looking at fat and salt content before putting the item into their shopping cart.

Participants decreased their volume of food intake even when eating with friends or in restaurants for example, in Anna's case, "So we get one plate and split it or get one plate and get a box and take the other thing home."

Participants used a variety of sources of information to support them while they made changes. For example, participants accessed recipe books, heart health books, nutrition workshops, and one-on-one interactions with health care professionals. The new knowledge enabled participants to experiment with new approaches and get feedback along the way. For example, when Arnie experienced the normal ebb and flow of weight loss progression, he was able to discuss his fears with the dietitian and get the information he needed to continue his efforts:

> One day, when I was losing weight, I would weigh myself and for a little while there I didn't lose any weight. It was 5 weeks actually and I was ready to give up. I thought, "what's the point; I can't get this weight off." She [dietitian] told me that lots of people are longer than 5 weeks.

Allen used the results of his physiologic measures to gauge his progress:

> I think one of the best things here is that they measured us, your waist, your weight, your height, you know, all this kind of stuff, and then they tested us again at the end of the 12 weeks, blood pressure of course, and pulse rate, all that. At the end of the year, we did the blood tests. So my blood sugar was something like 7.2 at the start of this program, and it's around 5 now.

The changes in exercise primarily involved learning how to walk and cycle in ways that were safe for the heart and effective for weight loss. Participants commented on how the supervision, learning how to take their pulse, learning correct heart rate targets, and learning what to look for with respect to abnormal responses enabled them to see the physical results. This began to increase their confidence and their commitment to keep up with the activity, for example, as Allen commented, "You just march around that old track and it was like a supervised program. After the program was over, we kept on walking." Arnie used what he learned about heart rates and heart rate parameters to continue to guide his activity. He explained, "I wear my heart rate monitor, when I get off the ice I make sure my heart rate comes down before I go back on." The idea of listening to their body was part of learning more about their physical responses as in Andy's case: "They would say, 'yeah, but you have to listen to your body; if you feel pain, then back off'" or, with Anna, more globally:

> It's an honest feeling because I know when I'm feeling on top of things now; I just feel good, ready to go, and I know the other feeling, when I really don't feel great today. I know there's something going on here.

Discussions about stress included not knowing the impact it had on daily life; for example, Arnie described:

> I had no idea how much stress I was under every day, because you just go to work and you're under stress. You knew some days it peaked – you knew those ones, but the others were like this zzzzzzz. I had no idea until I retired and thought, "holy frig, whew!"

Andy learned stress management strategies that included relaxation tapes, commenting, "The tape where you close your fist really tight and then you relax. It works for me." However, more importantly, participants discussed actually realizing that stress affected them, what their own particular definition of stress was, and what they could do about it. For example, Anna explained, "If I can do something about it, I do, and if I can't, I can't. If the stress is outside of me, I can't do anything about it…I wish I had learned that back when I was working." Axel was more succinct about his new strategy to replace eating when he was stressed, "I don't believe that because you're stressed out about something you better do something like eating. If you're stressed out, start running, burn some energy, and then get tired and go to bed."

Along the way, participants described some of their setbacks as in Axel's comment:

> I went for a walk, about an hour and a half, and I was really tired because I was sort of running too but I felt good. Then I passed by the Dairy Queen and I had an ice cream, a big one. It was nice. When I finished the cone, I felt so guilty, as if I had committed the biggest crime. I felt like a criminal, and I haven't had that kind of ice cream since.

Aidan described going into work over the weekend, "I went in and worked 6 hours on Saturday which I probably shouldn't have done…I guess if I do have a fear it's that I may slip back into this."

Participants described difficulties with side effects of medications and having to cope with the set backs posed by those realities. For Anna, "From all the medications, I had no energy, none at all. Then that kind of depressed me because here I could walk 3 -4 kilometres a day and now here I was back to taking baby steps." Allen talked about the cardiac medications making him impotent:

> Atenolol, and I can't do anything about it so we just accept it and that's it...I tried taking Viagra and it just gave me a headache, awful, awful headache...I've asked a couple of times if I can stop taking the Atenolol but the doctor said, "Not a good idea."

The permanence of medications was universally difficult. Side effects and accepting that no matter how their health improved, the medications would not change was difficult for participants in group A; that difficulty translated into troubled relationships with their physicians. For example, Arnie said, "I hardly talk to him because he, like all doctors, wants drugs, but he has different beliefs than I have...he can fix me with pills." However, the decision to continue stemmed from a commitment to their health and progress as Andy described:

> If you really want to keep enjoying a good quality of life and not just depend on drugs that will keep us alive but not give us the good quality of life aspect that I think we'd all like to have.

In describing their life and view of health, two themes came out, firstly, a new normal, and secondly, reaching out and sharing their new perspective with other people. The new normal included a different view of maintaining health as with Arnie, who said, "Some people set their goals to lose weight – I guess I did that too. Now I've reversed it. I never want to weigh 165 again. That's my goal." This included setting limits on their own activities as evident in Allen's story about helping his three sons build a workshop out in the woods, saying, "So I was out dragging planks around, offering advice and assistance…they don't ask me to do things they don't think I can do. I tell them. I can't do that. Don't expect me to get up that ladder…They accept that." The new normal also included limits about the extent of the changes they would make. As Allen said:

> They [doctors] recommend something like 185 (lbs). It's not possible… I'm comfortable at 210. I got two pant sizes off. I'm a 38 [waist] now. Great! I've had to throw away a lot of pants, and a 38 waist is really good for me.

Axel reiterated his feelings about doctors and wanting to avoid hospitals with a slight twist, saying, "I don't like doctors. When I say that – I love doctors and think they do a wonderful job, but me having to go see a doctor; that is not my cup of tea. If I'm to stay healthy, I'd better go see a doctor once in a while for a little check up." Finally, the new normal did not include a change in self identity. For example, Arnie stated, "Everything's normal, but the normal is different" or as Allen explained, "I don't think I changed who we are or anything just changed the way we do things." Axel summed up this new view by describing his response when people asked him why he lost all the weight: "They'd ask, 'Why'd you do this?' I said, 'I just started acting like a human being, that's all.'"

Finally, participants described reaching out to members of their community in ways that they felt would help. Andy got his family into the family heart health program, Anna spent time getting her elderly neighbour out for walks, and Arnie helped friends to start weight loss programs. Aidan got his employees together and set limits for eating lunch at their desk, "I think they [employees] emulate their supervisors and they may feel that's what the expectation is…I say, 'well, I'm not going to be at my desk for this period of time for my lunch.'" Axel felt he did not have any possibility of helping people to become more heart healthy and so he did what he could to help:

> The only thing I can do – when they give out that questionnaire like you did, they gave another one before, or you know, they took blood for research – that's the least I can do…maybe somebody will read this to someone down the road and to change someone's mind is good enough.

At the end, I asked participants if they thought they were healthy according to their definition of health. Responses were similar to Allen, who said, "Absolutely!" or Axel, who explained, "I would say I am very healthy now…I can do a lot of things that I was not able to do before. I can breathe much easier…I don't get this dizziness. That's done. I'm much, much healthier." For Anna, being healthy also meant knowing how to care for herself: "Now it's just making sure that in every day, you have your exercise and you have your fresh air by going outside, and you're just eating well. That's in every day. You don't miss."

In group B, participants identified wanting to lose weight, control blood sugars, healthy diet, and exercise. Similarly to group A, participants developed an increased awareness of the effects of stress in their lives and were able to talk about some of the strategies they have developed to manage. Changes around eating and exercise practices reported were either described as minor or more around increasing awareness, but not actually making the change. Stories of significant setbacks and difficultly rebounding came out. Overall, a sense of either going slowly but not there yet or, conversely, resignation and acceptance of the current status were the two prevailing themes that emerged from this final part of the interview.

Diet changes consisted of primarily decreasing fats and salt and increasing fibre. Participants gathered information from a variety of sources including the dietitian, and were able to decide how to or whether to change their eating habits. Brian and Bert described switching to more heart healthy diets. Brian assumed the role of cook, "I became the cook in the family after that and our whole lifestyle in terms of what we eat changed." Brenda, Ben, and Bob reported only seeing it necessary to make minor changes. For example Bob said, "I have made some adjustments, more fibre, fewer fruit juices, that's as much adaptation for diabetes as it is for heart." Bill and Bernard reported that they had a heightened awareness of their diets and knew what they had to do.

For this group, exercising consisted of walking and cycling. Participants who already walked or cycled regularly reported continuing in this pattern and, for the most part, did not see any value in doing the supervised track exercises: "I don't think they could have told me much more." said Bob. Others started exercising on the track but did not maintain the pattern and acknowledged that they needed to find other ways of getting physically active. For example, Bill described how much he disliked walking to the point that he would rather read a book that he did not like than go walking, saying:

> I should be out walking but I'll do it for three days and say, "To hell with it," I've got other things that are much more fun to do like picking up a book that I don't like and reading it.

Bill also described his love for curling and discussed it with the staff in rehab only to receive disconfirming feedback as to its usefulness as exercise. "I love curling…The reason I don't want to skip is the amount of sweeping that I'm able to do. In this building [the institute] it may not make any sense, but to me, it's a cardiovascular exercise," he said.

When discussing the impact of stress in their lives, different themes were expressed with this group. Half of this group felt there were no stressors in their lives and therefore did not see the need to explore it any more or make any changes. The other part of the group identified continuous stressors related to ongoing effects of their illness or treatment. In this group, significant attempts to control stress and anxiety continued to be made and slowly developing insights and successes were being experienced by participants. Bert was referred to a counsellor and placed on a prescription of anti-anxiety medication. Throughout his meetings with the counsellor which occurred during his participation in cardiac rehabilitation, he was able to understand what his own meaning of stress was, how it affected his body, and how he could change his perspective and approach. He describes his result, explaining, "I don't take medication for it anymore. I don't think I've had medication in about three months now…I don't worry at night. That, to me is an accomplishment. If I can sleep at night and walk in the daytime." Bill learned about new ways to control his anger, exemplified by the following comment:

> I find myself catching myself when the discussion is starting to turn into anger. When it happens or maybe when it has just happened, I shut up and clam up because I don't like what happens to me if I continue down that line.

In contrast, Brenda learned that her anxiety was not solvable:

> I can't think of any other way…so I know it sounds silly…there's no joy in it but I'm going on it, but I'm always nervous…so I'm pushing myself to do it and it's really hard on me because my legs hurt, I feel weak, I feel like sometimes I can't get my breath.

All three participants developed a different perspective as a result of their above experiences: "It means I'm getting older," said Bill, "I'm not the same person. I'm definitely not the same person I was 10 – 15 years ago."

Group B experienced significant set backs along the way—setbacks from which they had trouble moving forward. Medication side effects were, for some, including Brenda, debilitating:

> Metoprolol makes you very weak and it wasn't even a month when I started to

> feel it. I've heard athletes talk about hitting the wall…I know that feeling of hitting the wall, when you're going and all of a sudden your chest just won't expand or you feel like it can't expand so that you can breathe properly.

Repeated, non-productive encounters with health care professionals in the form of repeat admissions to the emergency department, complications from procedures, medication miscommunications, or, as in Brian's case, a significant and completely unexpected exacerbation were profound experiences to recover from. He said, "I got the impression, reinforced by everyone around me, that I was cured and that I had beaten this thing. I had no idea that this could recur." There were difficulties expressed around working with health care professionals to problem solve. For example, Brenda made many attempts to discuss the profound effects that the medication was having on all aspects of her life. She explained, "I see my family doctor every three months because she wants to keep an eye on my blood pressure and I get tired of hearing myself saying the same things so I just kind of stopped…I've given up" . For Bernard, his difficulties centred around his exercise regime: "I told them at the very beginning my dislike of the treadmill and the young lady put me half-time walking around the track at such and such a rate, and half-time on that stupid treadmill." Bill expressed it more bluntly: "No, it was more, 'do as you're told, or try to do as you're told.'"

When asked to describe how they have been affected or how they were now living their life, the dominant theme was one of resigned acceptance that the "new normal" is of much less quality than what it was like before. Decreased physical strength and decreased energy and passion became part of the new way of being. This is evident in Brenda's comment: "That's by far the hardest part—accepting the fact that there might be any kind of physical limitation." Brian described considering going on a driving trip:

> Before this happening to me, not a second thought I would drive 1000 kilometres a day for 10 days straight and it's no big deal. With this happening, we're just not going to do it...it's me thinking "Well, I don't want to do this and take the risk" ...because I don't know what the cause of it is, no-one knows.

Ben described his thoughts about dating, commenting:

> I find a lot of the women that I meet; they're shopping for a mate more than just go out and have a good time. You almost get the feeling they're looking at a horse and checking his teeth. Admitting that you have heart disease is like "Oh, there go your chances of getting laid." So I just don't go there.

However, a theme of not quite being finished or of recognizing that there was more work to be done and plans to be made around making health did emerge. When group B discussed their new definition of health, they included some of their changes in how they felt and some of their future plans for meeting that definition. When considering the limitations placed upon him by his health, Brian recounted his visit to the mall to buy luggage with wheels: "So now we have pull suitcases. It's quite obvious that now even I am buying into the idea that maybe there are certain things I don't have to do." Bob talked about the experience of praying with his friends: "So we prayed together. This fellow is Jewish and I'm Catholic and we're very good friends...It doesn't matter what you are. You respect and support each other." Although initially Bill presented himself as a bit of a rebel and talked about "that voice with the red hair [his wife]" as being the only reason he had started working on changing his diet, he then went on to disclose that, despite his wife being away, he had not gone out to buy pork chops [his favourite food]. I asked him if that meant he was developing his own "little voice" to which he responded in his unique and spirited way, exclaiming, "I hate it, you're right, dammit!" Ben also admitted to starting a slow process of learning to live with heart disease when he made a decision to buy a warmer winter jacket:

> I don't know; I need a new jacket. But I immediately went to, "I think this is a result of the heart surgery," which is kind of interesting. You know if it really doesn't bother you, how come you're using that as a reason…the fact that I would even conclude that, I guess suggests that maybe it has a greater influence on me than I'm prepared to acknowledge consciously.

However, he went on to emphasize how long and slow this process of acceptance was going to be, saying, "They sent me a membership card, but I don't go to the meetings."

Summary

Table 3: Summary of Data

Theoretical Construct	Group A	Group B
▸ A disorienting dilemma	• Being confronted with something unexpected • Not knowing what it meant to be ill • Increasingly feeling unable to manage what was happening	• A nagging anxiety, frustration with the process • Loss of trust in both the health care system and the health care professionals with whom they interacted.
▸ Self examination with feelings of fear, anger, guilt, or shame	• Recognition that they did not know or care for their bodies • Feelings of shame and anxiety	• Acceptance of their role in causing the problem • Rejecting the idea that their own actions may have caused the health problem • Feelings of disappointment
▸ Reflective discourse	• Clarified values • Finding and sharing new information • Seeking empowering discourse	• Lack of participation in meaningful and productive discourse
▸ Action and change	• Made changes around diet, exercise, and stress management • Experienced a "new normal" that did not alter essential self-identity	• Minor changes in diet and exercise • Significant setbacks experienced • Experienced a "new normal" that diminished self-identity

The experience of being diagnosed with heart disease was a process laden with distress and anxiety for both group A and group B. Participants described being disappointed in their lack of awareness about their health and being ashamed that they had not taken better care of themselves. Group B differed in that they had a heightened level of anxiety, frustration, and loss of trust throughout the diagnosis and treatment phases of their experience. Both group A and group B identified wanting to make diet and exercise changes, and both groups learned throughout their participation in cardiac rehabilitation that stress was also a factor in their lives. Group A was able to participate in meaningful discourse with family members or with members of the health care team. Group B was not able to have meaningful dialogue for a variety of reasons and this resulted in difficulties understanding information and making mindful changes. In some cases participants in Group B demonstrated significant gaps in their knowledge about the disease. Although both groups experienced setbacks throughout the course of their recovery, group B described a variety of very stressful and frustrating events that impacted on their ability to get the support and interaction that they needed throughout the experience. When articulating their updated definitions of health, group A felt they were more healthy and active than before. Group A also described sharing this new energy with other members in their family or social community. Group B felt that their health had been negatively impacted and that they still had more work to do before they would begin to feel healthy again; however, most members of group B also described actions that indicated they were still considering new plans and approaches for managing their heart health. In the next chapter, I will present the analysis of the findings.

CHAPTER 4: DISCUSSION AND CONCLUSION

This research study investigated how adult learning theory can inform health education in a cardiac rehabilitation program. The research methodology used a mixed methods approach where quantitative parameters informed the selection and classification of participants and qualitative interviews generated the data. The purpose of the interviews was to gain greater understanding of the experience of participants in their ability or failure to maintain healthy lifestyles after participation in cardiac rehabilitation. Transformative learning theory focused both the interview guide and the presentation of findings. Participants were all cardiac patients who had completed the cardiac rehabilitation program at least one year prior to the interview. In using this theory, one of the major assumptions was that a diagnosis of heart disease was significant enough to be considered a disorienting dilemma.

In the first part of this chapter, I evaluate the research methodology used with respect to its success in generating relevant and appropriate data. The second part is an analysis of the actual findings. The analysis is presented in four major sections: the challenge of an illness diagnosis to the concept of self, the influence of emotions, the role of reflective discourse in adult learning, and the way that learning influences change. In the conclusion that follows, I discuss how this study demonstrates the utility of transformative learning theory to inform health education and health educators, specifically in a cardiac rehabilitation program.

Research Methodology

In the evaluation of the methodology used, I considered whether it was an effective means of generating the kind of information relevant to the purpose of this study. For this study, quantitative and qualitative methods were used in data collection. The main components of the methodology were the use of purposeful sampling, the division of the sample into two different groups, using the constructs of transformative learning to inform the interview guide, and the use of semi-structured interviews.

The participants in this study were initially approached based on a set of defined criteria. This is called purposive sampling and its purpose is to allow for the selection of rich sources of specific information pertinent to the study (Devers & Frankel, 2000). In this study, choosing potential participants based on whether they had or had not maintained healthy lifestyle change enabled access to individuals who manifested the expected outcomes of participation in cardiac rehabilitation, as well as individuals who disconfirmed the expected outcomes; therefore, greater insight was provided. The use of "negative cases" (Morse, Barret, Mayan, Olson, & Spiers, 2002, p. 5) is also advocated as a method to attain trustworthiness.

Using the constructs of transformative learning to inform the guide for the semi-structured interviews is advocated particularly for novice researchers (Polipnick & Delevan, 2003). Using an existing framework also can help to focus the research question (Hsieh & Shannon, 2005). Both of these points were relevant in this study. As a novice researcher, structuring the interview guide added to the relevance and reliability of the information as it provided consistent data collection. It also provided an audit trail that could be followed for both secondary analysis and study replication. Finally, it was appropriate for this study as the main purpose was to extend the understanding and possible future application of transformative learning theory in health education. Furthermore, using the constructs of transformative learning theory in the interviews allowed me to develop a better understanding of how they could be applied to adult learning in this particular context.

The semi-structured interviews were a useful means of encouraging the participants to tell their stories and allowed me to gain access to the experiences of each participant and the meaning they ascribed to their experience. The participants' stories situated their health care encounters within their personal circumstances and presented the reality and impact of their experience from their personal frame of reference—where meaning making ultimately occurs (Gilgun, 2006; Vanderford, Jenks, & Sharf, 1997).

Finally, the use of mixed methodology was an effective element of this study. Tobin and Begley (2004) describe the use of "Between Method Triangulation" as a means of overcoming "the deficiencies intrinsic to a single-investigator, single-theory, or single method study, thus increasing the validity of the findings" (p. 393). Using a quantitative approach to determine who was maintaining healthy lifestyle changes and who was not removed the possibility that my personal bias might influence the delineation. Blood pressure measurements, weights, waist measurements, and cholesterol results are not subjective and thus they represent consistent criteria upon which to classify each participant. Based on that initial quantitative selection, the qualitative findings gained in validity and completeness within the confines of this study. In summary, the research methodology provided a consistent means of recruiting participants who were rich resources for this study. It outlined a clear trail that could be followed for the purposes of both auditing the study and replicating it and, lastly, it provided relevant information about how the participants ascribed meaning to their experiences throughout their health crisis. The findings contribute valuable information for professionals working within the cardiac rehabilitation setting; they also set the stage for further research and development of learning interventions for this same population.

Data Analysis

Four themes emerged from data analysis which related to key elements of adult learners and adult learning theory. The first theme highlights the challenge that a sudden illness presents to the self concept inherent in every adult learner. As discussed in chapter 2, the self concept is a conglomerate of knowledge, experiences, and perspectives through which we process and understand new information. The definition of who we are has an influence on how we make meaning of unexpected events such as a sudden illness. The second theme is that of the role of emotions in adult learning. Participants in both groups experienced a range of emotional responses which affected both what and how they learned. Thirdly, the role of discourse in adult learning played prominently in this study in that there was a marked difference in the ability to engage in empowering, reflective discourse between participants in Group A and Group B. The final theme that emerged was that of making change. The final construct of transformative learning theory is that of enacting or making change based on broader or truer perspectives. The basis of this study was to explore individuals who had maintained healthy changes compared to individuals who had not and these differences are elaborated in this final section.

The Challenge of Illness to Self Concept

The participants in this study experienced a sudden change in their health status. The health of a person is part of his or her personal frame of reference or sense of self. Mezirow (2000) describes a frame of reference as, "the structure of assumptions and expectations through which we filter sense impression" (p. 16). Furthermore, MacKeracher (2004) describes adults as having an established sense of self that has developed as a result of whole life experiences, relationships, and interactions with the world. Part of this self definition includes the way adults perceive the elements of their physical body or as Bill commented, "health is something that would be part of me but not a conscious part of me."

When an individual's health status changes suddenly, it challenges an established core frame of reference and that dissonance becomes a problem when trying to understand or make meaning from the experience. The challenge to the existing frame of reference was a common element in each participant's experience that became the disorientating dilemma. It resulted in a cascade of reactions. Not being aware, not knowing what to do, and finally, knowing that they needed help predominated in group A. Group B had similar reactions but, additionally, they also experienced an associated element of prolonged anxiety, frustration, and loss of trust because of delays in diagnosis and disempowering interactions with health care professionals. This added the element of mistrust of both the health care system and health care professionals to the experience. A result of that mistrust was another layer through which they received and processed subsequent information and interactions with the people involved in their care. Similar to the findings in this study, stories of frustrations with attempts to get meaningful help from health care professionals emerged in another study exploring perspective change in adults with arthritis (Ashe, Taylor, & Dubouloz, 2005). Ashe et al. report the results of these interactions left participants questioning their beliefs that the system and the individuals within it would be able to help them. In a review that examined the relationship of patient empowerment to the care of education and patients, Aujoulat et al.

(2007) examined the characteristics of empowered patients, and identified traits such as greater understanding and acceptance of their condition, greater involvement in care, and personal integration of healthy strategies.

The need for empowered and engaged patients is evident in health care; furthermore, the insight into self concept, information processing, and the basic characteristics of adult learners brings important ideas into how that process can be facilitated. The new diagnosis challenged the ability to cope, not only because it was beyond previous experience, but also because it challenged participants' self identity. An individual's self concept includes assumptions of power and abilities as well as their current view of reality (Vanderford, et al., 1997). Health and illness are a central component of an individual's self identity and any change in health status poses a threat. The development of who we are takes many years and involves the shedding of, metaphorically speaking, vast amounts of blood, sweat, and tears along the way. Our identity is the core upon which we base our view of reality (MacKeracher, 2004). When we are faced with an event that overwhelms the ability of our vast store of knowledge and experience to process and resolve, we not only have to acknowledge that we are not up to the task, but, also, we have to consider new information that could change the very essence of who we are and what we value (MacKeracher, 2004).

The Affective (Emotional) Component of Adult Learning

Throughout the diagnosis and treatment components of their illness, group A critically appraised some of their assumptions and perspectives and acknowledged feeling shame and distress when they discovered that they did not know or care for their body, even though they had thought that they were health conscious. In examining shifts in identity as related to behaviour change, Kearney and O'Sullivan (2003) called this "Taking a hard look at myself" (p. 144); they related it to the process of critical self-appraisal that involved identifying emotions and identifying their own role in the unfolding problem. In a recent qualitative study exploring experiences of people who had emerged from significant illness, unstructured interviews were conducted where "participants were simply asked to tell their story" (Mayan, Morse, & Eldershaw, 2006, p. 22). The findings were similar to this study in that participants noted not being aware of their health or evolving condition prior to the diagnosis.

Taylor (2000) reviewed several studies on transformative learning and concluded that feelings and emotions are often an intense element of critical reflection that makes them an integral component of adult learning. If they are allowed to be processed in a safe and supportive environment, they can expand personal development, self-confidence, and self-understanding.

In Group B, participants either accepted their part of the problem or completely rejected that they had anything to do with the problem. However, universally, Group B acknowledged disappointment and directed it to their assumptions about either themselves, their bodies, or, in some cases, their beliefs about accessing help and care for example, with Bob. On several occasions throughout Bob's interview, he mentioned that there had been "communication problems." To elaborate, he described being sent home from the emergency department, after being placed on a waiting list, with instructions to call 911 if he experienced more chest pain. After an anxious few weeks, he was finally able to get to the institute, only to experience a life-threatening complication that resulted in immediate emergency surgery. Following a devastating week in intensive care where he tenuously clung to life, Bob then experienced the pain and distress of having one of his arm veins traumatized by a nurse despite his cries for the nurse to stop. When he was discharged, he was still so weak that he could not look after himself and that left his wife, herself a senior citizen with her own health problems, to look after him. And, after all that, he was told that he needed to come back to cardiac rehabilitation to learn how to look after his heart. Although the wait time, angioplasty complication, and intensive care unit experience are all within the normal spectrum of cardiac care, it is reasonable to expect that Bob would have a significant emotional burden that, if not acknowledged and processed, would be difficult to push aside. The intravenous experience that included a nurse who seemed unwilling to respond to his cries of pain made matters worse. In that context, his reactions to the staff when they tried to get him to participate in the program without ever really sitting down with him and hearing his story, were understandable and, in the end, resulted in weight gain, increase in waist measurement, increased blood pressure, and uncontrolled blood sugar. He mentioned that, when he was fully recovered, he had written a letter describing his experience and had received some kind of "form letter" reply that did not change his view of his experience. In essence, he did not feel that anyone had heard his story. Bill's initial diagnosis was made at a different health care facility and it left him feeling so frustrated and disempowered that he was unable to see beyond that experience to consider where he might be able to make a difference to his health by his own actions. For people like Bill or Ben, who held important positions of authority in their professional lives, to be "told" to change the way they do things without ever asking them what their opinion was; or Brenda, feeling that she was not allowed to use the same technical terms that she had used professionally her whole adult life, the emotional layer of the experience held participants back from learning not only about their heart disease and management but from learning more about themselves as well. In an overview of health communication research, Vanderford et al., (1997) postulate that these types of health care encounters often led to feelings of confusion, anxiety, and denial and those kinds of emotions often resulted in faulty health decisions. In order for fruitful learning to take place, acknowledgement, reflection, and processing of the affective component must take place. The nature of Group B's experiences denied that opportunity and diminished the possibility for rich and meaningful learning to occur (Taylor, 2000). In facilitating healthy lifestyle change, recognizing the role of emotions and including affective processing in health education would give adults the opportunity to start their own process of meaningful learning and make their own plans for change.

The Role of Discourse in Adult Learning

In Group A, the need to seek discourse to help clarify values, consider new ideas, and plan actions that would fit was universally expressed. Group A tended to seek more empowering interactions to help them counter the effects of less-positive interactions. Aiden and Andy, in particular, actively sought out discourse with either health care professionals or co-workers that focused on rebuilding their definition of health as it pertained to the active and energetic individuals that they perceived themselves to be. In a community-based education program for self support, learning outcomes were evaluated using transformative learning theory (Christopher, et al., 2001). Benefits of the discourse with groups and skilled lay facilitators resulted in decreased feelings of isolation and being able to problem solve with people in similar situations. In a qualitative study exploring self-directed learning in women with cancer, Rager (2003) found that participants listed networking and support groups as critical vehicles to exchange information, find acceptance, gain support, and as a place where it was safe to share their most fearful and vulnerable moments.

The significant effects of reflective discourse were demonstrated with senior citizens suffering from chronic disease by McWilliam et al. (1999). They had conducted a randomized controlled trial where the intervention was aimed at altering the ways they experienced chronic illness. The intervention was based on perspective transformation and involved reflective dialogue around beliefs, perceptions of health, illness, and priorities and actions. The authors hypothesized that the intervention would increase positive mindset, decrease the number of hospitalizations, and increase quality of life. Although their study was flawed in that they tried to apply positivist tools to a qualitative experience, the results do indicate that a year after the intervention, the experimental group showed statistically significant higher independence. Although statistically non-significant, the data also showed trends toward increased perceived ability to manage health and perceived quality of life. The need for adults to connect and discourse about new or unsettling experiences is a key element of adult learning. Health care professionals can facilitate the critical reflection that may result in construction of new meanings of health that include active and healthy lifestyles.

Group B was more diverse in that although there was equal searching for new information, there was less participation in meaningful discourse with either family and/or health care professionals. The reasons for this were related to either high family anxiety or other problems with family members that left participants reluctant to share their evolving thoughts, ideas, and emotions. Adults filter new information and any subsequent emotional responses through their personal experience and their social and cultural context (MacKeracher, 2004).

Interpreting new information and experiences requires reflection and discourse to clarify and verify interpretations and to make action plans that fit with the unique individual's current reality. With regards to discourse with health care professionals, in this study participants described attempts that left them anxious, disempowered, and often confused. Similar findings emerged in a qualitative study that explored the barriers and facilitators to self care practices of a group of patients with heart failure (Reigel & Carlson, 2002). The purpose of their study was to explore how heart failure influences patients' lives and what was helpful or not helpful in enhancing their self care abilities. Participants reported interactions as being unhelpful if they involved "someone telling me what to do" (Reigel & Carlson, 2002, p. 290). Conversely, participants identified facilitators of self care as being the provision of information and emotional support about important aspects of learning to live with this condition. In this respect, the requirement for learning that relates to the unique concerns of the adult is what can facilitate meaningful learning and subsequent healthy change. Reigel and Carlson identified patient knowledge as being a barrier to self care in that, despite having attended a didactic patient education class on heart failure before they were discharged, the patients were found to have very little understanding of their illness, many misconceptions on how to manage it, and, overall, very little success in integrating this diagnosis into their life in safe and productive ways. This is similar to some of the experiences in group B of this study. For example, Bill was told "do as I say," Bernard received "information overload," Brian was unable to have his heart rate questions answered meaningfully, and Brenda was treated as a lay person. These failed discourses resulted in lost opportunities to form safe and trusting relationships where they could clarify their own thoughts and assumptions, ensure they had accurate information, reflect and explore other interpretations, and finally, to create a meaningful and more inclusive point of view and action plan (Cranton, 2000).

Being unable to effectively discourse leaves a gap in the critical construction of meaningful new perspectives. As Mezirow (2000) states, "Transformative learning involves participation in constructive discourse to use the experience of others to assess reasons justifying these assumptions, and making an action decision based on the resulting insight" (p. 8). The need to use our experiences to critically examine new information requires not only looking inward but, also reflecting with others, comparing, considering, elaborating, expanding, and making plans and decisions based on a truer understanding of the meaning of our experiences. Interestingly, our colleagues in the field of cognitive neuroscience are beginning to provide the physiological evidence that supports what adult educators have known for years – the influence of emotions and social interactions on our rational thinking (Wissow, 2007). Cognitive neuroscientists use the term "mirror-neuron system" (Wissow, 2007, p. 1) to describe the part of our brain that is hardwired for "unconsciously reading cues about other peoples' emotional states and trying to make sense of their intentions" (p. 1). This involves not only participating in discourse but, also carrying out continual scanning of the environment and the other players, monitoring the reactions, and reading into what their own and others' responses might mean. Reflective discourse requires an environment that values adults' experiences and places them on an equal footing with others so that their voices can be heard and thus, they can then be able to hear and listen to others' voices (Parks Daloz, 2000). In this way, emotions are processed and new information is given meaning. Stating opinions, asking questions, and clarifying different points of view effectively require environments that are safe, trustworthy, and empathetic (Mezirow, 2000). Baumgartner (2001) takes this one step further by arguing that "transformational learning is not an independent act but is an interdependent relationship built on trust" (p. 19). The stories from Group B outline many instances where the opportunity for critical discourse was absent and some of the consequences of that absence include participants having inaccurate information, limited opportunities to clarify their own point of view, and diminished attempts to try new ways of doing things.

Thus far, my analysis has clarified the significance of dialogue in health education. To summarize, I point to Margalit and El-Ad's (2008) research and their argument that meaningful dialogue can no longer be ignored in health education and care. The findings in this study are explored in some detail in the next few paragraphs because they illustrate the importance of reflective dialogue in health education and care using a methodology that is considered by the medical and scientific community as being of the highest standard. This study examined "costly" patients, defined as high consumers of health care. The methodology was a longitudinal, randomized, controlled trial where patients were randomized to either "usual care" which means they continued to be high consumers of health care and the intervention group. The intervention group of patients were referred to a specialized clinic where the staff were specifically trained to base their interventions on a biopsychosocial approach. Interventions started with in-depth patient interviews and physical examinations that clarified the full meaning and impact of the patient's illness or symptoms for both staff and patient. The final diagnosis was not made until it was agreed upon by both patient and staff. Treatment and follow up plans were developed by collaboration with the patient and the multidisciplinary team. They included advice, counselling, family involvement, and often lasted through several encounters.

The outcomes of Margalit and El-Ad's (in press) study at two years post intervention were significant: the number of emergency room visits, hospital days, and costs for the intervention group decreased exponentially. At the five year point after the study, the authors looked at overall mortality. With both groups starting at 21 patients, in the intervention group, six patients had died; in the control group 17 patients had died. In summary, the major difference between the control group and the intervention group was, simply, the opportunity to tell their story and clarify how it impacted their life to a health care professional who was listening and who was able to reflect their concerns, collaborate, and empower them to take control of their health. In parallel with these outcomes, Group A became healthier and more in control as they either had or created opportunities for sharing and discussing with others whereas Group B, like the control group remained disempowered and less healthy due, in part, to difficulties in finding or creating opportunities for sharing and discussions with others.

Margalit and El Ad's study also exemplifies some of the key concepts in critical adult learning theory; the power balance was equalized; the learning was controlled by the patients, and the interactions placed value on discourse, experience, and inclusion. Group A's experiences also exemplify these concepts. For example, when Andy discussed his over-protective family with the staff in cardiac rehabilitation he was able to consider new strategies based on reflective discourse, truer information, and empowering staff feedback and support. Thus he was able to free himself from the constraints being placed on him by his family and continue to reframe his perspective on his health and lifestyle change. Allen was allowed to control his rehab learning experience by bringing his wife along and sharing the knowledge and skill development with her. Anna described the dialogue with her contact in cardiac rehab as being tailored to her concerns and experiences. In summary, opportunities for reflective discourse serve to enhance a truer exchange of important and productive information about making healthy and realistic changes during these encounters.

Making Change

Group A primarily made changes around diet and exercise so that they could lose weight and become fit. Throughout the cardiac rehabilitation experience and beyond, they became increasingly aware of the role that stress had played in their lives and began to learn more about what stress meant for them and how to manage it. Group A experienced setbacks and barriers, but used their renewed commitment to themselves to keep moving forward. This was similar to Ashe et al.'s (2005) findings from a study that explored changes in self perception of arthritis patients after a 6 month group intervention. In their study, participants described new feelings of power through knowledge and the enactment of new skills and strategies for managing their disease.

For Group A, moving forward also meant reaching out to their community to help and encourage other individuals who might be undergoing a similar experience. This was similar to findings in a study of the changing meaning perspectives of AIDs patients over time. Baumgartner (2002) found that reaching out to others and making a meaningful contribution became a new frame of reference as a result of the AIDs diagnosis that was maintained over time.

To further situate this particular finding, I return to emerging results in the field of cognitive neuroscience where researchers are finding that, in the presence of stress, our primal tendency is not always the "fight-or-flight" response. Instead, as social beings, our instincts may also lead us to "respond with affiliative behaviors, finding relief (and changing the brain's emotional state) through helping others or otherwise seeking to strengthen social ties" (Wissow, 2007, p. 1).

In Group B, participants identified similar goals to Group A, but experienced less success. Anxiety, frustration, and lack of trust resulting from difficulties in establishing meaningful dialogue with either family or health care professionals were contributing factors to Group B's lack of success. This led to difficulties with medication side effects, physical setbacks, and reluctance to acknowledge the need to make change. In a study of home based rehabilitation with arthritis patients (Dubouloz, et al., 2004), new meaning perspectives regarding accepting their physical and mobility limitations emerged that allowed participants to change their understanding of the use of instrumental help (walkers, etc.) from being a sign of their illness and frailty to being a means of controlling their life and maintaining their independence. In the same vein as these findings, the purchase of the wheeled luggage or the change to a warmer winter coat gave a sense from group B that, although they were still struggling with their illness and health identity, there were signs that they were slowly moving forward.

Transformative action is a brave and challenging deed. Social, emotional, and informational barriers need to be faced. The opportunity to try out new perspectives and actions in a safe and supportive environment was missing with Group B and that slowed down or set back their progress. Initiating ongoing discourse with family and caregivers to provide feedback and accessing ad hoc information was irregular, and subsequently, new problems and challenges could not be worked through in helpful and meaningful ways. Even in the best scenarios, confidence and competence may be a slow process and getting back to everyday life with a new take on things may not go smoothly. For some participants this back-and-forth progress was more evident.

Summary

The stories from Group A and Group B reflect many of the facets of the journey through transformative perspective change that are depicted in other studies. Each group experienced the disorienting dilemma of a sudden change in health status from which a cascade of emotional, internal, social, and action-oriented changes occurred. As I review their stories and as emerges clearly in the analysis, the most significant difference between the two groups was the engagement in productive and affirming reflective discourse. Whereas group A either had or created opportunities to talk with their families and health care providers, group B did not realize that opportunity as effectively. Group B's experiences were characterized as having higher levels of anxiety and frustration which may have impeded the development of trusting and productive relationships with their health care staff. Group A was able to adopt and maintain healthy lifestyle changes around diet, exercise, and, to varying degrees, stress management, while group B did not yet seem to be as close to that point as were Group A. In both groups, the definition of health changed somewhat in that it became more at the front of their consciousness as something that needed to be maintained. Whereas most of the participants in group A felt they were living that new definition of health, group B seemed to be still fluctuating between resigned acceptance of a lower quality of life and renewed considerations of how to move productively forward.

Conclusion

The purpose of this study was to investigate how adult learning theory can inform health education in a cardiac rehabilitation program. Rather than make a conclusion as to whether or not each participant had a transformative learning experience, I highlight the centrality of how self-concept, emotions, and reflective discourse influence the way adults make meaning of their experiences and, subsequently, how that influences their health decisions and actions. Secondly, I discuss the relationship between adult learning theory and the need to develop outcomes-based health education interventions.

As was highlighted in the discussion section, sudden illness poses an enormous challenge to an individual's definition of who they are. It is difficult to feel empowered enough to make decisions and enact change in the face of such a fundamental identity shift. Cayton (2006) recognizes this barrier to self care and describes a vision of patient education that starts with ensuring basic health literacy and follows with the provision of useful information at the right times and right amounts, thus enabling patients to become engaged in making their own health decisions and become more involved in their own health maintenance. Central to this vision is the empowerment of patients as advanced by the United Kingdom-based Expert Patient Programs where volunteers who are trained in self management, facilitate courses for people with chronic diseases such as arthritis and heart disease (Donaldson, 2003). The philosophy of these courses focuses on the development of life skills, coping mechanisms, and other productive strategies to manage disease and maintain or enhance quality of life. Part of their success lies in the use of peer facilitators who, themselves, have some kind of chronic disease and are able to harness their own experience to add depth to the workshops. The outcomes include improved symptoms, better communication with health care providers, less time spent in emergency departments, better symptom control, and an increase in the use of health information. In cardiac rehabilitation there are frequent contacts over periods up to 3 months where similar opportunities for the use of peer facilitators and the interactive discussion of self care and self management strategies could be included. Further research into the use of self-management workshops in cardiac rehabilitation is recommended.

The emotional component of adult learning and its role in processing new information has not traditionally been recognized by professionals engaged in health education. In both groups, the emotional impact was far reaching and, when not acknowledged or managed, it interfered with the learning process and maintenance of healthy lifestyle change. This resulted in heightened anxiety, inaccurate understandings about their condition, and a denial of the opportunity to create a more dependable base of knowledge and experience. In summary, participants who were unable to manage their emotions were not able to make effective decisions and take action that fit with their condition, values, and reality.

As demonstrated in the analysis and discussion, the ability for participants to engage in safe and productive reflective discourse influenced their ability to enact meaningful change. As elaborated above, providing these opportunities in the form of peer facilitators or health care practitioners who are able to encourage and support reflective dialogue enables the individual to really move forward in their ability to understand their illness, re-align their self-concept, process their emotions, and begin to strategize for meaningful and productive change. For adults, it is truly the essential component of the learning process and it must become a part of any health education experience if the intent is for meaningful learning to take place. Further research on the effects of reflective discourse in cardiac rehab is recommended.

At the beginning of this thesis, I discussed the current emphasis that health care interventions be based on scientific evidence. Evidence is accumulated based on measurable outcomes. Theories of health behaviour focus on changing unhealthy behaviours and thus enable the articulation of measurable outcomes upon which to evaluate effectiveness. While theories of health behaviour change have variations in approach and philosophy, they all have common elements that are considered critical to their success. Included in these elements are favourable attitudes; social discourse and influence; self efficacy, which includes the cognitive and social elements of mastery; and intention to change (Noar, Chabot, & Zimmerman, 2008). These commonalities are all part of the process of learning from the perspective of how an adult receives and processes new information and experiences. In this context, the utility of transformative learning theory in health care is becoming increasingly clear; indeed, knowing what we know about the ways adults learn, it is imperative in any health education setting to include opportunities for patients to share their experiences in an environment that fosters interaction in an atmosphere of trust, safety, and respect. Similarly, a behaviour change intervention that includes constructs of adult learning theory has greater possibilities to help adults clarify the meaning of their own health experience based on a truer and more dependable frame of reference. Thus empowered, adults are in a better position to make health decisions that will fit with their own reality. It is easier for an adult to support and maintain those kinds of decisions because they are in keeping with the changing self concept that started the whole process in the first place (MacKeracher, 2004).

Transformative learning theorists' philosophy of broadening perspectives and facilitating meaningful choice does not lend itself to operational measurements of outcomes (Buchanan, 2006). As the system of health care and health education is increasingly recognizing the power of empowered and informed patients on the outcomes of care, this gap is starting to be studied. In a recent process of building an evaluation tool to measure outcomes of patient education, Osborne, Elsworth, and Whitfield (2006) defined a list of outcomes of patient education. Embedded deeply in that list are social engagement, opportunities to test new actions, productive interactions with health care providers, and strategies for making meaningful health related decisions. The need to create a validated tool to measure the outcomes of health education is critical if the constructs of adult learning theory are going to be considered in the development of patient focused interventions. This aligns with Allegrante's (2006) view which separates a medical, outcomes-focused model of health education from a more humanistic philosophy that believes in "the individual's inherent capacity to learn, adapt, and take responsibility" (p. 307). All of these outcomes are related to the process of developing broader and truer perspectives about caring for health and are all part of a transformative learning process. Whether through individual interactions, self management workshops, or other group-based learning, the need for health care professionals in the cardiac rehabilitation setting to enable reflection, equality, mutual discourse, and decision making based on new, more dependable meaning perspectives is a key recommendation based on the results of this thesis.

The purpose of health education is to provide the information, tools, support, and confidence to promote health, prevent illness, encourage self management, and inform effective management of chronic disease. Changing behaviour is part of the purpose of health education, but is not the only indicator of the success of the health education. Any meaningful health education must also empower each individual to take charge of his or her own health and to access the resources in the health care system in the most productive way.

This work has added to the literature that supports the use of empowerment, social discourse, collaborative planning, and supportive care in the facilitation of healthy lifestyle change and chronic disease management. The constructs of transformative learning theory provide a framework to include these principles in the development of health education. Additionally, transformative learning is a logical theoretical partner in designing interventions to promote healthy lifestyle and behaviour change. Over the long term, only meaningful and reflective transformative learning experiences will truly enable lasting healthy lifestyle change.

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APPENDIX A: Interview Guide

Theoretical Construct	Associated Questions
▸ A disorienting dilemma	Before you were diagnosed with heart disease, can you describe what being “healthy” meant for you? Can you tell me what it was like for you when you became aware that your usual level of health had changed? • How did you react • How did this affect your sense of who you are • How did your family react • How did your family’s reaction affect you
▸ Self examination (feelings of fear, anger, guilt, or shame) ▸ A critical assessment of assumptions ▸ Recognition that one’s discontent and the process of transformation are shared	Once you realized that you had heart disease, can you tell me what went on inside your head? • What kinds of thoughts or ideas • What kinds of emotions • How did you respond to the emotions • What kinds of effects did your interactions with the health care team have on you • Did you bring in anyone (either health care professional or family member or friend) to use as a sounding board • Was that a good idea • How were you affected
▸ Exploration of options for new roles, relationships, and actions ▸ Planning a course of action ▸ Acquiring knowledge and skills for implementing one’s plans	What happened next? • Was there any sense that you were going to have to change or that your life was going to change • Did you feel that you would be able to change • How did you make your decision to change • Did you look anywhere for help in making the plans or decisions • Did the Cardiac Rehab program have any affect on how you moved forward; if so, in what way?
▸ Provisional trying of new roles ▸ Building competence and self-confidence in new roles and relationships	Can you tell me about any healthy lifestyle changes that you made? • What made it easy to make the changes • What made it difficult • How have the changes affected you; your family
▸ A reintegration into one’s life on the basis of conditions dictated by one’s new perspective	What does being “healthy” mean to you? • How do you feel when you feel healthy • How do you look after your health? • What about the health of your family or friends or community? • How does that connect with your own sense of health

APPENDIX B: Criteria for Identifying Potential Participants

Basic Criteria:

- Have *Consent to Chart Review for Research Eligibility and to be Contacted* form signed and available on their hospital file
- English speaking
- Between the ages of 50 to 75 years
- Have participated in the institute's Cardiac Rehabilitation program
- Are one year after entry into the Cardiac Rehabilitation program
- Have modifiable risk factors

Purposive Sampling Criteria:

Healthy Target Parameters

- Minutes per week of exercise greater than 210 minutes
- Cholesterol profile (LDL-C less than 2 mmol/L; HDL-C increased; Total cholesterol/HDL-C ratio less than 4 mmol/L)
- Weight loss of at least 5%, waist less than 102 cm for men and 88 cm for women
- Blood pressure less than 140/90 or 130/80 if diabetic
- HbA_{1C} (If diabetic) less than 6% if possible

Group A (able to achieve healthy lifestyle targets over the long term):

- Either meets or maintains the healthy target parameters at the one year time point or shows a trend towards meeting the healthy target parameters.

Group B (unable to achieve healthy lifestyle targets):

- Either does not meet the healthy target parameters at the one year time point or shows a trend towards falling outside of the healthy target parameters.

APPENDIX C: Telephone Script for Initial Contact*

Purpose of call:

1. To get expression of interest
2. To agree to have a Patient Information Sheet and Consent form mailed out
3. To agree to be contacted again a few days after receipt of Information Sheet and Consent form
4. Confirmation of mailing address

Hello Mr/Mrs …

My name is Lorraine Montoya and I'm calling you from the (name of institute).

I'm calling to ask if you would be interested in a study we are doing looking at people who have heart disease and who have made healthy lifestyle changes.

If you were interested, it would require about an hour of your time and it would be an interview where you would be discussing your experiences around living a heart healthy lifestyle.

Pause: wait for questions

Before concluding telephone call, make sure the following information has been discussed:

- It would be a tape recorded interview
- It would involve no cost

Do not ask them to provide their mailing address. Instead, ask if their mailing address has changed from the last time they were contacted by the institute. That way their privacy is not being threatened.

*Developed with assistance of Department of Communications and Media Relations

APPENDIX D: Patient Information Sheet & Consent Form

After Cardiac Rehabilitation: Exploring Lifestyle Changes as Transformative Learning

Principal Investigator and telephone number: Lorraine Montoya, BSN, MAdEd (c)
Phone: phone number removed

Please read this Patient Information Sheet and Consent Form carefully and ask as many questions as you like before deciding whether to participate.

Introduction:

You have been asked to participate in a research project entitled: *After Cardiac Rehabilitation: Exploring Lifestyle Changes as Transformative Learning.*

The purpose of this study is to learn more about the experiences of people who, as part of their treatment for heart disease, have completed a Cardiac Rehabilitation Program. This study is part of the thesis work being done by Lorraine Montoya to complete her Masters Degree in Adult Education from St Francis Xavier University in Antigonish, Nova Scotia. Recruitment for this study is expected to take 2 to 4 months and will involve about 15 individuals however, if you choose to participate, your time commitment will not be more than one or two hours.

You are being asked to participate because you have completed a Cardiac Rehabilitation program designed to help you to live a heart healthy lifestyle. This is called an *exploratory* study because it is looking to learn more about people's experiences. *It will not be testing any kind of new treatment or therapy.* Your participation will help the investigator to understand the connection of adult learning theory to people who are at the one year point after cardiac rehabilitation.

This study will require about one hour of your time and involves a personal interview where Lorraine will ask you about your experiences throughout Cardiac Rehabilitation and beyond. In addition, Lorraine may contact you by telephone after your interview if she needs clarify some of the information from the interview.

Procedure:

If you agree to participate in the study you will be contacted by Lorraine to set up an appointment at a time and location that are convenient for you. The interview will last about one hour and it will be tape-recorded. Lorraine will then transcribe the interviews on to paper herself. In addition, the blood results and completed questionnaires that are *already on your file* from the Prevention and Rehabilitation Centre will be included as part of the research information collected.

Risks and Discomforts of Participation:

There are no known risks of participating in this study. If you find the questions or discussions upsetting or have any other concern, the researcher, who is an experienced nurse, will be able to answer your questions or make arrangements for you to see your physician, nurse, or other health care professional.

Benefits of Participation:

You may not receive any direct benefit from your participation in this research. The benefits of your participation in the research are mostly focused on knowing that your story will provide rich information that will ultimately benefit other people who are learning to live with heart disease.

Confidentiality:

Information from your file at the Prevention and Rehabilitation Centre will be included in this study. You and your health records will not be identifiable in publications or presentations. No identifying information will leave the hospital, and your initials will not be used to identify you. All information, including audio taped interviews and transcriptions, will be identified only by a number code. It will be stored in a locked filing cabinet, only accessible by Lorraine Montoya. Any computer files will be protected by a password. Your name or other personal information will not be identifiable in any of the published results of this study, including the master's thesis. No records bearing your name will leave the name removed Institute. Any results used in secondary data analysis will only be identified by your number code.

Ethics:

The Human Research Ethics Board (HREB) of the name removed Institute has approved this protocol. The HREB considers the ethical aspects of all Institute research projects involving human subjects. If you wish, you may talk to the Chair, Human Research Ethics Board at phone number removed.

Participation:

Participation in research is completely voluntary. You are free to choose to participate or not to participate in this research study. If you agree to participate in this study, you may choose to withdraw your participation at any time. This will not affect your present or future care at the Heart Institute, or at any hospital. You may also refuse to answer any specific questions.

Institute Logo Removed

After Cardiac Rehabilitation: Exploring Lifestyle Changes as Transformative Learning

Consent to Participate in Research

This study has been explained to me by Lorraine Montoya. I have read and understood this 3 page Patient Information Sheet and Consent Form. All my questions at this time have been answered to my satisfaction. If I or any of my family members have any further questions about this study, we may contact Lorraine Montoya at phone number removed.

I will receive a signed copy of this Patient Information Sheet and Consent Form.

I voluntarily agree to participate in this study.

____
Participant's Name (please print)

______________________________ ____________
Participant's Signature **Date**

Lorraine Montoya______________
Name of Investigator

______________________________ ____________
Signature of Investigator **Date**