Return to Work With Cardiac Illness: A Qualitative Exploration from the Workplace

by

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A thesis submitted in conformity with the requirements for the degree of Doctor of Philosophy
Exercise Science
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Abstract

Objectives: Research literature points to a range of “factors” that are associated with return to work outcomes but little understanding of the experience of workers, the strategies used to adapt, how work shapes and influences adjustment, and the trajectories that describe their return to work experience. The aim of this qualitative, workplace-based study was to characterize workers readaptation to the workplace and develop a substantive framework for return to work following disabling cardiac illness. Methods: The study used a concurrent, nested, mixed methods approach, using grounded theory to inform the sampling and analysis framework. Participant workers were 12 males having suffered occupational disability owing to cardiac illness and returning to work at a large auto manufacturing plant. Participants were purposefully sampled for a range of disease and disability experiences as well as a range of work roles in the plant. Data were derived from semi-structured in-depth interviews, standardized questionnaire measures of health-related quality of life and work limitations, observations within the plant, and extensive field notes and memos. Longitudinal information was obtained through follow-up interviews over a two to ten month period. Results: Participants had a range of illness impacts and representations and fulfilled diverse roles in the plant including assembly jobs and trade work. Thematic analysis revealed that participants used adaptive strategies including changing mindset in relation to work, building physical capacity and efficiency, managing relationships and work schedules, and using supports in the plant. Thematic analysis highlighted the importance of the nature of work, the quality of work relationships, organizational practices around accommodation and supports in the workplace including occupational health support. Conclusions: Worker adaptation following disabling cardiac illness involved a process of self-
regulation including elements of illness and work representations, deployment of adaptive strategies to compensate for ongoing impairments, self-monitoring, goal setting and adaptive selection of work activities. Work demands, relationships and structures provide a range of possibility for self-regulation and quality of life. Implications for practice for work and health researchers and professionals as well as potential linkages to theory are discussed.
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Chapter 1

1 Introduction

1.1 Heart Disease in the Working Population

“I thought I was healthy, you know, I did not exercise but I was active. I did not see this [Myocardial infarction] coming”.

Steve, on the shock of a heart attack

Steve’s experience is not unique. Fifty percent of myocardial infarctions (MI’s) occur in working age individuals (under the age of 65) and two-thirds survive a cardiac event (Mital et al., 2000). One-third of a million (345,000) Canadians of working age (58% males, 42% females) report a diagnosis of cardiovascular disease (Johansen, 1999). For individuals, the consequences of having experienced a cardiac event include higher levels of depression (Lesperance, Frasure-Smith, & Talajic, 1996), chronic pain, and activity restriction and lower levels of perceived health (Lewin, 1999). Canadians reporting a diagnosis of cardiac illness also have poorer employment and income levels than their healthy counterparts (Johansen, 1999). Many cardiac patients experience ongoing symptoms and limitations, as well as ongoing and increased utilization of health care resources.

Cardiac disease has serious economic consequences: indirect losses due to disability associated with cardiovascular disease have been estimated to fall between $4,000 to $17,000 per person per year (Grover et al., 2003). In Canada, total indirect costs for disability and lost productivity have been estimated at 11.6 billion dollars per year (Johansen, 1999). The human and economic costs of cardiovascular disability are not only borne by the individual but by all members of society.

This dissertation is about the experience of Steve and 11 other workers, returning to work after the oftentimes-surprising emergence of heart problems in the prime of work life. The dissertation will describe an ethnographically oriented qualitative study of these workers followed at various points during the return to work process. The following introduction will orient the reader to the
problem of cardiac work disability and foreshadow the findings of this study felt to be of particular relevance to the practice audience for which it is intended.

1.2 Cardiac Illness and Return to Work

Return to work has been the primary quantifier of “successful” occupational outcome for individuals experiencing disability due to cardiac illness. A significant proportion of individuals do not return to work; with work resumption rates varying from 40 (Gehring, Koenig, Rana, & Mathes, 1988) to 80 (Gutmann et al., 1982) percent depending upon the inclusion criteria (e.g. employed vs. disabled prior to event or intervention). Other studies have reported a decrease in work involvement in terms of hours (Soderman, Lisspers, & Sundin, 2003), self report of responsibility and demand, effort and involvement (Abbott & Berry, 1991). This literature suggests that return to work following disabling cardiac illness has dimensions beyond disease and resulting physical impairments. But what is the experience like for workers? What trajectories describe their experience in returning to work?

The perspective of the worker is absent in present accounts of cardiac work disability. This dissertation will endeavour to enrich our knowledge of the experience of return to work following disabling cardiac illness by focusing on the experience of this group of workers. The dissertation will provide a rich characterization of return to work experience in terms of the impacts of cardiac illness and participant responses to resulting impairments and functional limitations during return to work.

Return to work has been associated with better mental health and quality of life in cross sectional (Crilley & Farrer, 2001) and prospective studies (Rost & Smith, 1992) of patients with cardiac illness. In acute myocardial infarction (AMI) patients followed over the course of a year, Rost and coworkers (Rost & Smith, 1992) found a progressive reduction of emotional distress in patients who returned to work and increased distress in those who did not, after controlling for disease severity, psychosocial and demographic factors. Conversely, premature retirement and unemployment have been associated with higher levels of morbidity and distress (Simchen et al., 2001). This research suggests a salutogenic effect of return to work on health but the conditions under which this can be realized are not well understood and workers’ perspectives on these possibilities are absent. This dissertation will provide insight into quality of life inside and
outside of the workplace and the potential for return to work as a normalizing experience (or not) following disabling cardiac illness.

1.3 Factors Influencing Return to Work

“Its that insidious stress…I can lift a screw and put in a taillight but there’s that insidious stress that makes it [return to work] difficult.”

Phil, on return to work and job stress

Review papers (Dafoe, Franklin, & Cupper, 1999; Gutmann, Sheldahl, Tristani, & Wilke, 1995; Prior & Cupper, 2004; Shanfield, 1990) typically summarize factors such as age, gender, illness severity, depression, self-efficacy, disability duration, financial disincentive, job satisfaction, and socio-economic status as influencing return to work in cardiac patients. Mark and coworkers conducted a large scale prospective study examining influence on return to work in patients receiving treatment for cardiovascular disease (Mark et al., 1992). These researchers found the largest proportion of variance accounted for in return to work outcome related to non-clinical factors with personal efficacy and subjective distress accounting for 27 percent of the variance. Further, this study identified that revascularization procedures provided no advantage in return to work outcome, suggesting a significant gap between disease pathology and social outcome.

While identifying that psychosocial factors play an important role in return to work, previous research and academic writing has been limited in characterizing of worker efforts and strategies to reintegrate to the workplace. Likewise, they provide little indication as to how worker efforts to adjust are shaped by their own representations of illness and work. This has resulted in a limited conceptual framework for researchers and clinicians studying return to work and intervening to improve the lives of these individuals. This dissertation will enrich our conceptual understanding of how worker agency influences the return to work process, derived through the experience of the workers themselves.

“Its like a different world in there. You can’t put your finger on it. Its [i.e., work] more the mental than the physical”.

Bill, one week after return to work
Perhaps most important, and absent from present accounts, is a perspective from the workplace. My review of the literature would indicate that research to date has been conducted from the cardiac care centre, cardiology practice or rehabilitation clinic. Social perspectives have been limited to the influence of social support devoid of context (Boudrez, De Backer, & Comhaire, 1994; Hlatky et al., 1986; Soejima, Steptoe, Nozoe, & Tei, 1999) or generic organizational characteristics (Varailiac et al., 1996). Along with the health problem, the worker with cardiac illness must contend with the complexity of the job, relationships with supervisors and coworkers, disability support and management systems, the medical system, and potentially family life and commitments. Research has not examined the interface between the worker with cardiac disease, their efforts to adapt, and the complex, dynamic environment of the workplace. In this dissertation, I will advance a situated perspective on the return to work experience of these workers outlining how context shapes their efforts to adjust and how it imposes direct limitations on the possibilities for reintegration to the workplace.

1.4 Medical and Rehabilitation Interventions and Return to Work

“They [physicians] really don’t understand what I’m faced with at work. They should come and see what we do on the job….see what the demands are”.

Derek, discussing frustrations relating to medical involvement in his return to work

Practice guidelines encourage physician involvement in the return to work process (Reynolds, Wagner, & Harder, 2006). Likewise, guidelines for cardiac rehabilitation state that it should “enhance and maintain the physical, psychosocial and vocational status of individuals with established heart disease” (CACR, 2004). However, there is a significant shortage of family practitioners in Ontario and no funding for physician involvement in return to work. Similarly, the majority of cardiac rehabilitation programs in Ontario do not provide any specific vocational service (Ontario cardiac rehabilitation pilot project: Report and recommendations 2002). As well as aspects such as access and funding, as Derek suggests, effective service provision may be impeded by the lack of understanding of how patients experience return to work and the influences on this process. Improving this understanding would help to identify the mechanisms whereby programs might encourage work resumption and, importantly, the quality of work life.
enjoyed by those that do return to work. This dissertation will advance the foundational understanding of return to work following cardiac illness, helping practitioners and programs to direct strategies and activities to improve vocational outcomes for workers disabled by cardiac disease.

1.5 Statement of the Problem

Our understanding of work disability in cardiac patients is incomplete and, in some respects, incommensurate with the contextualized problem of work disability. The emphasis on return to work rates as the quantifier of successful outcome downplays the importance of worker role quality and quality of life and ignores the situated nature of influences on return to work. The experience and process of return to work, the role of worker agency, and influences such as work, relationships, organizational influences, and medical and rehabilitative intervention, are difficult to understand without drawing on worker experience in the context of the workplace.

Research is required that will: provide a picture of worker experience in the return to work process; deepen understanding of the personal and contextual influences on return to work from the perspective of the worker and workplace; illuminate the potential for interventions on work adaptation; and provide an explanatory framework of the complex and contingent nature of personal, contextual, and intervention influences on return to work.

1.6 Research Questions

The purpose of this qualitative study is to expand the understanding of the process of return to work following the onset of disabling cardiac illness from “the lived experience” of workers, focusing on their agency in the context of work and the workplace. This project will address the following questions:

1. How can we understand the process of return to work through the experience of workers with cardiac illness?

2. How do personal and contextual factors influence this process?

3. What are the implications of these findings? What inferences can we draw for theory and practice?
This dissertation will respond to these exploratory questions, initially reviewing theoretical and empirical perspectives on cardiac work disability, prior to describing the study, its results and implications.
Chapter 2

2 Work Disability and Cardiac Illness

2.1 Introduction

The introduction has helped to frame the issues that will be addressed through this study with the purpose of advancing understanding of cardiac work disability. The literature review will focus on providing the reader with a foundational background in the impact of heart disease on individuals, work disability theory, the factors in the literature identified as influencing work disability in cardiac patients and the impact of interventions on cardiac work disability. The review will be divided into two sections.

The first review chapter will discuss the nature and impact of cardiac illness, including disease characteristics, symptoms, comorbidities, medication effects, functional impact, psychological impact, and occupational impact. The outline of cardiac illness will be followed by an outline of contemporary theoretical frameworks in the area of work disability including the Work Health Organization Framework, Social Models, Person Environment Fit Models, and the Stage or temporal model. Using a theoretical perspective, I will review factors identified in the empirical literature that influence work disability. Key questions will be posed to frame each area of discussion. In the initial chapter, I will contend that the present research literature provides an incomplete understanding of worker adaptation, specifically in its limited conceptualization of return to work, lack of treatment of worker experience, and limited focus on the importance of context. Owing to these limitations, research to date is limited in its explanatory power and ability to inform potential interventions to improve the quality of life of workers with disabling cardiac illness. I will discuss opportunities to advance understanding in light of this literature.
The second literature review chapter will discuss the influence of interventions on cardiac work disability. In this chapter, I will argue that present models of treatment are inadequate for addressing occupational outcomes owing to their exclusive focus on modifying individual behaviour and capacity without addressing worker strategies that enable return to work and relational factors between the worker, work and workplace that enable and constrain worker efforts to return to work.

2.2 How does the literature describe the impact of cardiac illness on workers?

Illness describes both biological and personal aspects of disease. Kristensen (Kristensen, 1996) suggests that stress-associated illness should be studied from the standpoint of the objective severity of the disease, the individual’s perception of illness and the functional consequences of the illness (objective and subjective). The disease process itself imposes a range of possibilities on the individual, to which he or she must adapt. The “cardiac population” presents with a diversity of physical, functional, emotional, and occupational sequelae as a result of illness. This section will review these areas of impact. As suggested in the introduction to this chapter, the literature is limited in its characterization of the impact of cardiac illness on occupational function. Impacts on occupational function will be reviewed with this in mind.

2.2.1 Disease Characteristics

The major portion (62% of deaths in men; 50% in women) of cardiac illness relates to cardiovascular disease (CVD) (Katzmarzyk, 2004). The clinical manifestations of CVD can include ischemic heart disease and myocardial infarction with a further five percent of CVD deaths in men and three percent in women resulting from chronic heart failure with aetiology in
CVD or idiopathic cardiac myopathy. Appendix A provides an overview of the aetiology of CVD and describes the major clinical manifestations of this process. CVD results in decreased efficiency in heart function and, in the case of heart failure, skeletal muscle function that lowers the individual’s physiological capacity for work. CVD also results in alteration in autonomic regulation that can render the individual less well able to respond to stress from a physiological standpoint and more susceptible to sudden cardiac death (Stein, Cox, Afifi, Belik, & Sareen, 2006).

2.2.2 Symptoms

CVD has the effect of causing dyspnoea and increased perceived exertion at submaximal workloads, as well as angina pain as a result of myocardial ischemia. Chest wall pain may effect upwards of 50 percent of individuals having undergone bypass surgery owing to the insult to boney and soft tissues in the chest wall with resulting scarring, mechanical alterations in normal rib function, and potential neuralgic pain (Eisenberg, Pultorak, Pud, & Bar-El, 2001). A significant proportion of unexplained chest pain may also be related to anxiety (Fleet & Beitman, 1997).

2.2.3 Comorbidities

Owing to the nature of its development later in life, CVD is typically accompanied by other conditions. Canadians with heart disease report an average of 2.4 comorbid conditions (Johansen, 1999). Diabetes is common as it is associated with the metabolic disturbances that lead to atherosclerosis. Kidney disease and peripheral vascular disease may occur in the presence of CVD as alternate manifestations of atherosclerosis. Arthritis and back pain are likewise common conditions in the ageing, CVD population (Sheilds, 2004). Thus, coping with other
health conditions is common for individuals living with CVD limiting our ability to examine the impact of CVD in isolation.

2.2.4 Functional Impact

As indicated above, individuals with cardiac disease demonstrate significant reductions in work capacity both in the acute phase of illness and may potentially have longer-term impairments. For example, the average 50 to 59 year old male patient suffering an MI, work capacity as determined by maximal oxygen consumption might be 26 ml/kg/min (7.4 METS) (Squires, 1995) compared with 35ml/kg/min for a healthy individual (Balady et al., 2000). In terms of work ability, this means that the “average” 55 year old male with cardiac illness has the capacity to perform continuous work of a metabolic demand of 3 METS equating to light industrial work (e.g. auto repair, janitorial work; assuming a continuous work output capacity of 40% of VO2max) (Cutler et al., 1994). The average female cardiac patient may have an aerobic capacity of 21ml/kg/min (6 METS) and be capable of clerical work requiring sustained metabolic demand of 2.4 METS.

2.2.5 Psychological Impact

Depression and anxiety are primary mental health issues that form part of the clinical picture of cardiac illness. Eighteen percent of cardiac patients suffer from clinical depression (vs. six percent in the healthy population) and 30% suffer from depressed mood (Buselli & Stuart, 1999; Lesperance et al., 1996).

Anxiety is also highly prevalent in the cardiac population. Anxiety (sense of troubled feeling, sense of perceived threat) is predictive of higher frequency of cardiac events and ischemia (Buselli & Stuart, 1999). Its role in influencing occupational role function has not been as
extensively researched as depression. Some authors posit that anxiety and depression are difficult to distinguish and should be examined together when studying the impact on role function (Buselli & Stuart, 1999).

### 2.2.6 Perceived Function

Self-reported function is diminished in MI patients in relation to age-matched individuals with other cardiac illness (Ades et al., 2002) and in relation to healthy individuals. While work capacity can be objectified through metabolic evaluation, self-perception of functional ability is the strongest determinant of whether an individual will attempt or persevere with a task such as work (Bandura, 1997).

### 2.2.7 Medication Effects

Medications typically prescribed for CVD include: nitrates, beta blockers, and calcium channel blockers to reduce heart workload and angina; anti-platelet therapy to reduce clotting; and statin medication to manage cholesterol (Ehrman, 2003). These drugs, their physiological action and adverse effects are detailed in Appendix B. Along with their intended effects, ingestion of these medications results in a number of adverse effects on physiology with resulting impact on symptoms as outlined below (Mycak, Harvey, & Champe, 2000):

- **Nitrates** - effects include headache (30 to 60% of patients), postural hypotension, facial flushing, reflex tachycardia and loss of consciousness

- **Beta blockers** - effects of non-selective blockade include bradycardia, pulmonary and peripheral vasoconstriction, impaired glucose metabolism, fatigue, sexual dysfunction, drowsiness and limited tolerance for strenuous activity, depressed mood.
- Calcium channel blockers (CCBs) - effects of non-selective blockade include bradycardia, pulmonary and peripheral vasoconstriction, impaired glucose metabolism, fatigue, sexual dysfunction, drowsiness and limited tolerance for strenuous activity.

- Anti-platelet therapy (ASA) – prolonged bleeding

- Statins – liver dysfunction, muscle cramping

2.2.8 Occupational Function

Return to work following disabling cardiac illness has primarily been operationalized as a dichotomous outcome (working/not working). In workers with disabling CVD, work resumption rates vary from 40 (Gehring et al., 1988) to 80 (Gutmann et al., 1982) percent depending upon the inclusion criteria. Workers employed prior to their event or intervention, not surprising demonstrate higher return to work rates than workers not employed. In a cross-sectional sample of 358 bypass patients, Gutmann and coworkers (Gutmann et al., 1982) found that 95 percent of workers who were disabled or unemployed prior to undergoing surgery remained disabled following the intervention.

Prospective cohort studies have indicated some variability in return to work rates at different follow-up times and in different populations. Maeland and Havik (Maeland & Havik, 1987b) found a 73 percent return to work rate in patients six months following MI. Mark and coworkers (Mark et al., 1992) found a 79 percent return to work rate in a mixed cohort (CABG, PTCA, and medically treated) cardiac patients one year following event. Boudrez and De Backer (Boudrez & De Backer, 2000) found an 87 percent return to work rate in previously employed workers suffering first MI versus 81 percent of workers undergoing first CABG at one year follow up. In a longer term cohort study, these authors found a 78 percent return to work
rate in patients with first MI (Boudrez et al., 1994). Canadian data from the 1960’s and 1970’s examining two large CABG patient cohorts over three and five year follow up demonstrated return to work rates of 69 (N=326) and 76 (N=1217) percent.

Studies have shown a range in disability duration from a mean of 4.9 wks in patients undergoing revascularization with Percutaneous Transluminal Coronary Angioplasty (PTCA), 10.9 wks in individuals undergoing Coronary Artery Bypass Graft (CABG) (Hlatky et al., 1998) and 5.5 months following myocardial infarction (Varaillac et al., 1996). More recent European data have demonstrated an mean disability duration of 14.9 weeks in CABG and MI patients (Boudrez & De Backer, 2000). Following CABG and PTCA some researchers have reported a net loss in employment in individuals working prior to the event in spite of adequate functional capacity and abolition of symptoms (Fitzgerald, Becker, Celentano, Swank, & Brinker, 1989).

Fewer studies have examined more qualitative aspects of return to work in workers with CVD. Soderman and coworkers (2003) reported a decrease in self-reported work involvement in terms of hours following return to work in 198 cardiac rehabilitation patients (Soderman et al., 2003). Abbott and coworkers (1991) found a decrease in self report of responsibility, effort and involvement in workers returning to the job following MI (Abbott & Berry, 1991). In a prospective cohort of 174 MI patients with average follow up of 33 monts, Varaillac and coworkers found that 34 percent of patients who had returned to work changed work hours, the tasks involved in their work or their job itself (Varaillac et al., 1996). It wasn’t indicated whether other health factors over this long follow-up period had impacts on these changes in work involvement.

The major thrust of research on occupational function has focused on the dichotomous outcome of work status. As indicated above, a more limited number of studies have examined the quality
of work life following return to work. These studies suggest that, along with return to work being an issue for a significant number of workers, those who do return have to make adjustments to work life. There have been no qualitative studies examining the experience of return to work and work life quality following return to work. Similarly, there have been no studies reporting on work life experience in context as the ability to use adaptive strategies such as reducing work hours or work tasks may be highly contextually dependent. Further, no studies have reported on quality of work life and work life balance as a function of participation in rehabilitation or other intervention.

Likewise, quality of life issues outside of the workplace have not been addressed when examining occupational role function. Return to work may be a necessity rather than a choice for some workers and may involve tradeoffs between home and work life. Contextualized research into the experiential aspects of return to work and its relationship to quality of life on and off the job would be interesting and valuable.

2.2.9 Summary - Impact

Reduced work capacity, pain, fatigue, mood disturbance, reduced personal efficacy, medication side effects, and disability from work are all potential impacts of cardiac illness on workers. What is less clear in this literature is how individual workers might experience the challenges of heart disease in the context of their lives and the workplace. The literature does not describe the struggles workers may encounter over the course of return to work and reintegration into the workplace. Also less evident are the interactive relationships between impact of illness, work, and quality of life and the relationship the worker holds with work following the emergence of life-threatening illness.
2.3 Theoretical Perspectives on Work Disability

A number of models have been put forward to help conceptualize work disability in the face of illness. Scholarly research definitions attempt to provide a conceptual framework to study work disability and account for the myriad of factors that may influence its expression. These conceptualizations consider disability as a continuum rather than an absolute state and as much a social phenomenon as an individual one (Altman, 2001).

2.3.1 WHO ICF

The World Health Organization International Classification of Functioning, Disability and Handicap (ICF) conceptualizes disability as a layering of factors moving out from the individual to society; that is, from illness pathology to the resultant impairments and activity limitations and ultimately to participation restriction (International classification of functioning, disability and health (ICF).2008).

. Impairments are generally described in terms of loss or abnormalities in physical, psychological or anatomical structure or function (International classification of functioning, disability and health (ICF).2008)

. For example, coronary ischemia is the impairment associated with reduced coronary blood flow. Depression is impairment in mental function that relates to the experience and control of affect.

Activity limitations are conceptualized as the restrictions that impairments impose on the individual’s ability to perform fundamental activities or tasks (International classification of functioning, disability and health (ICF).2008)

. Participation restriction relates to how activity restrictions become manifest in involvement in life roles. While these concepts are related, they are not entirely overlapping. For example, cardiac illness may restrict an individual’s global stamina for body mobility activity. If accommodation is available in the workplace, this may not result in a restriction in participation
in employment activities. Environmental factors are situated outside of the individual and include the physical, attitudinal and social environment. Disability is conceived as the degree of participation restriction or life involvement that emerges from impairments and activity limitations on the spheres of activities that we associate with roles or other domains of life (International classification of functioning, disability and health (ICF).2008).

In this model, disability is a function of the complex interplay of these factors. Fougeyrollas and Beauregard (Fougeyrollas & Beauregard, 2001) criticized this model from a number of standpoints. Firstly, in spite of recognizing the multicausality of disability, this phenomena is still seen to reside in the individual. Environmental factors are placed in the periphery along with personal factors, neither of which are specified in any way. Activity limitations are not differentiated in relation to capacities vs. performance. The former may be objectively determined, whereas the latter depends upon the interaction of the individual and the environment.

2.3.2 Social Models

Social models conceptualize disability as a form of social oppression (Altman, 2001). In social models, disability is function of constructed standards of “normal” function. Activity participation is restricted not by “real” impairments and functional limitations but rather socially imposed restrictions on participation. Medical practice adds to this by relying on positivistic notions of diagnostic determination and “labeling”, creating expectations of the individual and others around them in terms of their capacity for activity participation. Rehabilitation practice contributes by attempting to “objectify” functional capacity and job demands and determine the congruence between the two, continuing to situate the disability in the individual and focusing on accommodation by the individual to reduce disability. This view is valuable in maintaining a critical perspective on disability research; however it is limited in two respects: 1) its neglect of
the body as a source of generative mechanisms for disability; and 2) its recognition of individual agency and the possibilities agency offers for adaptation (Williams, 1999).

2.3.3 Person-environment Fit Models

“Person-environment fit models model have a long history in management, vocational, and disability literature (Altman, 2001). In general terms, person-environment fit models posit that occupational “fit” is a function of the dynamic interaction between the personal characteristics of the individual (capacities, goals, beliefs) and the characteristics of the environment (demands, opportunities, resources). Occupational disability is a result of discrepancy between the individual capacities and the demands of the occupation, mediated by individual goals and illness beliefs and moderated by factors in the environment including resources such as social support and opportunities for accommodation.

In this model, personal factors may include the impairments and functional limitations associated with a health condition as well as the individual’s physical and psychological resources and vulnerabilities, and motivational state (Altman, 2001). For example, an individual with cardiac illness may experience reduced stamina, possess the belief that work activities pose a threat to well-being and may have poor self-efficacy in relation to work demands; all of which would negatively impact on return to work. Occupational characteristics such as heavy work demands and social/environmental conditions such as a lack of social support and accommodation would compound the situation in terms of the “fit” into the occupational environment. Further to this, opportunities provided by work for personal well-being or financial reward would also be considered in terms of “fit”.
This model has been elaborated by Fougeyrollas (Fougeyrollas & Beauregard, 2001) as the Disability Creation Process model (Figure 1). In this model, personal factors consist of the individual’s intrinsic characteristics including organic systems and capabilities. Organic systems are dimensionalized from integrity to impairment and capabilities are dimensionalized from ability to disability. While organic systems and an individual’s capabilities relate, they may be assessed independently and do not necessarily correspond directly. Risk factors belong to the individual or environment and predispose individuals to disease, trauma or other disruptions of integrity or development. Environmental factors are physical, social, economic and political influences that comprise the immediate and larger context of the individual. Environmental factors can be barriers and facilitators to adaptation. It is the interaction between personal and environmental factors that determine the individual’s life habits. Life habits describe all of the various activities of normal life that the individual might normally engage in. In this model, disability is created from this interaction and resides neither purely in the individual or the environment.
Loisel and coworkers have further specified this model in relation to work-related disability (Loisel et al., 2001), suggesting the need for a paradigm shift in the conceptualization of work disability. The Disability Prevention Model posits that the interaction of person, workplace, compensation, and health care systems interact to produce work disability. Person factors including physical and psychological interact with the work and workplace factors (relationships, policies and procedures) compensation system factors (including direct relationships with agents), and healthcare system factors (including professionals and programs) to produce disability. This model has been derived from work-related musculoskeletal disability literature and, in this sense, does not relate directly cardiac work disability as health care and compensation system influences will differ significantly. For example, in Ontario, there is no “unified” system of compensation and rehabilitation for workers disabled by cardiac illness. In spite of this, there are undoubtedly influences related to insurance systems that impact on return to work for these workers.

Person-environment fit models are consistent with a critical realist perspective on the study of disability and adjustment to chronic illness in that it views occupational disability and readjustment to the workplace following disabling illness or injury as emerging from the interplay of personal and social mechanisms within the context of the workplace and larger social environment (Danermark, 2002; Williams, 1999).

2.3.4 Stage Model

Work disability has also been conceptualized in temporal terms in the Stage Model of Disability (Frank et al., 1996). Epidemiological findings demonstrate a steady deceleration in work
recovery potential beyond 6 to 8 weeks following the onset of work disability in musculoskeletal conditions (Figure 2). Risk factor studies have indicated that with increasing chronicity, psychosocial factors become predominant. The probability of return to work diminishes substantially and traditional interventions directed simply at the alleviation of symptoms and impairments become less effective (Frank et al., 1996).

The negative relationship between time on disability benefits and likelihood of return to work has also been demonstrated in cardiac patients (Caine, Harrison, Sharples, & Wallwork, 1991; Gutmann et al., 1982; Perski et al., 1999; Skinner, Farrer, Albers, Neil, & Adams, 1999) although the factors associated with chronicity have not been as well studied as in musculoskeletal disability. The stage model provides a temporal dimension in framing work disability as a dynamic phenomenon and will be discussed in relation to the literature on cardiac work disability.
These models help in defining disability and providing a “meta structure” for its study. They do not identify in an exhaustive fashion the specific personal, social, and contextual factors impacting on disability, their inter-relationships, and their relative importance in the expression of disability. The next section discusses personal, contextual and occupational factors relevant to occupational disability in cardiac patients, with particular reference to the Person-Environment Fit Model.

2.4 Literature Review Process

The focus of the literature review was to examine present understandings of cardiac work disability and return to work in this population. As such, I sought to provide the reader with a broad perspective on literature in the area, including contemporary theories of work disability and areas where the literature is inadequate (e.g. worker experience and lack of context) and, in some ways incommensurate with current research and theorizing on work disability.

An iterative strategy was used, combining database searches and references gathered from relevant review papers with articles generated from the literature reviewed. Literature was gathered through the search of online databases including Cochrane, Medline, Pubmed, CINAHL, Psychinfo and Scholars Portal Group including social science and nursing areas. Search terms included cardiac illness, cardiovascular disease, return to work, disability, rehabilitation, medical treatment, coronary artery bypass grafting, stenting, and PTCA. Papers were also gathered from symposia at conference proceedings including the World Congress of Cardiac Rehabilitation (Dublin, 2004), and relevant reviews including Perk and Alexanderson (Perk & Alexanderson, 2004), and Shanfield (Shanfield, 1990), book chapters by Dafoe, Franklin, and Cupper (Dafoe et al., 1999) and Gutmann (Gutmann et al., 1995) and Prior and Cupper’s chapter in the Canadian Association for Cardiac Rehabilitation Guidelines (CACR,
Apart from the reference to this author’s preliminary work (O'Hagan, Thomas, & Franche, 2004a), only peer-reviewed publications were included in the review. Perk and Anderson’s review paper was systematically developed but did not include an analysis of effect for intervention studies. The other review papers identified were narrative reviews, with the guidelines and book chapters having a clinical focus. These reviews appeared to be comprehensive (based on this author’s search of the literature) in their coverage of the literature to the publication date. A systematic review including a meta-analysis of intervention effects would be a valuable contribution to the literature.

Influences on return to work were tabled and examined in relation to the strength of effect (univariate and bivariate vs. multivariate effects). Quality of research papers were critically evaluated for design, sampling, potential bias, statistical analysis, and their relevance (ability to inform issues characterizing and explaining cardiac work disability and the impact of interventions on work disability). While comprehensive in nature, this literature review does not constitute a systematic review. Review papers relating to cardiac work disability were reviewed and are referenced in this section as appropriate. Recent research and academic writing on the topic has been limited and this is reflected in the dated nature of the literature (Perk & Alexanderson, 2004).

2.5 What does the literature suggest are the key factors in determining return to work following disabling cardiac illness?

The next section focuses on a review of the personal, environmental and occupational factors in the literature and how they relate to return to work in cardiac patients. Specific information on
the studies cited can be found in the table below, followed by the narrative description of the studies, framed by personal and environmental factors.
<table>
<thead>
<tr>
<th>Author</th>
<th>Publ year</th>
<th>Country</th>
<th>Purpose</th>
<th>Design/population</th>
<th>Sample</th>
<th>RTW Outcome</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boulay</td>
<td>1982</td>
<td>Canada</td>
<td>Determine return to work rates and predictive factors following CABG</td>
<td>Prospective cohort; male CABG patients; 30 to 36 month f/u</td>
<td>326 - 30 month f/u, 1217 - 36 month f/u; mean age 49 y</td>
<td>69% - 3y</td>
<td>76% - 5y Preoperative employment, comorbidity, physical job demands, education, anginal class, duration of symptoms</td>
</tr>
<tr>
<td>Gutmann</td>
<td>1982</td>
<td>USA</td>
<td>Study the influence of patient knowledge, risk behaviours, preoperative work status, and subjective reports of the benefit of surgery and recovery on postoperative work status.</td>
<td>Retrospective cohort of CABG patients; 4 to 22 months post surgery</td>
<td>302 male 56 female; average age 58 y</td>
<td>82% of working individuals returned to work</td>
<td>Not working preoperatively, older age, lower occupational status, lower income, greater comorbidities, more symptoms, poorer recovery expectations related to post operative disability</td>
</tr>
<tr>
<td>Hlatky</td>
<td>1986</td>
<td>USA</td>
<td>Identify the medical, psychological, and social factors that independently relate to disability in individuals with cardiac disease.</td>
<td>Cross-sectional; male patients &lt; 60 y with documented &quot;significant&quot; CAD without cardiac comorbidity</td>
<td>814; average age 49 y</td>
<td>71% working</td>
<td>Disability associated with lower educational attainment, previous MI's, hypochondriasis, depression (most predictive) in multivariate model. Strength of model not reported.</td>
</tr>
<tr>
<td>Maeland</td>
<td>1987</td>
<td>Norway</td>
<td>Examine RTW in 6 months after MI in relation to psychological variable assessed at the time of hospitalization.</td>
<td>Prospective cohort; male patients &lt;67y with uncomplicated, first time myocardial infarction; 6 month f/u</td>
<td>247; average age not reported</td>
<td>71% at 6 months</td>
<td>RTW associated with urban residence, lower age, lower complications, expectancies of work capacity, lower depression and anxiety, higher cardiac lifestyle knowledge, Expectancies and urban residence strongest predictors. Correct classification of 82% of participants’ work status.</td>
</tr>
<tr>
<td>Author</td>
<td>Publ year</td>
<td>Country</td>
<td>Purpose</td>
<td>Design/population</td>
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<tr>
<td>Smith</td>
<td>1988</td>
<td>USA</td>
<td>Evaluate diverse predictors associated with RTW and develop and describe risk factors that will aid clinicians.</td>
<td>Prospective cohort; employed patients suffering first MI with no comorbidity or revascularization; 12 month f/u</td>
<td>151; 90% male, average age 53 y</td>
<td>72%</td>
<td>Education, physical job demands, severity of infarct, subjective health rating significant in logistic regression; correct prediction of 77% of cases; sensitivity 72%, specificity 64% - easier to predict those who return; financial incentive not predictive</td>
</tr>
<tr>
<td>Gehring</td>
<td>1988</td>
<td>Germany</td>
<td>Evaluate the influence of social and medical factors on RTW following bypass</td>
<td>Prospective cohort; males CABG working or not prior to surgery; 16 month average f/u</td>
<td>306; average age 53 y</td>
<td>44.3% of previously employed</td>
<td>Lower RTW in older blue collar workers, low exercise tolerance, angina, poorer revascularization, long average wait time (4 months) and pre-surgical disability duration (7 months)</td>
</tr>
<tr>
<td>Fitzgerald</td>
<td>1989</td>
<td>USA</td>
<td>Investigate patterns of return to work and the role of psychosocial and demographic factors.</td>
<td>Prospective cohort; patients working in 6 months prior to successful, uncomplicated PTCA; 1 and 6 month f/u</td>
<td>82; 89% male; average age 52 y</td>
<td>59% at 1 month, 87% at 6 months</td>
<td>RTW at 1 month - no recent MI, higher self-efficacy, lower physical job demands, scheduling flexibility, job security related to RTW. Self-efficacy was only independent predictors in multivariate analysis.</td>
</tr>
<tr>
<td>Caine</td>
<td>1991</td>
<td>England</td>
<td>Evaluate health perceptions and the ability of pre-operative variables to predict post-operative outcome in bypass patients.</td>
<td>Prospective cohort; non-consecutive male non-emergency patients &lt; 60 y admitted for CABG; 3 and 12 month f/u</td>
<td>100; average age 51 y</td>
<td>73% at 12 months</td>
<td>Dyspnea, working pre-operatively, wait time for bypass, pre-operative energy and mobility, related to RTW. Sensitivity 78%, specificity 75%.</td>
</tr>
<tr>
<td>Author</td>
<td>Publ year</td>
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<tr>
<td>Abbot</td>
<td>1991</td>
<td>England</td>
<td>Evaluate the influence of demographic and psychological variable on RTW in MI patients.</td>
<td>Prospective cohort; Males &lt; 60 hospitalized for first time uncomplicated MI; 12 month f/u</td>
<td>82; average age 50 y</td>
<td>56% - 20% changed nature of occupation</td>
<td>Earlier RTW with younger age, higher social class. Attribution of MI to work stress, internal locus of control, lower depression predicted RTW.</td>
</tr>
<tr>
<td>Mark</td>
<td>1992</td>
<td>USA</td>
<td>Construct a predictive model of RTW in patients with CAD</td>
<td>Prospective cohort; employed patients &lt;65 y with &gt;50% CA blockage without prior Dx of CAD; 12 month f/u</td>
<td>1252; average age not reported</td>
<td>79%</td>
<td>Older age, black race, heart failure, PVD, lower self-report of function, lower education, greater psychological distress related to disability; ROC area .74 in development sample and .80 in test sample; 86% prediction of RTW, 71% prediction of disability.</td>
</tr>
<tr>
<td>Herlitz</td>
<td>1994</td>
<td>Sweden</td>
<td>Describe 1 y prognosis of patients admitted for first time MI</td>
<td>Prospective cohort; consecutive patients, confirmed MI</td>
<td>921 total; average age 72 y; 58% male</td>
<td>&lt; 65 y - 37% full-time, 12% part-time; &lt; 60 y 46% full-time, 14% part-time at 1 y f/u</td>
<td>Infarct site same in working vs. non-working patients; higher percentage angina in non-working (67 vs. 44%); multivariate analysis young age smaller infarct</td>
</tr>
<tr>
<td>Varaillac</td>
<td>1996</td>
<td>France</td>
<td>Examine medical and socioprofessional factors related to RTW in post MI patients</td>
<td>Prospective cohort; employed patients &lt;66y with first time MI attending CR program; 33 month f/u</td>
<td>174; average age 51 y; 98% male</td>
<td>75% - 34% reduced hours, changed tasks or jobs</td>
<td>Older age, lower exercise capacity, fall in BP during exercise testing negatively related to RTW. Higher social class, white collar status, company &gt;200 employees, longer job tenure lower physical demands positively related to RTW. Longer disability was related to a change in job or working conditions (not specified).</td>
</tr>
</tbody>
</table>
**Table 1: Studies on predictive and related factors - cardiac work disability (cont’d)**

<table>
<thead>
<tr>
<th>Author</th>
<th>Publ year</th>
<th>Country</th>
<th>Purpose</th>
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<th>RTW Outcome</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Petrie</td>
<td>1996</td>
<td>New Zealand</td>
<td>To examine initial perceptions of illness and return to work, cardiac rehabilitation attendance, and sexual dysfunction.</td>
<td>Prospective cohort; consecutive patents &lt;65y admitted for first, uncomplicated MI; 3 and 6 month f/u</td>
<td>143; 87% male; 55% employed at time of MI</td>
<td>79% RTW in employed individuals at 6 weeks</td>
<td>Early RTW related to perceptions of lower consequences and shorter timeline for illness.</td>
</tr>
<tr>
<td>Skinner</td>
<td>1999</td>
<td>England</td>
<td>To study clinical health and social outcomes in patients undergoing first elective CABG.</td>
<td>Prospective cohort; consecutive patients admitted for first time, elective CABG; 3, 6, 12, 60 month f/u.</td>
<td>353; 84% male, 34% working at time of surgery; average age 57 y</td>
<td>94% at 6 months, 62% at 60 months</td>
<td>RTW at 12 months associated with longer time to retirement (OR 7.6), male gender (OR 7.7), work pre-operation (OR 22.1), and absence of angina (OR 2.5). Working prior to event and ongoing angina multivariate predictors.</td>
</tr>
<tr>
<td>Fioretti</td>
<td>1998</td>
<td>Nthlands</td>
<td>Assess work resumption and morbidity in patients suffering first MI and participating in CR.</td>
<td>Retrospective cohort; patients working prior to MI and completing outpatient CR program</td>
<td>100; 90% male; average age 51 y</td>
<td>58%</td>
<td>RTW related to higher post MI and post rehab work capacity and lower presence of angina.</td>
</tr>
<tr>
<td>Soeijima</td>
<td>1999</td>
<td>Japan</td>
<td>To examine the influence of psychosocial and clinical factors on RTW.</td>
<td>Prospective cohort; consecutive patents &lt;65y admitted for first, uncomplicated MI; average f/u 8 months</td>
<td>111; average age 51 y</td>
<td>83% RTW,</td>
<td>Failure to RTW predicted by older age, introverted personality, early depressive symptoms. Longer duration of disability predicted by health concerns, low social support, and poor coping process. Greater work limitations predicted by older age, more health concerns, and expectations about low work ability. Clinical variables not related to any outcomes.</td>
</tr>
</tbody>
</table>
Table 1: Studies on predictive and related factors - cardiac work disability (cont’d)

<table>
<thead>
<tr>
<th>Author</th>
<th>Purpose</th>
<th>Design/population</th>
<th>Sample</th>
<th>RTW Outcome</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boudrez</td>
<td>To examine prospectively the rate of work resumption and predictive variables.</td>
<td>Prospective cohort; patients hospitalized for first MI or CABG, age &lt; 60 y; not on permanent disability; 12 month f/u</td>
<td>227, 93% male, average age 49 y; 40% MI, 60% CABG</td>
<td>87% in MI; 81% in CABG</td>
<td>CABG - Left ventricular function, degree of revascularization, general distrust, job insecurity, expectations of work recovery, attribution of disease to stress, work status predictive in logistic regression; 90% overall correct prediction. MI – less somatic complaints, lower physical job demands predictive; accuracy not provided. Job strain, value of work in life not predictive in either MI or CABG</td>
</tr>
<tr>
<td>Mittag</td>
<td>To examine the comparative predictive value of physicians and patients' views on RTW.</td>
<td>Prospective cohort; consecutive, employed CR male patients having suffered first time MI or CABG; 12 month f/u</td>
<td>132, average age 52 y</td>
<td>62%</td>
<td>Age, patient views on disability, physician's views on overall health independent multivariate predictors of work status. Prediction of RTW in 85% of cases; high sensitivity (90%) and specificity (75%) Low to moderate correlations between physician and patient views on disability and prognosis.</td>
</tr>
<tr>
<td>Soderman</td>
<td>Investigate the role of depression in the resumption of full or part-time work.</td>
<td>Prospective cohort; consecutively referred, employed CR patients; 12 month f/u</td>
<td>198; 79% male; average age 51 y</td>
<td>52% RTW full time, 26% reduced hours,</td>
<td>Clinical depression (OR 9.4), level of education (OR 4.3), age (OR 4.5) independent predictors of resumption of full-time work. Clinical depression and education predicted resumption of part-time work. Prediction of RTW 79% for full time, 65% for part time.</td>
</tr>
</tbody>
</table>

Notes: y = year, f/u = follow-up, RTW = return to work, CABG = coronary artery bypass graft surgery, PTCA = angioplasty, Dx = diagnosis, Tx = treatment, CR = cardiac rehabilitation, BMI = body mass index
2.5.1 Personal Factors and Return to Work

2.5.1.1 Medical/Clinical

The study by Mark and coworkers (Mark et al., 1992) is frequently cited when indicating the relative importance of psychosocial, medical and clinical factors in cardiac work disability. These researchers conducted a prospective validation study with a large cohort (N = 1,252) of patients and validation cohort in excess of 300. In multivariate analysis independent predictors of return to work included older age, black race, presence of congestive heart failure and peripheral vascular disease, lower self-report of function, lower educational attainment, and greater levels of psychological distress. Of the total variance accounted for by the logistic regression model (predictive value of .80 of ROC), patient perception of health and function accounted for 27%, while sociodemographic variables accounted for 45% and clinical variables 20%. The authors emphasised the strong influence of psychosocial factors on return to work in cardiac patients in relation to clinical variables.

While clinical factors may not be the primary determinants of return to work they are the primary factors causing perturbation in the individual’s health and in initiating contact with health care and disability systems. With this in mind, the following clinical factors have been studied in relation to CVD and work disability.

Measures of disease severity in the literature have included left ventricular function, heart failure, functional classification (physician determination based on signs and symptoms) and severity of MI. Left ventricular dysfunction and heart failure have been related to lower rates of return to work in bivariate (Froom et al., 1999; Gutmann et al., 1982; Varaillac et al., 1996) and multivariate (Hlatky et al., 1986; Hlatky et al., 1998; Mark et al., 1994) analysis however the
relationship weakens considerably with the addition of psychosocial variables. Higher functional class has also been related to higher rates of return to work in cardiac rehabilitation patients (Engblom et al., 1994). In PTCA and CABG patients, individuals having sustained an MI prior to surgery have lower return to work rates (Fitzgerald et al., 1989; Froom et al., 1999; Gutmann et al., 1982; Hlatky et al., 1998). The presence of other vascular disease (peripheral vascular disease, stroke) has been associated with lower rates of return to work (Boulay, David, & Bourassa, 1982; Mark et al., 1992). Disease severity has been predictive of RTW following uncomplicated MI (Smith & O'Rourke, 1988) and CABG (Boudrez & De Backer, 2000). Higher degree of revascularization has been associated with higher return to work rates (Gehring et al., 1988). Other researchers have found no relationship between duration of disability and work resumption rates and disease severity in post MI patients (Soejima et al., 1999).

Symptoms, (rather than clinical measures of severity), are the primary source of information for the individual patient adjusting to cardiac illness. Angina has been related to lower rates of return to work in correlational (Caine et al., 1991; Fioretti et al., 1988; Gehring et al., 1988; Mark et al., 1992; Mulcahy, Kennedy, & Conroy, 1988; Perski et al., 1999) and multivariate analysis (Boulay et al., 1982; Froom et al., 1999; Skinner et al., 1999). The study by Mark and coworkers (Mark et al., 1992) found significant correlation with report of angina and work status at follow-up; however, this relationship did not endure multivariate analysis. Caine and coworkers (Caine et al., 1991) found relationships between reports of angina and dyspnea and lower return to work rates; however, only dyspnoea remained significant in multivariate analysis. Higher reports of general somatic complaints have been related to lower return to work (Boudrez & De Backer, 2000), as has longer duration of symptoms (Boulay et al., 1982) in prospective studies.
2.5.1.2 Comorbidities

As indicated above, individuals with cardiac illness are often faced with an increased disease burden through other health conditions. A greater number of comorbid conditions has been linked to lower rates of return to work (Boulay et al., 1982; Froom et al., 1999; Gutmann et al., 1982; Mark et al., 1992). Complications following surgery have also been associated with lower return to work rates (Maeland & Havik, 1987a).

2.5.1.3 Functional Capacity

Individuals with higher exercise tolerance report lower levels of exertion and fatigue for a given workload potentially translating to an easier time during periods of exertion at work. Some research supports this hypothesis, indicating higher return to work rates with higher exercise capacity (Engblom et al., 1994; Fioretti et al., 1988; Gehring et al., 1988; Perski et al., 1999; Varaillac et al., 1996); however, not all studies support this relationship (Mark et al., 1992).

2.5.1.4 Psychological Factors

Depression negatively affects behaviour, cognitions and physical function. Depressed mood has been associated with delayed and lower rates of return to work in a number of studies (Abbott & Berry, 1991; Hlatky et al., 1998; Maeland & Havik, 1987a; Soderman et al., 2003; Soejima et al., 1999). High anxiety has been related prospectively to lower return to work rates in some studies (Hlatky et al., 1998; Maeland & Havik, 1987b) but not others (Abbott & Berry, 1991).

Research on the “Type A” behaviour characteristics (achievement orientation, time-pressured, hostile) has demonstrated mixed results with some studies demonstrating no difference in disabled vs. non-disabled workers one-year following myocardial infarction (Soderman et al., 2003) and others finding a positive relationship (Smith & O'Rourke, 1988). Higher internal
locus of control (belief in personal control over control by environment) has been related to higher return to work rates in patients one-year post myocardial infarction (Abbott & Berry, 1991; Soejima et al., 1999). Various other constructs receiving more limited attention in the research literature have been linked to higher return to work rates including lower cognitive complaints, feelings of trust, no attribution of illness to stress (Boudrez & De Backer, 2000), “extroverted” personality (Soejima et al., 1999), low hypochondriasis, “ego strength”, optimism, and “positive work attitude” (Hlatky et al., 1998).

2.5.1.5 Personal Representations

Representations concern the individual’s beliefs about aspects of illness and function (Coutu, Baril, Durand, Cote, & Rouleau, 2007). Representations of illness are the individual’s interpretation of injury or disease in the context of their world experience and worldview. As such, illness representations are an extension of the diagnosis and biomedical information pertaining to the disabled worker’s illness (Coutu et al., 2007).

Illness representations influence the worker’s adaptive response through their influence on coping behaviour. Coping behaviours are enacted in response to environmental demands that are perceived to tax the individual’s ability to cope, although individuals also cope proactively to prevent distress (Maes, Leventhal, & De Ridder, 1996). As part of coping, workers have notions about what constitutes the illness from a number of perspectives (e.g. ability to exercise personal control over the disease and its sequelae). Representations then influence whether coping efforts will be enacted, at what level of effort, and how long they will persist. (Coutu et al., 2007)

Illness representations may be influenced by the severity of the disease, past experience and learning and social influences including lay and professional input.
Representations of illness can influence the individual’s health and occupational outcomes and emotional response to illness (Weinman, Petrie, Moss-Morris, & Horne, 1996). Researchers have demonstrated the prospective influence of illness representations on return to work in cardiac patients (Hlatky et al., 1998; Maeland & Havik, 1987b; Petrie, Weinman, Sharpe, & Buckley, 1996). Petrie and coworkers (Petrie et al., 1996) studied the relationship between patients’ early perceptions of myocardial infarction in relation to their impact on participation in cardiac rehabilitation, time taken to return to work, function outside work, and sexual difficulties at three and six months following hospital admission for acute MI in 143 consecutive patients age 65 and younger. In bivariate analysis, shorter return to work (within six weeks) was related to perceptions of faster recovery and lower degree of consequences; however, this effect did not emerge in multivariate analysis. However, illness perceptions were significant in other aspects of functional recovery and represent a significant factor in the overall picture of response to illness.

Self-efficacy and optimistic beliefs are personal representations that have been studied in relation to work adaptation in cardiac patients. Self-efficacy refers to one’s personal beliefs about their ability to plan and enact a particular behaviour in a particular circumstance to achieve particular objectives (Bandura, 1997). Self-efficacy for occupational and other physical activity has been shown to be a more powerful determinant of work status than measured functional capacity (Fitzgerald et al., 1989). Perceived function has been shown to independently relate to work outcome; individuals reporting higher beliefs regarding their physical abilities more likely to return to work (Caine et al., 1991; Engblom et al., 1994; Mark et al., 1992; Mittag, Kolenda, Nordman, Bernien, & Maurischat, 2001). Similarly, higher levels of perceived health has also been related to higher return to work rates (Mittag et al., 2001; Soejima et al., 1999). Conversely, an increased sense of vulnerability and fear of recurrence of heart problems may also occur following the onset of cardiac illness, which may influence the individual’s willingness to
engage in activity such as work (Abbott & Berry, 1991). In this sense, the individual’s perception of the illness and its impact on their function is more important than objective indicators of disease.

Outcome expectancy is the belief that enacting a behaviour will produce a certain, valued outcome (Bandura, 1997). In the context of illness, outcome expectancy refers to the individual’s belief in potential for recovery following illness and/or involvement in a given course of intervention. Positive outcome expectancy has been related to improved return to work rates in observational studies (Engblom et al., 1994; Maeland & Havik, 1987b; Mittag et al., 2001; Soejima et al., 1999). General optimistic beliefs and acceptance of illness have likewise been associated with higher return to work rates in bivariate analysis (Hlatky et al., 1986). High acceptance/low denial or high denial/lower acceptance of illness are related to higher return to work rates (Maeland & Havik, 1987b).

2.5.1.6 Life Span/Developmental Influences

Duration of disability prior to intervention negatively influences return to work. Longer disability duration has been associated with lower return to work in CABG patients (Boulay et al., 1982; Caine et al., 1991; Gehring et al., 1988; Gutmann et al., 1982; Hlatky et al., 1986; Skinner, 1999), angioplasty (Huberman & Miles, 1983) and cardiac rehabilitation (Engblom et al., 1994; Engblom, Korpilahti, Hamalainen, Ronnemaa, & Puukka, 1997; Mulcahy et al., 1988). Longer duration of disability results in greater exposure to loss of routine and role function, decrements in self-efficacy, and deconditioning. In a positive sense, prolonged absence from work permits the individual to experience a life less encumbered by the demands of the workplace and, potentially, involvement in other rewarding activities that make return to the day in day out work routine less attractive. For example in their cohort study, Mark and coworkers
(1992) found that approximately 25 percent of workers that did not return to work, did do so for reasons other than health (e.g., personal choice to retire). Job attachment may also be affected with employers dismissing workers disabled for longer durations. Activity intervention directed at disability likely achieves better outcomes earlier in the process of illness, while disability of longer duration may require a more comprehensive psychosocial intervention.

Limited work has been done examining career stage and its influence on return to work. Varaillac and coworkers (Varaillac et al., 1996) found higher return to work rates in individuals with longer job tenure. This might suggest stronger job commitment in those individuals returning to work; however, workers with longer job tenure may also have the benefit of a greater support network and flexibility in scheduling. Longer job tenure may also result in self-selection to lighter work positions. Boudrez and coworkers (Boudrez & De Backer, 2000) examined perceptions of work as a valued activity as a predictor of return to work in post MI and CABG patients and found no effect.

Older age has been related to lower return to work rates in a number of studies (Abbott & Berry, 1991; Boudrez et al., 1994; Boulay et al., 1982; Froom et al., 1999; Gehring et al., 1988; Gutmann et al., 1982; Hlatky et al., 1986; Kornfeld, Heller, Frank, Wilson, & Malm, 1982; Krause & Ragland, 1994; Maeland & Havik, 1987b; Mark et al., 1992; Mulcahy et al., 1988; Skinner et al., 1999; Soejima et al., 1999; Varaillac et al., 1996). Less certain are the factors that mediate the influence of age.

In reviewing factors related to return to work and cardiac patients, Shanfield (Shanfield, 1990) suggests that heart disease hastens one’s evaluation of the place of work in the life plan, suggesting that this may be an adaptive response to the threat of disease. Feelings of vulnerability can have a particularly strong influence in late middle life when issues of mortality
and illness have a greater presence in an individual’s representations. In addition, those workers in the latter stages of work life (55+) are free of the responsibilities of young children and mortgage that tie younger workers to their job; however, the increasing number of workers assuming responsibility for elder care may auger against this. Shanfield (1990) also cites premorbid work dissatisfaction and performance issues as potential influences on work resumption. While these factors are plausible from a developmental standpoint, they have yet to be verified by empirical scrutiny.

2.5.1.7 Summary – Personal Factors

In summary, individual factors influencing return to work include:

- Work status at the time of event or surgery;
- Presence of angina and left ventricular dysfunction;
- Higher co-morbidity;
- Worker representations of illness including diminished self-efficacy, high perceived disability and poorer outcome expectancy
- Depressed mood
- Longer job tenure

Findings in relation to functional capacity are conflicting. Stage of career development could influence return to work but has not been studied systematically. Illness representations such as fear of activity have likewise not been studied empirically. Disease severity likely defines a range of possibility in terms of functional outcome whose bounds are further delineated by
individual psychological response. The potential for social and contextual influences are reviewed next.

2.6   Environmental Factors and Return to Work

2.6.1 Work Relationships

While general aspects of social support have been studied in relation to return to work, relationships in the workplace have received limited attention in the cardiac return to work literature. Cohort studies have found a positive relationship between return to work rates and shorter duration of disability and self-report of social support from friends and family (Boudrez et al., 1994; Soejima et al., 1999) In cross-sectional study, Hlatky and coworkers (Hlatky et al., 1986) found no relationship between social network and return to work but found higher self-report of quality of social support in working individuals. Boudrez and coworkers (Boudrez & De Backer, 2000) examined general support provided by coworkers within the Job Strain framework and found no predictive value on RTW in MI and CABG patients, one-year post event.

Kushnir and Laria (Kushnir & Luria, 2002) studied the attitudes towards return to work from the perspective of 58 supervisors of male employees (62% in white collar jobs) who had returned to work following MI or CABG surgery. Results indicated that the supervisors were generally supportive of return to work; however, 60 percent reported that they felt the employee required special attention. Supervisors in blue-collar work situations indicated a more negative attitude towards re-employing workers with heart problems, including more worry with respect to recurrence of heart problems and a greater degree of work limitation and absenteeism in these individuals. The study suggested differential levels of supervisor support between white and
blue-collar work environments (Kushnir & Luria, 2002); however, this has not been related to the return to work process in these particular settings.

Employer and coworker support has been identified as important factors in work resumption in cardiac patients in a number of review papers (Dafoe et al., 1999; Gutmann et al., 1995). However, there has been no empirical study of relationships in the workplace and their specific influence on return to work or adjustment to the workplace. My preliminary research has found a stronger association between perceived employer support (on the part of the worker) than either physician support or family support on perceived work adjustment and work status in cardiac rehabilitation patients (O'Hagan, Thomas, & Franche, 2004a). Research on workers with work disabling physical injuries (Shaw, Robertson, Pransky, & McLellan, 2003) and mental health conditions (Nieuwenhuijsen, Verbeek, de Boer, Blonk, & van Dijk, 2004) has identified the important role played by supervisors in the return to work process. The salient aspects of support in improving return to work in workers with cardiac illness are in need of further research in terms of source, type and the contingencies that may be involved in the giving and receiving of support.

2.6.2 Job Characteristics

Job characteristics and organizational factors have been examined in relation to return to work with cardiac illness. Physical work demand is the most commonly cited work factor in the literature, demonstrating a negative association with return to work in the majority of studies in bivariate (Fitzgerald et al., 1989; Gutmann et al., 1982; Skinner et al., 1999; Varailiac et al., 1996) and multivariate analysis (Boulay et al., 1982; Froom et al., 1999). Other studies have found no relationship between physical work demands and return to work (Boudrez et al., 1994; Krause & Ragland, 1994; Mark et al., 1992). Conflicting findings may reflect variation in worker
control over physical work demands, as well as the influence of support afforded by the employer, which may be highly situational.

Abbot and coworkers (Abbott & Berry, 1991) studied the influence of self-reported job stress on return to work in the year following myocardial infarction. Paradoxically, these researchers found a positive relationship between return to work and higher job stress. Other characteristics of work relating to job control (Karasek et al., 1998) and perceived effort/reward (Bosma, Peter, Siegrist, & Marmot, 1998) have received little attention in relation to return to work and may mitigate the effect of job stress on return to work following myocardial infarction.

2.6.3 Occupational Status

Studies have demonstrated a positive relationship between professional and managerial occupational status and return to work and duration of disability (Gehring et al., 1988; Gutmann et al., 1982; McGee, Graham, Crowe, & Horgan, 1993; Soejima et al., 1999; Varaillac et al., 1996). Gehring (Gehring et al., 1988) found a significant interaction between occupational status and age such that older, blue collar workers had lower rates of work resumption than their white collar counterparts with no difference in the younger age cohort. Aspects of job demands as well as latitude over schedule and pace may have a greater impact on the older worker faced with return to a heavier, blue collar job.

Soejima and coworkers (Soejima et al., 1999) found that white collar occupational status was positively associated with return to work outcome but did not influence duration of disability. Duration of disability was more greatly affected by individual perception of health status. Structural factors such as occupational status may be decisive in determining return to work through factors such as opportunities afforded for accommodation, whereas individual factors
such as illness representations may predominate in determining the duration of sick leave in those workers going back to work.

2.6.4 Organizational Factors

Organizational factors have received more limited attention in relation to return to work and return to work. In examining the influence of size of organization, Varaillac and coworkers (Varaillac et al., 1996) found higher return to work rates in larger vs. smaller companies with 56% of workers returning to work in companies with greater than 200 employees and 25% returning to work in companies with less than 50 employees. This finding suggests a greater capacity for supporting return to work in large organizations however, job characteristics may confound these findings (i.e. greater proportion of white collar workers or light jobs in large organizations) and this was not controlled for in the analysis.

Fitzgerald and coworkers (Fitzgerald et al., 1989) used a prospective cohort design to study patterns of work return following PTCA. Their findings indicated that scheduling flexibility and job security (self-reported) were positively associated with return to work and negatively associated with duration of disability following the procedure. These factors are characteristic of white-collar job status (job status was not controlled for) and therefore may have been moderated by occupational status.

The literature suggests that organizational factors may play a role in return to work through the provision of flexibility in scheduling and providing a secure work environment. However, these factors can relate strongly to type of employment and, if studied through self-report, may be affected by the workers’ satisfaction with employment or generally pessimistic view of the social environment. Structural supports such as modified return to work programs have not been
studied independent of worker perception. Larger organizations may be able to provide greater flexibility in accommodating workers with health problems and therefore support return to work. However, this is going to depend upon legislative factors such as obligations on the part of employers to accommodate, which will vary between jurisdictions. While all health conditions are supposed to be treated the same in terms of the duty to accommodate, in practice non-compensable conditions, like cardiac illness do not receive the same consideration as workplace injuries such as back pain. Union presence may also influence accommodation policies but this influence has not been studied. Organizational characteristics such as the size of organization and industry sector have not been studied in the Canadian environment.

2.6.5 Compensation Influences

Access to disability benefits have been shown to affect work disability with lower levels of disability associated with greater limitation in access to benefits (Gutmann et al., 1982; Waddell, 1998). Higher levels of work disability are found in jurisdictions with more liberal benefit systems (Waddell, 1998). Faster work recovery has also been shown following elimination of pain and suffering awards in car accident victims (Cassidy et al., 2000). Research supports the theory that benefits create a “moral hazard” in populations of disabled persons. In a prospective study of post MI patients, Smith and O’Rourke (Smith & O’Rourke, 1988) found a positive relationship between financial incentive to remain disabled (measured by the ratio of disability payments to pre-disability earnings); however, this effect did not persist in multivariate relationship. Disability benefit systems are jurisdictional and a comparative analysis of their influence has not been addressed in this literature.
2.6.6 Summary – Environmental Factors

In summary, occupational factors including physical work demands, and blue-collar work status have a negative effect on return to work although findings are somewhat variable. Larger organizations may have greater capacity to support return to work efforts, although this may interact with occupational status. How job characteristics, work relationships (particularly supervisors), and organizational practices might inter-relate and mutually influence return to work and quality of life is not well understood.

2.7 Sociodemographic Influence

The impacts of cardiovascular disease on occupational function may also be influenced by gender and socioeconomic status. In comparing work resumption in male and female post AMI patients, Chirikos and Nickel (Chirikos & Nickel, 1984) found a lower rate of work resumption in females (60 vs. 80% at 2 year follow-up). Multivariate analysis indicated that the difference was due primarily to “behavioural response” rather than disease severity. Other researchers have found gender to be a significant determinant in return to work in correlational (Mark et al., 1992; Soderman et al., 2003) and multivariate (Hlatky et al., 1998; Skinner et al., 1999) analysis with lower return to work rates among females.

Higher socioeconomic status has been related to increased rates of return to work (Abbott & Berry, 1991; Mulcahy et al., 1988; Soejima et al., 1999; Varaillac et al., 1996), as has higher educational attainment (Boulay et al., 1982; Hlatky et al., 1986; Hlatky et al., 1998; Maeland & Havik, 1987b; Mark et al., 1992; Soderman et al., 2003) and higher income (Gutmann et al., 1982). While socioeconomic status and educational attainment are significant, they are not amenable to intervention other than changes in social policy. Socioeconomic status and
educational status are also highly correlated with occupational status and therefore share much of the variance associated with this measure.

2.8 What about the effect of return to work on worker health and well-being?

Research has suggested that timely return to work does not place the low risk cardiac patient at any greater risk of recurrent events. Studies examining the role of work as an exposure and its impact on well-being are summarized in the table on the next page.

Dennis and coworkers (Dennis et al., 1988) randomized 201 post AMI cardiac patients to an intervention consisting of early work capacity testing and recommendation to return to work with a control usual care condition. Workers in the intervention group resumed employment a median 24 days sooner than the control group. The frequency of recurrent events, follow-up surgery and sudden death were the same in both groups. No recurrences were noted in occupational settings. The researchers did not define the type of employment these workers were returning to and the small sample size precludes drawing definitive conclusions. Froom and colleagues found a two-year incidence of non-fatal recurrent MI’s of four percent following return to work among a cohort of 214 workers referred to an occupational medical clinic (Froom et al., 1999). Two of the six recurrences occurred on the job.

Return to work has been associated with better mental health and quality of life in prospective studies of patients with cardiac illness (Crilley & Farrer, 2001; Rost & Smith, 1992). In acute
<table>
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<tr>
<th>Author</th>
<th>Publ year</th>
<th>Country</th>
<th>Aim</th>
<th>Design/population</th>
<th>Sample</th>
<th>RTW Outcome</th>
<th>Result</th>
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<tbody>
<tr>
<td>Rost</td>
<td>1992</td>
<td>USA</td>
<td>Examine the influence of return to work on subsequent emotional distress in cardiac patients.</td>
<td>Prospective cohort; consecutive, uncomplicated, non-surgical, employed MI patients; 4 and 12 month f/u</td>
<td>143; 90% male; average age 51 y</td>
<td>42.1 in non-working vs. 20.4 in working patients</td>
<td>Difference in emotional distress remained significant after controlling for baseline physical health and psychological adjustment.</td>
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<td>Froom</td>
<td>1999</td>
<td>Israel</td>
<td>Examine return to work and the incidence of reinfarction among workers experiencing MI.</td>
<td>Prospective cohort; consecutively referred patients to and occupational medicine clinic; 2 weeks post MI; 24 month f/u</td>
<td>216; 92% male; 69% &lt; 55</td>
<td>6 recurrent MI's, 2 occurred at work, 77% initial RTW rate, regressing to 66%; non-RTW related to diabetes, Q wave AMI, heavy work, older age</td>
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<tr>
<td>Crilley</td>
<td>2001</td>
<td>England</td>
<td>Examine self-reported physical and mental health following MI.</td>
<td>Prospective cohort; uncomplicated, employed patients from coronary care unit; 12 month f/u</td>
<td>146; average age 62 y</td>
<td>PS 47 vs. 32, MS 53 vs. 44 in employed vs. disabled.</td>
<td>Work disabled patients demonstrated lower physical and mental health scores from time of MI to follow up not entirely accounted for by symptoms. Employment status at time of f/u was significant predictor of MS and PS scores.</td>
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<td>Plach</td>
<td>2002</td>
<td>USA</td>
<td>Examine the relationship between social role quality and physical and psychological well-being and determine if social role quality mediates the relationship between physical health and psychological well-being.</td>
<td>Cross-sectional; women undergoing cardiac surgery (bypass or other) within the previous 5 months</td>
<td>157; 39% working; average age 66 y; 39% working</td>
<td>Role function mediated association between physical health and quality of life. Discrepancy between role function and role expectations mediated relationship between physical health and all quality of life indicators (17 - 30% of variance accounted for). Role rewards vs. role costs mediated effect of physical health on psychological adjustment (22 - 44% of variance accounted for).</td>
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Notes: y = year, f/u = follow-up, RTW = return to work, AMI = acute myocardial infarction
myocardial infarction (AMI) patients followed over the course of a year, Rost and coworkers (Rost & Smith, 1992) found a progressive reduction in emotional distress in cardiac patients who returned to work and increased distress in those who did not, after controlling for disease severity, psychosocial and demographic factors. In a cross-sectional study, Plach and Heidrich (Plach & Heidrich, 2002) found inter-relationships between role quality (as defined by role balance) and role discrepancy, and physical health on emotional well-being in female cardiac patients. Mediation analysis indicated that good occupational role quality mediated the relationship between physical health and quality of life. In addition, other studies have found that premature retirement and unemployment are associated with higher levels of morbidity and distress (Simchen et al., 2001).

More recent findings have identified that return to jobs with high psychological demand and low opportunity for control results in higher levels of reinfarction and death (Aboa-Eboule et al., 2007). These researchers studied 972 workers following first time myocardial infarction over a period of six years. The rate of fatal and non-fatal MI and unstable angina was higher (OR 2.0) in workers exposed to chronic (greater than 2.2 years) levels of high job strain, indicating that return to work is not healthy in all contexts.

How workers view return to work as influencing their health and well-being is uncertain. The therapeutic effects of return to work suggested above may be present, but this may also be contingent upon work and work relationship factors. Quantitative research provides a limited understanding the potential for work supporting or detracting from quality of life following a disabling cardiac event. As well, return to work may be a “necessary evil” for practical reasons. Understanding how workers balance the decision of returning to the workplace would be valuable in understanding influences on the process of return to work.
2.9 What does this literature tell us about return to work in these workers?

Influences on return to work are multiple and layered. Factors including aspects of disease, illness, psychological response, job and organizational characteristics have been identified. Work relationships have not been well studied and the understanding of relationships between identified influences is limited. These influences are situational and contingent and difficult to examine from a quantitative perspective.

The impacts (symptoms, reduced work capacity, psychological distress) of cardiac illness in workers have been portrayed in quantitative, descriptive terms. The picture of how these impacts are felt in the context of the individual’s return to work experience is limited (beyond the educated speculation of the clinician or researcher). It is often assumed that once a worker is back on the job then things must be ”better”. The data from studies indicating that workers operate at a reduced capacity and put “less effort” into work indicates the need for further examination of adjustment to work in those who return. How the interaction of these impacts and work context influence the quality of work life is uncertain.

The literature is also limited in its description of the efforts and strategies used by workers to return to work and remain on the job, how these strategies develop and how they influence outcome. For example, self-efficacy beliefs are important in return to work but how do these beliefs develop and how do they influence adaptive behaviour? This is an important foundational question for developing helping interventions. While the role of psychosocial factors has been identified as important in return to work, the understanding of these factors remains more descriptive than explanatory. The literature on coping describes a number of dimensions of coping and provides an indication of the factors that influence adjustment to
cardiac disease (Stanton, Revenson, & Tennen, 2007); however the role of adaptive strategies in dealing with the concurrent demands of cardiac illness and return to work warrants greater attention. The important role of the workplace in shaping efforts to adjust needs to be considered alongside any discussion of personal agency (Cartwright & Cooper, 1996).
Chapter 3

3 Influence of Interventions on Work Disability

3.1 Introduction

In reviewing the cardiac rehabilitation literature, Shrey and Mital (Shrey & Mital, 2000) indicate “the existing paradigm reflects a unilateral focus on altering physical and psychosocial characteristics of cardiac patients with little focus on worksite policies and practices and labour relations influences.” (Shrey & Mital, 2000, p. 660). These authors are expressing, in specific terms, a major disconnect between clinical practice and return to work in patients with cardiac illness. Patient exercise capacity and health behaviour has been the focus of rehabilitative intervention. Resumption of occupational roles and adapting to the new circumstances of illness has played a secondary part. Further to this, social context has been overshadowed by a focus on adjusting the individual with cardiac illness to the workplace through improvements in functional capacities. As the above authors suggest, research and practice needs to extend its focus outside of the clinic and into the workplace to better understand and improve the return to work experience of workers. Research and practice also needs to concern itself with the quality of work life enjoyed by workers and how this might be improved.

This chapter will discuss the underlying logic and empirical evidence for intervention effects on return to work. I will contend that interventions based on the traditional medical paradigm are limited in their potential to improve return to work outcome as evidenced both by the limited impact of medical and surgical interventions and exercise-based cardiac rehabilitation on return to work outcomes. Studies focusing on the influence of interventions are summarized in the table below and elaborated in the next section.
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<th>Author</th>
<th>Publ year</th>
<th>Country</th>
<th>Purpose</th>
<th>Design/population</th>
<th>Sample</th>
<th>Intervention</th>
<th>RTW Outcome</th>
<th>Results</th>
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<tbody>
<tr>
<td>Bengston</td>
<td>1983</td>
<td>Sweden</td>
<td>Elucidate the effects of rehabilitation on clinical, social, and</td>
<td>RCT; patients</td>
<td>87 - 44 rehab (average age 55 y), 43 control (average age 57 y), 87% men</td>
<td>Physical training,</td>
<td>RTW 75% in rehab vs. 72.5 control; sick days 235 in rehab vs. 262 in controls</td>
<td>Lower resting systolic and exercise systolic and diastolic blood pressure in rehab group, otherwise no difference on clinical variables or exercise tolerance.</td>
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<td>psychological factors and patient understanding of illness and treatment.</td>
<td>deemed eligible for rehabilitation following MI from coronary care unit</td>
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<td>counselling for 3 months; f/u average 67 week from MI</td>
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<td>Hedback</td>
<td>1987</td>
<td>Sweden</td>
<td>Examine long-term morbidity and mortality, risk factor modification,</td>
<td>Retrospective</td>
<td>Cohort 1 - 123 CR participants; Cohort 2 - 157 surviving patients admitted to hospital w/o CR program; average age 57 y in both</td>
<td>Comprehensive outpatient program; exercise, education; 3 months intensive then 1 X/month</td>
<td>89% in participants vs. 67% in reference group at 5 years</td>
<td>No difference in RTW rate at 1 y. Greater RTW at 2 and 5 y in CR group. Decreased smoking, lower BP, lower medication use, lower recurrent events in CR group. Similar geographic, social and demographic profiles in 2 regions. Intention to treat analysis.</td>
</tr>
<tr>
<td>Dennis</td>
<td>1988</td>
<td>USA</td>
<td>Study the effect of graded exercise testing and specialist consultation on RTW</td>
<td>RCT; employed, uncomplicated, low risk MI patients</td>
<td>99 intervention (average age 49 y); 102 control (average age 50 y)</td>
<td>graded exercise test, specialist consultation with feedback to primary practitioner.</td>
<td>Median RTW 51 days in intervention group vs 75 days in controls</td>
<td>Intervention group - higher levels of perceived health, and an earlier likelihood of return to work; lower perceived risk and more timely recommendation for RTW from physician. No difference in frequency of recurrent events, follow-up surgery and sudden death. No recurrences in occupational settings.</td>
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<tr>
<td>Author Publ year Country</td>
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<td>Mark 1994 USA</td>
<td>Compare RTW rates in patients receiving medical therapy, PTCA, and CABG</td>
<td>Prospective cohort; employed patients with no previous revascularization; 1 y f/u</td>
<td>491 medical, average age 55 y, 82% male; 312 angioplasty, average age 52 y, 83% male; 449 CABG, average age 55 y, 90% male</td>
<td>CABG, PTCA, or medical therapy</td>
<td>Adjusted RTW rates of 84% for PTCA, 80% for CABG, 79% for medical (NS); median time to RTW 18 days for PTCA, 54 days for CABG, 14 days for medical (p&lt;.05)</td>
<td>88% returned to usual job and usual work conditions; Younger age, white race, absence of congestive heart failure, extracardiac vascular disease, perceived function, education, general psychological well-being significant predictors in multivariate modelling. Percent variance accounted for not reported.</td>
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<td>Pollock 1996 USA</td>
<td>Compare PTCA and CABG on employment and QOL outcomes</td>
<td>RTC; consecutive, non-complex patients; 24 month f/u RITA trial</td>
<td>499 CABG, 509 PTCA; average age not provided</td>
<td>CABG or PTCA</td>
<td>22% of CABG, 26% of PTCA not working due to cardiac reasons at 2 y f/u</td>
<td>Presence of angina negatively related to RTW at all time points; earlier RTW in PTCA at 2 months; no difference by 5 months</td>
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<td>Hlatky 1998 USA (BARI trial)</td>
<td>Compare employment outcomes following PTCA or CABC.</td>
<td>RTC; consecutive employed patients appropriate for either intervention; 4 y f/u</td>
<td>219 PTCA, 192 CABG, average age not provided; 72% male</td>
<td>CABG or PTCA</td>
<td>No diff in time worked over f/u (2.23±0.13 vs. 2.13±0.11 FTE); RTW in PTCA 4.9 weeks vs. CABG 10.9 weeks</td>
<td>Age, plan to RTW, initial full time work status, male gender, single health insurance, left ventricular function significant in multivariate model with left ventricular function accounting for least variance; model coefficient of determination .34.</td>
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<tr>
<td>Hoffman-Bang 1999</td>
<td>Study the effect of intense 4 week intervention on lifestyle and social outcome post PTCA.</td>
<td>RCT; uncomplicated PTCA patients with no prior MI.</td>
<td>46 intervention; 41 control; 81% male; average age 53 y in both</td>
<td>Four week residential rehabilitation program with one year nursing f/u up vs. usual care with 1 y f/u</td>
<td>75% CR vs. 68% control at 1 y (NS); 78% CR vs. 61% control at 2 y (NS)</td>
<td>No difference in anxiety or depression b/t groups; higher internal locus of control in CR group.</td>
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<td>Intervention</td>
<td>RTW Outcome</td>
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<td>Laird-Meeter 1989 Nthlands</td>
<td>Effect of PTCA vs. CABG on RTW</td>
<td>Prospective cohort; consecutive patients; PTCA or CABG</td>
<td>125 CABG, average age 52, 47% working; 94 PTCA, average age 51, 59% working; all male</td>
<td>CABG or PTCA</td>
<td>39% in bypass vs. 56% in PTCA at 1 y f/u</td>
<td>59% RTW &lt; 3 months in PTCA vs. 19% in CABG; CABG group, not working prior to intervention, older age, angina at follow-up were predictors in logistic modeling. Job satisfaction not significant.</td>
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<td>Perk 1990 Sweden</td>
<td>Study the influence of comprehensive CR in relation to usual treatment</td>
<td>Case-control; uncomplicated CABG patients matched for demographics, disease severity, smoking, work status; 1 y f/u</td>
<td>49 CR, 98 controls; average age 57 y; 80% male</td>
<td>3 month exercise and education followed by home program</td>
<td>59% CR vs 65% in controls (NS)</td>
<td>Non-resumption of employment related to pre-surgical sick leave. Lower consumption of anxiolytic meds in CR participants</td>
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<td>McGee 1993 Ireland</td>
<td>Compare PTCA and CABG on employment, angina and smoking</td>
<td>Prospective cohort; consecutive patients; PTCA or CABG; 6 - 18 f/u</td>
<td>119 PTCA, average age 54 y, 33% female; 112 CABG, average age 56 y, 20% female</td>
<td>CABG or PTCA</td>
<td>59% in CABG; 68% in PTCA (NS)</td>
<td>Earlier RTW in PTCA (39% vs. 12% at 8 weeks); angina resulting in lower RTW; lower RTW in lower social class CABG patients</td>
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<td>Engblom 1994 Sweden</td>
<td>Study the effect of CR and other factors on RTW in first year post CABG.</td>
<td>RCT; consecutive, uncomplicated, employed, male CABG patients &lt; 64 w/o comorbidity</td>
<td>59 CR (average age 51 y), 67 control (average age 52 y)</td>
<td>Presurgery psychoeducation, 3 week standard CR post surgery, 8 month f/u education vs. usual care</td>
<td>56% CR vs. 38% control (NS) overall; 60% CR vs. 35% control in &lt; 55 (p&lt;.05)</td>
<td>Patient prognosis, expectations of RTW, functional class, duration of disability prior to surgery all related to RTW.</td>
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<td>Author</td>
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<td>Perski</td>
<td>1999</td>
<td>Sweden</td>
<td>To evaluate the response to an intensive inpatient cardiac rehabilitation program in chronic emotionally distressed patients versus non-distressed patients with a focus on functional status and return to work.</td>
<td>Prospective cohort; CABG; without angina at rest, heart failure or pulmonary or orthopaedic comorbidity; 1 y f/u;</td>
<td>152; 73% &lt; 60 y; 83% male; average of 12.8 months post surgery</td>
<td>4 week intensive program including counselling, employer contact, job placement</td>
<td>39% distressed vs. 61% of non-distressed patients working at 1 y f/u</td>
<td>1 y disability related to experience of angina, dyspnea, lower performance on maximal exercise testing, higher use of nitrates, anxiety, use of sedatives, psychosomatic symptoms, lower participation in rehabilitation and delay in referral to intensive rehabilitation. Administrative data used for work status f/u. No psychosocial data collected at that time.</td>
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<td>Dugmore</td>
<td>1999</td>
<td>England</td>
<td>Examine differences between post MI patients receiving comprehensive cardiac rehab vs. matched controls not receiving rehab.</td>
<td>RCT; non-consecutive patients suffering clinically documented MI recruited from hospital cardiology practice.</td>
<td>62 intervention, 62 control; 98% male; subdivided into good and poor prognosis groups</td>
<td>12 month rehab exercise, 3 times per week</td>
<td>67% in CR vs 35% in controls (p&lt;.05)</td>
<td>Earlier RTW in CR group (55% &lt; 3 months vs. 21%, p&lt;.05), less lost time (26% vs. 58%, p&lt;.05), fewer taking up lighter work (14% vs. 39%, p&lt;.05). Greater improvements in exercise capacity, mood, and QOL in treatment group. Significantly fewer non-fatal reinfarctions in treatment (8%) vs. controls (22%), lower rate of angina (35% vs. 69%) at 5 y f/u.</td>
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Table: Studies examining intervention and return to work. (cont’d)

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<th>Author</th>
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<tr>
<td>Higgins</td>
<td>2001</td>
<td>Australia</td>
<td>Influence of home-based rehabilitation program on outcomes following PTCA</td>
<td>RCT; consecutive</td>
<td>54 intervention - 83% male, average age 48 y, 63% working; 50</td>
<td>Intervention - same as control plus home-based, behaviourally-oriented CR; Control - pre and post</td>
<td>93% intervention vs. 85% control at 1 y</td>
<td>Changes in serum cholesterol, BMI, exercise participation in Tx group; earlier RTW in Tx group average 16 vs. 44 days disabled</td>
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<td>patients, routine PTCA</td>
<td>patients, routine PTCA</td>
<td>intervention - 96% male, average age 47 y, 43% working</td>
<td>post PTCA education, quarterly phone f/u for 1 y</td>
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<tr>
<td>Simchen</td>
<td>2001</td>
<td>Israel</td>
<td>Study the influence of CR on QOL and RTW in CABG patients</td>
<td>Prospective cohort; CABG patients &lt; 64 y completing QOL measures matched with reference by age and gender; 1 y postal f/u</td>
<td>124 CR, 248 reference; 96 working in CR, 156 working in reference</td>
<td>3 to 6 months exercise, education, counselling; various intensities</td>
<td>65% working at 1 y vs. 41% reference (p&lt;.001)</td>
<td>53% RTW within 3 months vs. 34% for reference (p&lt;.003); adjusted OR for CR participation on RTW 2.7 (p&lt;.003); lower likelihood of leaving work in CR group; females, older workers, blue collar workers participating in CR more likely to be working at 1 y</td>
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</table>
3.2 What is the influence of interventions on cardiac work disability?

3.2.1 Medical and Surgical Interventions

Revascularization (Coronary Artery Bypass Graft Surgery - CABG, Percutaneous transluminal coronary angioplasty and stenting - PTCA) procedures are designed to restore blood flow to the myocardium, thus reducing ischemic burden and alleviating symptoms of angina, fatigue and dyspnea. Return to work may be promoted through alleviation of these symptoms although neither medical or revascularization treatment has an explicit goal of returning afflicted workers to the workplace. CABG involves opening the chest cavity. A 12-week recovery period typically ensues to permit healing of boney and soft tissues, which necessarily delays return to work. PTCA is less invasive and does not require the convalescence required in CABG procedures. Medical therapy (pharmaceuticals) may promote return to work through the alleviation of symptoms of angina, potentially increasing the individual’s confidence and security in relation to work activities. Adverse effects such as fatigue from medications such as beta blockers may have a negative influence on work readjustment.

Studies examining return to work following revascularization interventions have demonstrated variable rates of return to work. A net loss of employment has been identified in some research. Fitzgerald and coworkers (Fitzgerald et al., 1989) studied work resumption following PTCA and found that 87% of patients (all working prior to the intervention) were working 6 months following the intervention with those not returning to work having taken sick leave or early retirement. Following CABG surgery, Caine and coworkers (Caine et al., 1991) found that 77% of previously working patients had returned to the job within 1 year with 18% on sick leave.
Despite abolition of angina in 90% of the patients involved. In a prospective cohort of 100 CABG patients, Kornfeld and coworkers (Kornfeld et al., 1982) found that 95 percent of patients working prior to surgery resumed employment. At 3.5 year follow-up those remaining in the workforce reported greater satisfaction with their work. Angina rates have been shown to rise in longer term follow-up (Skinner et al., 1999), which may account for loss of employment over time. However, these results suggest that other factors apart from restoration of myocardial circulation are at play in return to work with these patients.

Comparing PTCA with CABG studies, researchers have found higher self-reported work ability (Raft, McKee, Popio, & Haggerty, 1985), and faster return to work (Hlatky et al., 1998; McGee et al., 1993; Pocock, Henderson, Seed, Treasure, & Hampton, 1996) in PTCA patients. Longer term follow-up however does not reveal a significant difference in return to work rates (Pocock et al., 1996) or durability of work outcome (Hlatky et al., 1998) between these forms of treatment.

Comparing medical treatment, PTCA, and CABG, and controlling statistically for differences in baseline variables, Mark and coworkers (Mark et al., 1994) found faster return to work in medically (median 14 days) and PTCA treated patients (median 18 days) compared with CABG (median 54 days) treated patients (measured following diagnostic catheterization). After 1 year 84% of PTCA patients were still working compared with 79% of bypass patients and 76% of medical patients (differences non-significant). Of the patients that returned to work, 88% had returned to their previous jobs with 6% reporting changing to a less-strenuous job, 5% decreasing hours worked and 1% doing both.

As Mark and coworkers indicate “Thus, although correction of physical limitations due to ischemic symptoms is an important first in vocational rehabilitation, by itself it is not sufficient” (Mark et al., 1994, p. 116). This is not surprising considering the factors affecting return to work
outcome discussed in the previous chapter and the limited focus of medical and surgical
treatment on modifying pathology.

3.2.2 Rehabilitation

Exercise training can change the clinical picture of work capacity with increases in VO2 max of
6 to 8 ml/kg/min depending upon the patient group studied (Squires, 1995), providing many
patients with adequate physical capacity to perform most jobs. Change in work capacity
following MI will of course depend upon initial fitness levels and individual response
characteristics. This physiological response forms the underlying logic of cardiac rehabilitation
programs in relation to functional outcomes – improving exercise capacity will result in a
resumption of activities as physiology permits their performance. Further information on
response to exercise training in cardiac patients is provided in Appendix C.

Research into the influence of cardiac rehabilitation programs on return to work has
demonstrated mixed findings. Some studies indicate no difference with usual care (Bengtsson,
1983; Danchin & Goepfert, 1988; Perk, Hedback, & Engvall, 1990), with others indicating
positive results (Boudrez et al., 1994; Dugmore et al., 1999; Hedback & Perk, 1987; H. C.
What can explain the discrepancies in these findings?

Research has examined subpopulations including MI, CABG and PTCA making comparison of
effect between studies more challenging owing to the variations in disease severity between
these groups. Intervention patterns also vary in different jurisdictions. For example, bypass rates
in Ontario and New York State differ significantly and vary across clinical subgroups and
therefore patients undergoing bypass surgery in these two jurisdictions may present at the
rehabilitation clinic with entirely different clinical pictures (Tu et al., 1997). Variability in program duration, intensity, program components, timing, and uptake also makes effective evaluation using the traditional clinical research paradigm difficult. No studies provide a description of the program model used and the logical relationships between program elements and expected outcomes (particularly occupational outcomes), leading to a “black box” problem in program evaluation (Durand, Vachon, Loisel, & Berthelette, 2003).

Methodological issues including poor compliance and high drop out, cross over effects and low numbers of participants are apparent in the studies demonstrating no effect (Bengtsson, 1983). Larger cross-sectional (Boudrez et al., 1994) and cohort (Hedback & Perk, 1987) studies as well as better controlled randomized trials (Dugmore et al., 1999; H. C. Higgins et al., 2001) have demonstrated positive effects on return to work and duration of sick leave absence. As rehabilitation service is highly dependent upon human interaction as well as the case management of patients, observational studies and, in particular, prospective cohort designs may provide better information regarding the ultimate effectiveness of programs as they are administered. A description of program models as they relate to vocational outcome would also be of benefit.

Length of follow-up is also important in studying outcome. Hedback and Perk (Hedback & Perk, 1987) found no difference in work outcome between rehabilitation and usual care patients at one year follow up but better return to work at two and five-year follow-up in rehabilitation patients, however this finding is not universal (Engblom et al., 1994). The outcome of interest may also impact on findings. For example, Higgins and coworkers (H. C. Higgins et al., 2001) found that rehabilitation had a positive influence on disability duration but no influence on return to work rates.
Difference in disease severity may also contribute to the disparity in findings. Rehabilitation programs may have a greater influence on patients with greater disease severity and emotional distress. Higgins and coworkers (H. C. Higgins et al., 2001) found that rehabilitation had no effect on return to work rates in PTCA patients (lower severity) expressing low levels of psychological distress. Similarly Lisspers (Lisspers et al., 1999) found no influence on return to work in PTCA patients exposed to a short duration rehabilitation program.

Differences in program components, duration and intensity may have an effect on return to work. Reviews in the area (Dafoe et al., 1999) have cited the emphasis placed on improving exercise capacity and health behaviours and reducing health risk as detracting from the focus on functional recovery and resumption of role function. Programs are typically exercise based with education focused on smoking cessation, dietary practice and stress reduction, none of which have been shown to influence work recovery. Specialized assessment and counselling focused on resumption of work has been shown to have positive effects on work resumption and sick leave duration (Dennis et al., 1988; Froom et al., 1999). Programs including vocational counselling have shown an influence on sick leave duration (H. C. Higgins et al., 2001).

“Comprehensive” programs including exercise, counselling and education have shown positive effects in some cases (Boudrez et al., 1994; Dugmore et al., 1999; Hedback & Perk, 1987) but not in others (Lisspers et al., 1999; Perk et al., 1990). The specific program components critical for impact on work outcome have not been identified empirically however one might extrapolate from these findings that assessment of work capacity coupled with counselling, an occupationally-focused intervention and education are important elements.

The trajectory of social and psychological recovery has been shown to be slower than that of physical capacity in rehabilitation patients (Morrin, Black, & Reid, 2000) suggesting that
program duration may differentially affect different outcomes. Longer duration programs may prove more beneficial in promoting psychosocial adaptation as patients have the opportunity to adapt their thinking and behaviour to life with cardiac illness in the supportive context of a rehabilitation program. Programs of longer duration have demonstrated positive influence on work resumption (Dugmore et al., 1999) with no effect from short duration programs (Danchin & Goepfert, 1988; Hofman-Bang et al., 1999; Lisspers et al., 1999) further supporting this relationship.

Programs that include components specifically focused on rebuilding work tolerances have been posited to improve return to work outcomes. Mital and coworkers (Mital et al., 2000) reported on the development of a novel program to improve work adaptation in cardiac patients. Study participants were divided into an experimental training group, which underwent a cardiac rehabilitation program involving job simulation tasks with a control group undergoing conventional Phase II cardiac rehabilitation. Results demonstrated a significantly higher return to work rate in the job specific intervention group with 100% of patients returning to their usual employment, 60 percent of usual intervention patients returned to employment with 20% of those individuals seeking alternate employment. The study outcomes, while suggestive of an effect due to the program, were confounded by a lack of randomization with the control group being four years older than the treatment group and having significantly more females than the treatment group - both known to be associated with lower return to work rates.

In terms of magnitude of effect, studies demonstrating positive influences on work resumption have shown variable findings. In probably the best controlled and designed study to date, Dugmore and coworkers (Dugmore et al., 1999) examined differences between 62 post MI patients receiving a 12 month comprehensive exercise rehabilitation program compared to
matched controls stratified by good and poor prognosis groups based on clinical data. In terms of vocational status, the comprehensive rehabilitation group demonstrated higher return to work rates at the five-year follow-up (68 versus 37%). The comprehensive group also returned to work earlier than the controls with 68 percent returning to work within three months of infarct versus 21 percent in the controls. A greater percentage of controls took up easier and lighter work (39 versus 14%) and lost time from work because of heart disease (58 versus 25%).

In support of this study, Hedback and Perk (Hedback & Perk, 1987) studied the effect of a comprehensive cardiac rehabilitation program over a five year follow-up period in a double retrospective cohort of 123 cardiac rehabilitation participants and 158 referent patients on mortality, nonfatal re-infarction, total cardiac events, alteration of risk factors, medication use, and return to work. At the five-year follow-up period participants in the intervention group demonstrated an 88.9 percent return to work rate versus at 66.7 percent in the reference group (p<.05).

Factors that influence work-related outcomes in cardiac rehabilitation patients include demographics, personal and clinical factors. Age has been cited by a number of studies in influencing the impact of programs on with younger patients demonstrating better response in terms of return to work (Boudrez et al., 1994; Danchin & Goepfert, 1988). Career stage and retirement as an option may influence older workers’ decision to return to work. Longer-term disability duration prior to intervention has been negatively associated with return to work rates (Carney et al., 2005; Perk et al., 1990). As suggested previously, long duration disability absence may result in lower feelings of job attachment, decreased self-efficacy and a waning of employer support as well as providing the worker with the alternative experience of a “practice” retirement, which may be appealing.
3.2.3 Psychological Intervention

Psychological interventions have received more limited attention in relation to return to work in cardiac patients. Jones & West (Jones & West, 1996) evaluated a 7-week psychological rehabilitation intervention outside of exercise-based rehabilitation and risk factor modification programs on morbidity, psychological and behavioural outcomes in 2,328 patients randomized to rehabilitation group and control groups. No differences were observed in employment, health care utilization, anxiety or depression. These findings have been critiqued however on the basis of a lack of selectivity in treatment with more severely affected patients and those mildly distressed not showing progress through treatment, thereby creating a washout effect (Garro, 1994).

Petrie and coworkers (Petrie, Cameron, Ellis, Buick, & Weinman, 2002) examined the effectiveness of an early, hospital based intervention focused on modifying illness perceptions on rehabilitation participation and return to work in 65 (38 working) acute MI patients randomized to an intervention and control group. The intervention consisted of 3 sessions of cognitive therapy focused on modifying beliefs relating to causal attribution, illness identity and consequences to facilitate a greater sense of control and belief in the efficacy of self-management. Disease severity was controlled for in the analysis. Work return was accelerated in working patients although return to work rates at 3 months did not differ between groups. A significantly greater number of patients in the intervention group participated in cardiac rehabilitation. Illness beliefs relating to timeline and consequences demonstrated favourable improvements in the intervention group. The authors suggested that early intervention of this nature was effective in improving functional outcome and rehabilitation participation through the alteration of illness beliefs.
3.3 Practitioner Influence

Physician advice to remain off work has been negatively associated with return to work. Physician’s views on the overall disability of workers with heart disease has been associated with return to work rates; however, the workers own view (independent of the physician) has been shown to have a greater influence (Mittag et al., 2001). On the other hand, physician intervention in the form of recommendation to return to work can have a positive influence on return to work rates (Dennis et al., 1988). The mechanism of physician-patient interaction influence on return to work is not clear.

3.4 Health Care System Influences

Wait times for health care interventions have been cited as potentially contributing to work disability by encouraging workers to “stay off” until a particular procedure or investigation has been completed. This time away from the workplace is felt to contribute to the development of “disability behaviour” (i.e. loss of routine, loss of role identity, diminished self worth) which inhibits return to the workplace in spite of the adequacy of functional capacity and low level of risk posed to the patient. A number of studies have supported this assertion (Caine et al., 1991; Gutmann et al., 1982; Perski et al., 1999; Skinner et al., 1999). Most of these studies (Caine et al., 1991; Gutmann et al., 1982; Skinner et al., 1999) have examined wait times for CABG surgery. Perski and coworkers (Perski et al., 1999) found that longer waiting time for entry into cardiac rehabilitation in patients demonstrating high levels of emotional distress and physical impairment was related to higher work disability at the one-year follow-up. It is logical to assume that interventions that are effective in alleviating symptoms or improving personal perceptions of adequacy would have a greater effect on work outcome prior to the entrenchment of disability behaviour.
3.5 Summary of Effects of Interventions

Pharmaceutical management and restoration of coronary circulation would appear to have no
differential influence on return to work rates in cardiac patients. In some studies a net loss of
employment has been identified with CABG and PTCA (Fitzgerald et al., 1989).

In cardiac rehabilitation research, better-designed observational studies (Hedback & Perk, 1987)
and randomized trials (Dugmore et al., 1999) have demonstrated increases in return to work rates
in patients participating in cardiac rehabilitation programs. Longer duration programs (12
months) (Dugmore et al., 1999) seem to be more effective than those of shorter duration and the
effectiveness of cardiac rehabilitation may only be apparent after longer term follow-up
(Hedback & Perk, 1987). Involvement in comprehensive programs involving education and
counselling may also have a greater effect (Boudrez et al., 1994; Dugmore et al., 1999; Hedback
& Perk, 1987). Programs with specific elements designed to increase work capacity may have a
greater influence (Mital et al., 2000) however this research is extremely formative and has
suffered from poor control and design. Programs may result in faster return to work rates in
lower risk populations such as PTCA (H. C. Higgins et al., 2001). Psychologically-based
treatment approaches may encourage earlier return to work (Petrie et al., 2002) but further study
is needed to examine the long-term impact on adjustment to the workplace. The factors
influencing work outcomes in intervention studies are similar to prognostic studies. Physician
views and advice and systemic factors also play a role in return to work.

Our understanding of the effect of rehabilitative interventions on cardiac work disability remains
limited in several respects. The literature characterizes outcomes primarily on the basis of work
resumption or duration of disability. Confining research outcomes to return to work status or
disability duration limits our understanding of the effects of programs. Cardiac rehabilitation
may not improve return to work rates but may improve adjustment to the workplace in patients who participate, decreasing distress and improving quality of life.

Effective program design and research is predicated upon a sophisticated understanding of the factors influencing occupational outcome. There has been no research explicitly detailing the logical relationships between program inputs and return to work outcomes in cardiac rehabilitation programs. For example, in return to work, employer relations and practices may dominate any influence that improvements in work capacity or lifestyle change may have on the possibility of return to work. In this case, program evaluation should examine program activities and strategies to determine if the inner logic of the program is congruent with the goal of increasing the possibility of return to work and/or improving work life. I would contend that the present research and clinical literature is limited in this respect.

Understanding return to work is also limited when studied from the standpoint of the clinic. In conducting clinical research, we tend to have an undue focus on understanding and modifying the individual in a decontextualized fashion. Specifically, the focus on modifying individual exercise tolerance and risk obscures the relationship of the individual to their environment and the effect that environment may have on return occupational roles. Participant views on the potential value of programs in relation to return to work outcomes are also essential for understanding the potential for effect. Participants may not view a cardiac rehabilitation program as having any relevance in relation to return to work. The outcome expectancies and views of relevancy held by workers towards the value of cardiac rehabilitation programs in influencing occupational outcomes warrant further attention.

Practitioner understanding fosters creativity in program development. Privileging the perspective of the clinic provides little opportunity to increase practitioner understanding of contextual
factors influencing work outcome. For example, employer support may be the critical source of support for workers (O'Hagan, Thomas, & Franche, 2004a) but what sort of support is important for return to work? “Therapeutic” return to work programs and ergonomic intervention have demonstrated effectiveness in workers with musculoskeletal injuries (Loisel & Durand, 2003) through helping the worker acclimatize to job demands in a gradual fashion and reduce the physical demand associated with the job. But what opportunities exist for cardiac patients and how can these be negotiated? The study of the worksite and work-oriented interventions are a promising frontier in optimizing return to work and re-adjustment to work activities following onset of CVD.

Cardiac rehabilitation practice literature also points to the limited and limiting nature of unidisciplinary perspectives of disability on intervention. As the literature above indicates, restoration of circulation in itself may be necessary but is not sufficient to ensure a worker’s ability to return to work. Likewise, exercise alone has limited effectiveness. Comprehensive programs including exercise, education and counseling demonstrate more promise and suggest an integration of disciplines.

Shrey and Mital (2000) advocate linking rehabilitation to work and the workplace; however, they also identify the unilateral focus in cardiac care on altering individual biology and behaviour. The biomedical influence of cardiology intervention has shaped cardiac rehabilitation’s focus on a functional capacity and risk management model. Psychosocial perspectives are included to manage mental health problems, but its integration into helping patients adjust to their illness and reintegrate into their lives is limited. Disciplinary paradigms limit the development of practice knowledge and intervention both because of the space occupied by the dominant paradigm, and
challenges faced by programs and professionals to operate in ways that are not comfortable or familiar.

Interdisciplinary perspectives have been developed and used effectively in occupational rehabilitation for workers with chronic pain and musculoskeletal disability. Loisel and coworkers (Loisel et al., 1997) compared traditional clinical intervention (physiotherapy) with combined medical and ergonomic intervention based in the workplace and a combination of workplace and functional clinic based therapy. The workplace and combined intervention demonstrated significant superiority in reducing disability duration, improving return to work rates and, in spite of higher intervention costs, demonstrated considerable savings on disability expenditures. Research into the adaptation of interdisciplinary approaches to cardiac work disability would be an interesting and valuable contribution to the practice literature.
Chapter 4

4 Methods

4.1 Purpose and Method

As outlined in the previous chapters, our understanding of the return to work process among workers with cardiac illness is incomplete and, in some ways, incommensurate with the highly contextual nature of return to work. In order to improve understanding, the purpose of this project was to characterize the return to work experience of workers with cardiac illness and describing, explaining the process of return to work in terms of its influences. Specifically, the following questions were addressed:

1. How can we understand the process of return to work through the experience of workers with cardiac illness?

2. How do personal and contextual factors influence this process?

3. What are the implications of the findings? What inferences can we draw for theory and practice?

Consistent with the theoretical framework of critical realism and the person/environment fit model of occupational function, the study focused on understanding personal and social within the context of the workplace. A qualitative approach was considered most appropriate to the purpose of the project as questions focused on the experiential aspects of return to work and the process of adaptation. Experience and context are interactive and resistant to quantitative measures. Process unfolds over time, is dynamic and often non-linear. As an object of inquiry, it is difficult to “freeze” process in time and measure its qualities. Qualitative methods provide the best opportunity for understanding these phenomena and exploring return to work in a manner that has not been considered in this population (Creswell, 2003).

This chapter will provide an overview of the methods used during the study and their rationale. It will describe the design, study context, process of access negotiation, sampling, data generation, data management and analysis, strategies for ensuring rigour, ethical considerations, and representation of findings.
4.2 Design

Grounded theory formed the foundation for sampling, analysis and the ultimate product of the study. (Creswell, 1998; Dey, 2004). Congruent with the object of inquiry, the study focused on the development of a substantive theory, grounded in data, of the process of return to work among these participants following disabling cardiac illness (Dey, 2004). Consistent with grounded theory, I attempted to purposefully sample a range of experience among workers experiencing disabling cardiac illness based on disease characteristics, disability, intervention exposure, and roles occupied in the plant, recognizing that the study was bounded within a particular setting and recruitment was dependent upon a third party (Dey, 2004). The study relied primarily on qualitative, unstructured data to allow theory to develop from the data itself. Constant comparison within and across cases was used along with progressive coding to derive analytic concepts from the data.

In contrast to classic descriptions of grounded theory (Walker & Myrick, 2006), extant theory sensitized data building and analysis. I used the conceptual foundation of Person/Environment Fit models to frame data gathering. Concepts from mid-range theories of coping and adaptation undoubtedly sensitized my analysis and some concepts were incorporated into the substantive framework developed from the data (Becker, 1998); however, I attempted, to the greatest extent possible, to shelve any preconceptions of what was going on in the experience of my participants and allow themes to emerge from the data. As per the goal of developing a theory or model that is trustworthy and transferable through naturalistic generalization, data saturation was sought during analysis, which began from the outset of data gathering (Dey, 2004).

Grounded theory was developed from the field of sociology and has a long tradition of use in the study of socially-embedded phenomena involving individual action, interaction and processes in relation to a phenomenon (Creswell, 1998). It has been used to investigate the general process of adjustment (J. L. Johnson & Morse, 1990; J. L. Johnson & Morse, 1990) and lifestyle issues (Eastwood, 2001) following myocardial infarction, the relationship between work conditions and health (Eakin & MacEachen, 1998) and return to work issues in other conditions such as cancer (Parsons, Eakin, Bell, Franche, & Davis, 2008). Grounded theory approaches have proven effective in exploring new fields of inquiry but also providing a nuanced picture of complex social and psychological phenomena and processes involving the interaction of work and health.
In the spirit of ethnographic approaches, I attempted to maintain a strong contextual orientation during the data building. Applied ethnography describes an approach that uses primarily interview-based data to study the tacit aspects of culture affecting the attitudes and behaviour of a group (Chambers, 2000). In this study, the influence of workplace factors was a major focus during sampling and analysis. The participants sampled not only reflected their individual particularities but also a type of job and a set of social relationships in the workplace embedded in the workplace culture. Contextual influences including work, workplace relationships, and organizational practices around work disability were a major focus of analysis. While data did not include the participant observation characteristic of classic ethnography, secondary data sources provided insight into the influence of the multiple actors involved, the structures of work and the workplace on workers with cardiac illness.

The characterization of participants was important in integrating qualitative findings and transferring findings to other contexts. To enable characterization of participants, a limited set of psychometrically sound quantitative measures were also employed as described below. Thus the design might be labeled as a “concurrent, nested mixed methods approach” (Creswell, 2003); however, the major focus was on the exploratory, qualitative method.

4.3 Study context and location

The study was undertaken at the Truck Plant at the General Motors Autocomplex in Oshawa. The plant builds the Chevrolet/GM C/K, Chev Silverado and GMC Sierra trucks for the North American Market. This site was selected for both practical and methodological reasons as follows:

1. The plant presented an excellent case of a large organization with established policies and procedures and supports for disability and return to work;

2. The plant employed a large number of male, middle aged workers prone to cardiac problems to ensure adequate sampling;

3. Job demands at the plant were sufficient to tax the workers’ physical and psychological capacities;
4. Coworker and supervisor relationships are present, providing a perspective on influences in the immediate work environment;

5. Stakeholder involvement included management, union, and occupational health; and

6. One of the physicians in the truck plant, Don Mertens, had an active interest in cardiac rehabilitation and facilitated access negotiation and sampling.

4.4 Timeline and Process

The study took place over a 16 month period from March, 2007 to June 2008. Prior to initiating recruitment and data collection, access was negotiated with the company and union. Ethics approval was sought and granted from the University of Toronto Research Ethics Board. Further details on access negotiation and ethical considerations are provided below.

Recruitment was initiated in March 2007. The last participant was enrolled in November, 2007. Follow-up with participants extended to June 2008.

4.5 Negotiating Access

Initial support for the project was gained through the human resources department and Canadian Union of Auto Workers (CAW). Access to the company was negotiated through two of the plant’s occupational health physicians, Drs. Michael Schweigert and Don Mertens. The initial recruitment plan was to have occupational health representatives contact the short-term disability insurer to enlist their aid in identifying and contacting potential participants for the study. This strategy failed. Owing to these difficulties, I enlisted the aid of a contact at the CAW national office (Kathy Walker), who facilitated interest in the project through the local CAW health and safety representative, Paul Groggan. Following this, I met with the CAW health and safety officer, Merv Scott, Drs. Mertens and Schweigert, and the Director of Occupational Health, Carole Black. The recruitment strategy was reviewed and posters and announcements in company newsletters were added to supplement contact through the insurer (which never transpired). Don Mertens, occupational health physician in the truck plant, was the sole source of participant recruitment for the study. As such, the sample reflects the situated characteristics of workers in the Truck Plant, although there is movement of workers between plants.
4.6 Sample

Owing to the orientation of this project in characterizing and explaining experience among workers in context, it was important to consider the range of possible influences on worker experience. During the design phase of the study, I conducted a situational analysis examining the possible influences on return to work experience (Clarke, 2005). I considered the inclusion of the perspective of other stakeholders in the process including supervisors, occupational health, and human resource personnel. While these perspectives potentially hold valuable information, the focus of this study was on worker experience and I did not want to obscure worker experience with the perspective of others. Nevertheless, the influence of these stakeholders is present in the data from workers and, importantly, how the workers constructed the influence of other stakeholders.

A purposeful sample of workers was sought to sample disease severity, disability duration, job position, job tenure, age, and intervention exposure. Recruitment took place over a 10-month period from March to November 2007.

Dr. Mertens (Occupational Health Physician) contacted workers in the normal course of his consultation work for return to work, or his review of disability cases. He explained the study and its purpose, providing the worker with an information sheet on the study. Dr. Mertens provided me with contact information for workers who expressed an interest in participating. I subsequently contacted the worker and gained consent for participation in the study.

A number of factors including data saturation, study design, the breakdown in recruitment strategy (limiting sampling to the truck plant), and plant restructuring all influenced the final sample size. The dissertation proposal suggested an initial sample of 12 participants, dependent upon data saturation (hearing the same story and themes repeatedly). However, the design evolved over the course of the project, influencing the possibilities for saturation. The initial design involved sampling workers cross-sectionally and conducting single interviews. This data was to be considered alongside interviews with supervisors, and focus-group data obtained with union, human resources, occupational health personnel. A number of issues ensued relating to access to supervisors and focus-group logistics. The pattern of recruitment also changed as many workers were being referred to the study at the outset of their return to work. These challenges
were viewed as an opportunity to enrich the data by shifting the focus to longitudinal interviews with workers rather than single contacts. As a consequence, supervisor and stakeholder data were eliminated and worker experience became the sole focus of the study. Longitudinal interviews with workers enriched the quality of interview data and enabled saturation (Yates, 2003) (discussed further below). Additional practical considerations that influenced sample size emerged over the course of the study and will be further discussed in the next chapter on results.

Hourly workers were considered eligible for the study. This group was considered to be a rich source of information owing to the demands of their work, their work relationships and, involvement in the union. This group held the greatest interest for my contacts in occupational health at the plant. I see them as a group with the greatest array of challenges in relation to return to work and vulnerable to work disability. These were workers occupying production, support or trade jobs. Eligible workers had experienced a period of work absence related to a cardiac disease (e.g., myocardial infarction, bypass or stenting) and having returned to work within the 3 years prior to the initial interview. The initial frame was set at two years based on a projection of the number of workers returning to the job at both plants but was extended to three years owing to the failure of recruitment at the car plant. Workers all had sufficient command of English to participate in the interviews and respond to the questionnaire.

4.7 Strategies for Data Generation

As the return to work experience of workers was the primary focus, in depth, focused interviews were the primary data source (Liamputtong & Ezzy, 2005). Interviews provided “information richness” (Kuzel, 1999) in terms of the return to work experience, relationships, work characteristics, and intervention involvement. Interviews used a semi-structured approach with broad questions including the worker’s experience of illness and return to work, response to illness, involvement of others, and the worker’s environment. Interview questions were generated as a function of the object of inquiry, theoretical and experiential understandings of return to work following disabling injury or illness. Specific prompts were used to elicit response in areas that were not spontaneously addressed. The interview guide was amended as data collection proceeded. For example, the relationship between return to work and self-care behaviours was identified early in the process and included in the prompts. The interview guide is appended for review (Appendix D).
A longitudinal approach was taken to sample experience over time, and optimize the reflection of participants and rapport with the researcher (Polkinghorne, 2007). Most (10) initial interviews were performed in the worker’s home environment. One interview was performed at a community site and one was performed at the plant. Workers appeared comfortable with the home environment, offering the researcher coffee and tea. The interview at the plant appeared less comfortable for the worker. This worker had insisted on the interview taking place at the plant and it was the only case where a participant expressed reservation about recording the interview. After the purpose and limits of disclosure were made clear, he readily consented but the interview remained reserved and tentative for some time, perhaps reflecting the ongoing influence of conducting the interview in the plant environment. I would note that this worker turned out disclose a considerable degree of information about the conflictual nature of his return to work experience.

Initial interviews ranged from 75 minutes to three hours duration. Interview length depended upon the response of the participant as well as their energy level. One initial interview was done in two 90-minute bouts owing to the worker’s level of fatigue.

A small set of questionnaire measures were employed to aid in the characterization of study participants in terms of health status and work limitations. At the end of the initial interview, workers completed a brief demographic and descriptive questionnaire including work ability, job demands, health and sociodemographic status using validated questionnaire measures including the Work Limitations Questionnaire (Lerner et al., 2001), and MOS SF 36 (Ware, Snow, Kosinski, & Gandek, 1993).

The SF 36 is widely used for the purpose of collecting data on self-reported health status in a wide variety of health conditions (Ware et al., 1993). Its psychometric properties have been well defined with good internal consistency (Cronbach’s alpha > .80) and expected correlations with other standardized questionnaire measures (p < .05).

The Work Limitations Questionnaire is one of the only validated measures tapping into a variety of dimensions of work limitations, having been validated in relation to a number of chronic health conditions including angina (Lerner et al., 2001). This instrument has demonstrated good internal consistency (Cronback’s alpha > .90) and expected correlations of limitations in relation to self-reported health status and work productivity (p < .05) (Lerner et al., 2001).
These measures provided a more encompassing understanding of worker status at the outset of their involvement in the project and enabled comparative analysis of personal and contextual influences on return to work. The integrated questionnaire form is appended (Appendix E).

Two to five contacts were conducted with each participant over a time period of one to nine months. The pattern of contact is outlined in the diagram below with the pseudonyms used during the project. They are ordered based on order of entry in the project.
### Table 4: Contact Timeline with Participants (months)

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**Notes:** R - Return to work; X – Contact; O – off work; Bill retired four months following return to work. Stan discontinued return process to work at time of the second contact. Sean’s follow-up contact extended beyond the timeline.
The number of interviews and intensity of contacts was negotiated with the workers on an ongoing basis. All workers agreed to be contacted again following the initial interview. These contacts were timed to coincide with particular occurrences or landmarks through the return to work process. For example, one of the participants was initially interviewed two weeks following his heart attack. Follow-up was subsequently negotiated two weeks after his projected return to work date as the participant felt that this would be adequate time for him to settle back in to his job. On other occasions, follow-up timing was dictated by participant health or scheduling conflicts.

Total contact time ranged from 90 minutes to 5 hours. Emails were received from two participants and included in the data corpus. Follow-up interviews were conducted by telephone owing to the dispersed geographic nature of participants. This strategy obviously limited the advantages of face-to-face interaction, eliminating the non-verbal information gained from body language and expression. Some individuals are also reluctant to spend large amounts of time on the phone. Case summaries were read to participants to generate reflection and response, which helped to ensure that follow-up interviews continued to capture the participants’ experience.

Observational data from the workplace helped to “fill in” the gaps in understanding not readily accessible through the talk of the workers in critical areas such as the physical layout of the work environment (Okely, 1994). The project involved extensive contact with occupational health personnel at the plant, meetings with representatives from the union and the company as well as observation of the work milieu. The occupational health physician provided me with an extensive tour of the plant. During this tour, I was able to observe the nature of the jobs discussed by participants during interviews and, in some cases, the specific jobs they identified working on. I was shown the automatic guided vehicles upon which trucks are assembled. I was shown the maintenance and parts storage areas. Most importantly, while seeing the physical setup and work process, I was able to observe workers interacting with their jobs, and to an extent, each other. I was toured through the plant gym and medical centre, again getting an idea of physical access as well as seeing the facility in use. I used field notes to record my observations during this visit. The tour was prior to the last initial interview, so I was sensitized to aspects of work that the participants felt were particularly important. While not allowing the advantage of the “naturalistic” perspective offered by participant observation (Chambers, 2000)
this approach offered a practical alternative to the long-term and invasive nature of traditional ethnography. The ethical issues of participant observation of individuals with health problems and disability in the milieu of their work were also considered when deciding on data sources.

Vignettes or case summaries developed by the researcher during analysis were used to deepen reflection and elicit response on the part of the participant at the time of follow up. These case summaries were developed based on the contacts to that time and included specific questions that came up during analysis of the interviews. Through these summaries, the participant had a foundation for reflecting on experience and could extend the range of their report or provide a deeper reflection on it. I was able to express my understanding of the worker’s experience and elicit response to this understanding. In the same way I could vet uncertainties or things that were not clear up to that point. These vignettes transformed as the project progressed based on the emerging understanding of their experience. For example the summaries initially were shaped by the worker’s descriptive account of their experience and followed the timeline of events. In subsequent summaries, while the timeline was not ignored, the summary was influenced by my interpretation of influences on return to work from an agentic and social/structural standpoint.

Field notes supplemented text-based interview data with observations relating to the participant, the setting and the encounter. Notes were made relating to embodied interaction (visual expression, gestures, body positioning), emotional response, talk (what is said and unsaid), behaviour, interaction, and place during these encounters, providing a “real time” account of contacts (Emerson, Fretz, & Shaw, 2001). Notes were dictated following all participant contacts as well as the meetings and plant tour. Reflexive memoing (Finlay, 2002) was used to track my response to the interactions and the project as a whole as it unfolded. I preferred the reflexive approach of Cutcliffe, (Cutcliffe, 2003) who advocates a balanced approach to subjective awareness to avoid the timidity generated through excessive reflexivity. Project memos were used to track technical and methodological aspects of the project and analytic memoing was used to track thoughts on emerging themes. These were referred back to at the time of analysis and writing (Emerson et al., 2001).
4.8 Data Management and Analysis

Interviews were recorded by a digital recorder and transcribed verbatim by a professional transcriptionist experienced in interview transcription. Field notes and memos were either dictated and transcribed, handwritten or keyed directly. Text included transcribed interviews, field notes, and memos. Nvivo7 software (QSR International, 2007) was used for data management. Cases were created and attributes were defined based on process and demographic characteristics. Interview data was organized according to case. Memos were organized according to whether they related to case, project, or analysis.

Analysis began from the outset of the data collection. I used a layered reading approach as described by Mauthner and Doucet (Mauthner & Doucet, 1998) to become intimate with the data and maintain the voice of the subject in the analysis and writing. The analysis began with a broad reading of the text, and memoing of initial impressions and reactions as a form of reflexive practice. My second read involved looking for the “I” perspective in the text, focusing on the experiences, beliefs and views of the participants. The third read involved looking for immediate relational influences on the experience of participants (e.g., supervisor and coworker interaction) with the fourth reading focusing on larger social influences (e.g. organizational practice).

Through this approach, I attempted to retain the multiple perspectives of participants and their own view of the relevancy of issues, at the same time, raising the analysis to characterize and explain worker experience more broadly, providing a perspective that those directly implicated in the situation may not be aware of.

Through the course of these layered reads, I applied the following analytic devices to the data:

1. Inductive coding was used to develop themes relating to return to work experience following the process of noticing phenomena relevant to return to work experience, gathering examples of those phenomena, and analysing those phenomena in terms of their “commonalities, differences, patterns and structure” (Coffey & Atkinson, 1996) pg. 29. Initially, coding remained at a low level of abstraction, extracting information about individual beliefs and experience, opportunities for agency, progressing to relational and process issues and aspects of the broader social context. Coding was used not only to
develop and place data into categories but also to encourage analytical thinking (Coffey & Atkinson, 1996).

2. Coding was progressive (Walker & Myrick, 2006), initially using an “open” approach, capturing larger themes. These themes were further coded into subthemes in order to enhance characterization. Codes were examined for inter-relationships and contingencies in an inductive fashion, linking them around a central theme into a substantive theory. Nvivo software enabled code tracking. Audit reports were printed on a regular basis to track coding.

3. Constant comparison was used to identify the properties of the concepts identified by the codes and begin to look at these from a more theoretical perspective in terms of what they represented (Seale, 1999b). Constant comparison was used to relate these emerging concepts to each other and to extant theory. Interview data was compared across interviews both within and across cases. The goal of constant comparison was to gain a deep understanding of the layered, relational aspect of the return to work process. Constant comparison was important to evaluate data saturation in examining whether new concepts and properties were emerging over the course of the interviews.

4. Analytic induction was used to analyse the plausibility and explanatory power of emerging ideas (Seale, 1999b) using alternate forms of analytic inference including abduction (looking at a concept through a different frame of reference – “Is this just an example or case of that?”) and retroduction (determining what is necessary for a particular phenomena to be what it is) (Danermark, 2002).

4.9 Secondary Analysis - Case Study

Following the initial thematic analysis as described above, I undertook to a secondary analysis of a collection of cases representing different return to work trajectories as well as a range of temporal perspectives on return to work.

A case study is “an exploration of a ‘bounded system’ or a case (or multiple cases) over time through detailed, in-depth data collection involving multiple sources of information rich in context” (Creswell, 1998, p. 61). Unlike the broad thematic representations of phenomena developed through grounded theory or ethnography, cases are specific, integrated, functioning
systems (Stake, 2000). Cases can be selected as interesting in themselves (intrinsic cases) or for their instrumental value in illuminating a particular issue or refining theory (instrumental cases) or as a collective to investigate a particular phenomenon, population or condition (collective cases) or cases may be investigated as some combination of the three (Stake, 2000). Case studies are valuable as heuristics in “fleshing” out the particular, contextual, and personal aspects of a phenomenon. Cases also move the understanding of a phenomenon from general, rule-based understanding to a more nuanced view thus aiding the development of “expert knowledge” (Flyvbjerg, 2004). Case study has a long tradition of fulfilling these roles in health, psychological and sociological research (Creswell, 1998).

Qualitative case study permits the synthesis of the factors influencing a phenomenon in a situated fashion. In contrast to grounded theory, which gathers concepts from data in a group of participants, case study focuses on the factors influencing experience within the particular case or group of cases. In the case of this study, case study also contributed to the methodological rigour by permitting an examination of the concepts developed through the thematic analysis within cases demonstrating a range of outcomes and temporal perspectives.

For this study, a collection of cases was considered with varying trajectories and occupying different time points on the return to work continuum. Four individual participant cases were developed, believed to represent points where return to work trajectories congregated. The cases chosen were not definitive but have particular characteristics that were thought to be valuable in representing certain aspects of return to work experience gained in the study.

Developing cases in this study involved a return to the data and the developed case summaries. I plotted the return to work trajectories for all participants utilizing the interview data. I analyzed the trajectories for common patterns in terms of duration of disability, whether the return to work was direct or graduated, the job returned to, and the degree of recovery experienced by the participant in relation to work demands. Thematic data were related to the individual trajectories to examine particular patterns relating to individual perspective, adaptive strategies, and social and structural influences on the trajectories. Data from quantitative measures were also superimposed to highlight health status and work limitations at the point in time these measures were administered. Return to work trajectories for each of the participants varied and it was
difficult to categorize the cases into neat “bins” although a range of trajectories was possible to identify.

In selecting cases for in-depth analysis, I also considered the temporal aspect of return to work. My contact followed some workers over the initial portion of their return to work while others were tracked later in the process. This produced different perspectives and provided different insight into the process of return to work over time. Cases such as Derek and Phil provided a “real time” account of return to work in process, while Sean and Pat provided the value of experience and reflection on the process.

4.10 Study Rigour

My goal in data building, analysis and interpretation was to provide a trustworthy account of the return to work experience of participants (Morrow, 2005) maximizing the “truth-value” and utility of the research. Verification processes for my data are inspired by the criteria outlined by Seale (Seale, 1999b) and included data, researcher, and theoretical triangulation, thick description, and my reflexive account. These strategies are detailed in the table below.

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<tr>
<th>Process</th>
<th>Description</th>
<th>Strategies</th>
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<td>Methods and design</td>
<td>Planning the inquiry in a rigorous fashion ensuring consistency between theory and methodology</td>
<td>Ensuring congruence between research question, object of inquiry and data building strategies</td>
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<tr>
<td>Data collection and management</td>
<td>Collecting and handling data in systematic fashion that ensures the integrity of the corpus and the methods used to gather data</td>
<td>Developing sound rationale for sampling and data generation strategies</td>
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- Use of semi-structured interview guide
- Audit trail kept of all changes in method along with rationale for change
- “Real time” electronic recording of data
- Use of low inference descriptors in field notes
- Use of validated quantitative measures for descriptive purposes
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<th>Process</th>
<th>Description</th>
<th>Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data triangulation</td>
<td>Cross-comparison of text through form, source, researcher, and theoretical perspective.</td>
<td>• Comparison of interviews, observations and field notes for emergent themes.</td>
</tr>
<tr>
<td></td>
<td>• Comparison of interviews, observations and field notes for emergent themes.</td>
<td>• Consideration of extant theory such as job strain, effort/reward</td>
</tr>
<tr>
<td></td>
<td>• Comparison of qualitative data with quantitative descriptive measures.</td>
<td>• Comparison of qualitative data with quantitative descriptive measures</td>
</tr>
<tr>
<td>Thick description</td>
<td>• “Leave no stone unturned” approach. Full detailed account of context and a blend of direct quote and researcher observation in the account to bring the reader into the research</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Use of low inference descriptors using verbatim accounts.</td>
<td>• Detailed description of General Motors Oshawa, auto assembly work, and processes of disability management used in the plant.</td>
</tr>
<tr>
<td></td>
<td>• Use of low inference descriptors using verbatim accounts.</td>
<td>• Extensive use of direct quotations from which themes were derived.</td>
</tr>
<tr>
<td></td>
<td>• Use of low inference descriptors using verbatim accounts.</td>
<td>• Keeping descriptors grounded in the data</td>
</tr>
<tr>
<td>Response data</td>
<td>Requesting participants to respond to an interim account to deepen reflection and enhance rapport.</td>
<td>• Feeding back case summaries constructed from interview data to participants for response.</td>
</tr>
<tr>
<td>Reflexivity</td>
<td>Making explicit my own perspective and the potential for subjectivity in order to better manage it.</td>
<td>• Reflexive analysis of the researcher’s own perspective and biases.</td>
</tr>
<tr>
<td></td>
<td>• Reflexive analysis of the researcher’s own perspective and biases.</td>
<td>• Extensive journaling by the researcher of emerging perspectives and possibilities for subjectivity.</td>
</tr>
<tr>
<td>Analytic strategies</td>
<td>Use of accepted, systematic processes for deriving meaning and explanation from data proceeding from indexing to coding to thematic abstraction.</td>
<td>• Use of multiple, layered reads</td>
</tr>
<tr>
<td></td>
<td>• Use of multiple, layered reads</td>
<td>• Use of systematic coding</td>
</tr>
<tr>
<td></td>
<td>• Use of analytic induction to actively seek negative cases that challenge emerging themes with alternate explanations</td>
<td>• Use of analytic induction to actively seek negative cases that challenge emerging themes with alternate explanations</td>
</tr>
<tr>
<td></td>
<td>• In-depth analysis and development of interesting cases</td>
<td>• In-depth analysis and development of interesting cases</td>
</tr>
<tr>
<td></td>
<td>• Use of qualitative analysis software for data organization, analysis, and extraction</td>
<td>• Use of qualitative analysis software for data organization, analysis, and extraction</td>
</tr>
</tbody>
</table>
Rigour in qualitative research is a combination of structuring the research in a manner that ensures methodological congruence and an organized approach and following a process that is reasoned, reflexive, and transparent. As indicated in the table above, important structural aspects used to develop project rigour included:

- establishing a congruent framework between my paradigmatic perspective, the research questions, and the specific approach and methods used;
- structuring data gathering tools in a manner informed by the object of inquiry and questions addressed by the project;
- tracking changes in analytic devices such as codes and memos to evaluate the status of sampling vis a vis saturation;
- using different forms of memoing to capture both thoughts and reflections in the present, as with interview memos, and developing thoughts around themes and concepts in analytic memos;
- organizing data and analytic tools such as memos in order to maintain coherence; and
- ensuring my methods and reflexivity was represented in a transparent fashion to increase credibility.

From a process perspective, I ensured that:

- adequate rationale were employed to underpin decisions around changes in methods over the course of the project;
- multiple, layered reads were used to ensure an adequate depth of understanding;
- data were analysed in a layered fashion by initially identifying concepts in a broad fashion then coding on to look at the particularities; and
- a reflexive perspective was maintained and documented throughout the project.
My initial perspective on rigour included a more positivistic approach to data verification in having a structured peer review of my coding by an “experienced” researcher. As I proceeded with the project and understood better the interpretive nature of qualitative research, I came to realize the limitations of transporting quantitative notions of reliability and validity to the data. For example, through different perspectives, experience, or familiarity with the literature, two analysts may reasonably come up with two very different interpretations of data based on their respective theoretical perspective, practical experience or the sensitizing concepts that they arrive at the analysis with. Consensus can be a tool through which this type of problem can be dealt with. Peer processes can also expand thinking around data and the object of inquiry, thereby enhancing the rigour of the study. Consensus opinion was difficult in the context of a dissertation project that is ostensibly independent in nature.

The longitudinal perspective adopted for the project contributed significantly to study rigour. Participant feedback helped me to continually examine my interpretations in relation to their experience. Participant feedback maintained accuracy in my account in terms of events and timelines. Participant feedback also allowed for the expansion of the scope of experience described by the workers. The conjunction of worker experience and my interpretation of the data is influenced by the workers’ capacity for reflection on experience, social desirability and rapport, and the researcher’s agenda (Polkinghorne, 2007). Prolonged contact and the feedback of case summaries to participants have helped to deepen their reflection. Prolonged contact also allowed me to develop rapport and comfortable exchange with workers as well as decreased the potential influence of social desirability effects. In addition, open-ended questions, supplemented by prompts in plain, non-threatening language (e.g., What has been challenging in starting to exercise? vs. Why aren’t you exercising?) and my persistent curiosity enhanced understanding and exchange. Interviewing workers at their homes increased their comfort and was more conducive to exchange. I presented at interviews with plain clothes and a plain, GM vehicle, which enhanced relationship and trust.

Interview data were enhanced through observations made during meetings with company personnel and a tour of the plant hosted by the occupational health physician. My previous clinical experience with the study population and context also enhanced the data. I have worked with workers from the plant for the past 18 years in occupational rehabilitation. I have had two previous tours of the workplace offered by the company. This has the advantage of familiarity
with the work context and surrounding community including health care supports (knowing the “lay of the land”). These observational data were invaluable in developing a deeper understanding of the context and its influence on the participants’ representations of experience.

There were caveats to the advantage of my previous experience with this population and context. It was important to remain aware of the dulling effect of familiarity and its potential influence on the project. I ensured to cover aspects of work context in the interviews that I was familiar with to avoid “taken for granted” knowledge affecting the results. It was also important to maintain an “unknowing” perspective and to attempt manage my notions of rehabilitation (e.g., self-responsibility, unlimited potential for recovery) in my dealings with participants and analysis of the data. I did this through first developing a reflexive “mirror” to identify my experiences and beliefs that may influence the project. Through the course of the project, I attempted to keep this mirror in play, without letting it obscure the data gathering, analysis, and interpretation.

In analyzing the data, a number of points relating to rigour were important including: the representation of participants by the researcher; the potential for plurality of interpretation and the search for a “truth”; the unit of meaning used in analyzing text; the development of concepts from coded data; the importance of context in the analysis; generalizing in qualitative inquiry, and maintaining a critical perspective in relation to catalytic validity (the ability of the study to generate change). These will be discussed in turn.

I attempted to maintain a balanced perspective on social representation through the analysis (Radley & Billig, 1996). This involved examining data and posing the question whether statements represent the actual views of the participants or a view that the participants wish to project in the context of the research interview or focus group of this project? Advancing alternate explanations for what I was hearing was important. In other words, I considered the accounts of participants critically as social representations, not to be analysed verbatim as the “truth”.

I believe that my theoretical perspective was important throughout the analysis in establishing an account that has explanatory potential and believability (Sayer, 2000). In interpretive research, the question of the nature of “truth” is a contested notion. Naturalistic views of truth hold it as something to be found in the data as opposed to the constructivist view that “reality” is made through the interaction of participants and the researcher. Critical realism attempts to strike a
middle ground between these views, asserting the existence of a social reality outside of our conscious awareness but recognizing the interpretive nature of social science research and that any representation of this analysis is couched in culture (Danermark, 2002). Interpretation is, in a sense, doubled as the analyst is tasked with interpreting the already filtered (i.e., interpreted) accounts of the participants.

Analysis in a critical realist fashion attempts to come up with not the only but the most plausible explanatory framework to explicate what is going on in the situation (Danermark, 2002). Sayer (Sayer, 2000) describes the notion of “practical adequacy” in describing the veracity of findings and the extent to which it “generates expectations about the world and about the results of our actions which are realized” (Sayer, 2000). Findings should permit those reading the account to make reasonable explanations in similar situations. Accounts can be looked upon as relative in terms of “practical adequacy” however some accounts of phenomena can be judged to be superior to others. In this sense, research should produce knowledge that is practical and credible to those who use it; in this case rehabilitation and disability management professionals but also those involved in job design and management.

The unit of meaning in qualitative research can pose a problem if utterances, removed from context, are the sole fashion through which data is analyzed (Silverman, 2005). In order to maintain narrative coherence and contextualization, I constructed a case summary for each of the cases. Information included in the summaries depended upon my emerging understanding of return to work experience of the worker, informed by my knowledge of theory and empirical literature in the area as well as my practical experience. Further to this, the narrative approach was extended to the construction of exemplar cases in Chapter 8 of the dissertation.

The question of generalization or transferability is commonly raised in relation to qualitative inquiry. The varying perspectives on transferability all hold that theoretical development is valuable. Danermark and coworkers (Danermark, 2002) argue that is the goal of an explanatory social science to develop theoretical generalizations that do not represent “totalizations” of social phenomena but broadly transportable concepts that hold true in similar contexts. Seale argues that qualitative research is better to focus on naturalistic generalization predicated upon “thick description” of the case or cases studied in order to thoroughly characterize the “sending context” to the extent a reader can extend concept or theory to a “receiving context” judged to be
sufficiently similar (Seale, 1999a). In my account, I have attempted to describe the possibility of theoretical generalization through relating these findings to extant literature and theory as well as putting forth my arguments in a manner that permits any claims to be substantiated by warrants developed from the data. I have also used rich, thick description to permit the reader to understand the “sending context” in order that my theoretical generalizations can be judged for believability and that the reader can also draw inference from the data.

Catalytic validity describes the potential for research to generate action on a particular social problem (Morrow, 2005). In the case of reintegration to the workplace, this would motivate action on the part of stakeholders such as employers to provide supports to help workers. An important aspect of motivation in this situation is the development of empathy towards the workers on the part of stakeholders and providing ideas, within the power of these stakeholders, as to how their experience could be improved. In this respect, I attempted to provide a rich, descriptive account of experience to consumers of this knowledge understand the difficulties faced by these workers and an understanding of specific contextual influences on reintegration (such as job design) that is within the power of stakeholders to deal with.

To conclude this section, including case studies as part of the analysis strategy helped to enhance rigour. In this study, the themes developed in previous chapters to characterize and explain return to work served as a sensitizing backdrop to the recounting of the experience of particular participants. The analysis of the cases provided a means to challenge the conceptual framework developed during the thematic analysis.

4.11 Ethical Considerations

Research in work disability is characterized by the involvement of multiple stakeholders, holding differing perspectives and interests with inherent imbalances in power between them. Workers are a vulnerable population in that potential for sanction exists because of the power and hierarchical structure of the workplace and the economic and social relationships involved (Rose & Pietri, 2002). University of Toronto Research Ethics Guidelines specifically identify employees as a special group. During the project, it was important to minimize coercion potential and the potential (perceived or otherwise) for negative consequences of choice of participation. It was important to employ data control measures to maintain the
confidentiality and anonymity of the participants. Owing to these concerns, the following measures were undertaken to mitigate ethical issues with respect to participants:

- During negotiation of access the importance of participant anonymity was made explicit
- Assurances that no adverse employment effects would occur as a result of participation were gained from the company;
- Participants were assured that confidentiality and anonymity would be maintained by the researcher through management of files and removal of any potential identifiers in the account;
- Signed consent for voluntary participation was obtained. Consent for contact was renegotiated by participants over the course of the study with assurances of no negative consequences; and
- Information regarding mental health and rehabilitation services was made available to participants as their needs warranted;

Tensions also exist between traditional health and social science research owing to the former’s focus on individual subject issues (in particular autonomy and informed consent) and the latter’s focus on political and emancipatory action (Hoeyer, Dahlager, & Lynoe, 2005). People in positions of power and influence are concerned, as it is often their practices that come under scrutiny in social inquiry. This can create problems in the exploratory context of qualitative research, particularly when these individuals or groups object to the account that is produced. Creating a dialogue from the outset of the research can help by ensuring that all those involved are aware of the nature and focus of the research and that the potential for findings that may find practices wanting in some respect.

The following actions were taken to mitigate these ethical issues with respect to stakeholders:

- Preliminary communication with the union and management at the plant regarding the exploratory nature of qualitative research;
• Negotiating dissemination of the findings with the company with the understanding that the company may opt to not be identified explicitly in publications (but that the form and scope of dissemination remained my prerogative);

• Periodic consultation with union and management over the course of the project.

• Assurance that results would be shared with the union and company prior to journal publication;

• Removal of any identify references to others discussed during interviews; and

• Provision of a balanced account focused on process issues and opportunities for improvement in company practices.

In order to protect the autonomy of participants, procedures for informed consent included:

• Initial contact for participation was made through a third party to minimize coercion potential;

• Written, informed consent was obtained from all participants; and

• Consent for follow up was included in the initial consent and renegotiated over the course of contact.

Information collected from participants was kept in strict confidence with no disclosure to parties, in particular employer and labour groups. Identifiers were removed from all text data and replaced with pseudonyms. A pseudonym legend was kept with identifying information. Questionnaires had number coded identifiers. Interview transcripts used the pseudonym identifier. Data files were separated from identifying information and both locked in separate secure cabinets with only the researcher having access to both sets of information. Electronic data was password protected and storage devices for electronic data were password protected.

Ethics approval was obtained from the University of Toronto Research Ethics Board. A copy of the consent forms is appended (Appendix F).
4.12 Representation of Findings

The subsequent results chapters will address the purposes of the project in order. Chapter five will characterize the participants, their experienced health impacts as a result of cardiac disease, and their experience and views on return to work. Chapter six will focus on individual perspectives on illness and work and individual agency in managing the challenges associated with return to work through specific strategies employed by participants. Chapter seven will focus on social and structural influences on the return to work experience. Chapter eight will provide a grounded representation of the interaction between individual perspective and agency and social and structural influences through the presentations of four exemplar case summaries that characterize particular trajectories and return to work outcome and temporal experience.

The summary and discussion chapter will bring these findings together, discuss their relationship to empirical literature and extant theory and advance a theoretical framework for return to work, providing possibilities for transfer to other situations and contexts. Lastly, I will identify implications for practice and potential avenues for future inquiry.

Expanded views of rigour call for social, catalytic or consequential validity, all referring to the ability of the research to stimulate action and achieve social and political change (Morrow, 2005). I have initiated dissemination of these results at meetings including:

- Trent Health Studies Day (2008) – A summary of results were presented to members of the Trent University academic community as well as the larger health care community in Peterborough.

- Canadian Association for Research in Work and Health (2008) – Results focusing on individual strategies were presented to the larger community of Canadian work and health researchers. My involvement in this conference has subsequently resulted in involvement on the board of this organization and other research and dissemination opportunities.

- International Commission on Occupational Health Conference on Psychosocial Factors in the Workplace (2008) – Results focusing on social and organizational influences were presented to this international group of researchers. The interest generated has resulted in
an invitation for involvement in the Commission’s conference on work and cardiovascular illness in 2010.

- Ontario Institute for Work and Health Open Plenary (2008) – In this presentation I was able to present a more detailed discussion of the entire results to researchers, knowledge exchange, and disability management professionals. I took the opportunity to compare and contrast the results with the musculoskeletal disability literature, more familiar to this group.

Following completion of the dissertation, a full report will be produced for the stakeholders at General Motors. This report will include concrete, practical recommendations that can be used to facilitate return to work for these workers. The findings will also be disseminated via peer and non peer-reviewed publication and further conference and workshop presentations.

### 4.13 Researcher as Instrument

In concluding this section, I would like to reflect on my role as a researcher and position in relation to the study. I tried to maintain my voice through the dissertation; however, there are aspects of my subjectivity that were perhaps less apparent and should be made clear. Reflexivity recognizes the central role of the researcher “as instrument” in shaping the nature of study, the active interpretation in knowledge construction, the ethical stance of the researcher, and ultimately the knowledge that is produced and how it is used (Finlay, 2002). Reflexivity is the process of self-examination undertaken by the researcher over the course of the research process (planning and dissemination included) that permits continual self-awareness of how the subjectivity of the researcher may impact on the knowledge produced (Morrow, 2005). Reflexivity is critical from the standpoint of methodological rigour, transparency and the production of a trustworthy account of the phenomena (Morrow, 2005) although excessive reflexivity can have a stifling effect on the creative processes of inference.

My interest in developing this study developed through my professional involvement in occupational rehabilitation and personal experience with work disability. After graduate training in kinesiology focusing on physiology, I began practicing as a clinical Kinesiologist and soon came to recognize the strong influence of psychosocial factors on worker adjustment and occupational outcome. The inadequacy of the medical model of disability in terms of diagnostic
cause and effect and the tension between that perspective and my understanding of disability shaped my professional practice in terms of its focus on multi-modal, multidisciplinary, and contextually sensitive intervention. I carried this perspective forward into my research. It served to steer my research towards practice-oriented research in occupational rehabilitation. I conducted a preliminary study examining the influence of a variety of psychosocial factors on return to work and “readiness” to return to work. While considering the findings from this study, I was fortunate to be exposed to qualitative research, which I felt allowed the possibilities for deeper understanding of the influences that this preliminary work helped to identify.

After deciding to take a qualitative approach, I trained under a strong group of qualitative researchers in the departments of Nursing and Public Health. My involvement in the CIHR funded Work Disability Prevention Strategic Researcher Training Program reinforced my qualitative training and strengthened my belief and commitment toward research focusing on understanding the multifaceted nature of work disability and the possibilities for intervention to reduce its burden. It also further grounded my critical view of the unidimensional view of impairment-focused models of disability and rehabilitation.

As such, my “bias” is toward an interdisciplinary approach to research. This has required longer-term training and the integration of multiple and sometimes incongruent perspectives in preparing for this study. This perspective has also shaped my approach to designing the study in its situated nature and the multi-level approach to analysis.

I attempted to manage my preconceptions through a number of strategies relating to my research paradigm, use of the literature, and use of theory. My theoretical framework (critical realism) recognizes the variously constructed nature reality and the possibility of multiple perspectives relating to the same phenomena. This theoretical perspective left me open to various possibilities emerging as influences on return to work experience. Recognizing that preconceptions are an inevitable part of life as a researcher, I took the view that an inclusive review of the literature would provide a broad foundation for the study. I did put aside the empirical literature while working on my design and during data collection to maintain some distance during that period. In the initial phase of the project, I avoided becoming too “theoretically loaded” by focusing on larger models and frameworks for work disability and general models of coping. This helped me
to keep an open mind to differing perspectives that might emerge from the study while at the same time being aware of the perspectives that could contribute to the analysis.

My years of experience in rehabilitation also helped me to adopt a more balanced perspective while conducting the research. Work in rehabilitation focuses on encouraging clients to extend themselves to achieve rehabilitation goals; sometimes overcoming constraints that limit possibilities for recovery. Having worked with hundreds of clients helped me to recognize the possibilities for individual adaptation and structural limitations placed on agency. I was keenly aware that there is potential in individual agency; however agency is both enabled and constrained by situational influences.

It was challenging to maintain balance when working with a group of workers struggling to maintain their jobs in an industry in peril. From the outset of the study, there were problems at the company and a sense that layoffs might be pending. When the third shift at the truck plant was laid off, this became a reality. Immediately prior to the last follow up interview, the company announced that it would be closing the truck plant altogether. Watching the prospects of my participants dwindle over the study was difficult, knowing that for some there would be few options in a tough labour market.

My position as a mature male researcher both had advantages and disadvantages. I believe that my gender and age (and also having worked with these workers for years) enhanced my ability to engage and develop rapport. Opening conversations would sometimes focus on the junior hockey rivalry between Peterborough and Oshawa; a good segue into the interview. A limiting factor was perhaps my gender. Older male workers were perhaps less apt to discuss the emotional impact of heart disease and disability with a male researcher. Phil, for instance, flatly denied any emotional distress during interviews yet reported an SF 36 score in excess of two standard deviations below the mean for mental health. From a methodological standpoint, inclusion of a quantitative measure was valuable as it provided a means of capturing the emotional difficulty of dealing with heart problems among participants. The pencil and paper measure may have dampened concerns about disclosure and prompted participants to respond in a more open fashion.

Having worked extensively in workplaces also enabled my research. This experience provided a good background for access negotiation, communicating with representatives from the plant and
union, and working with the participants. I was also familiar with the “culture” of the workplace and the multiplicity of views held both by different workers in relation to work disability and return to work, and that of the other stakeholders in relation to work disability.
Chapter 5

5 Characterizing Experience

How did the workers experience return to work following disabling cardiac illness? What were the impacts of cardiac illness on their well-being? Prior to elaborating on the analytic perspectives that emerged during the study, this chapter will provide the reader with a foundational understanding of how saturation emerged in the data, the context of the workplace and work, the workers and their return-to-work experience in relation to the context, demographics, impacts of disease, representations of illness, views on return to work, and return to work trajectories of participants.

5.1 Data Building and Saturation

As follow up interviews with the workers proceeded it became apparent that seeking further participants beyond the initial 10 would be unlikely to result in different themes emerging. By the ninth or tenth interviews, the broad themes described in these results chapters were developing consistency. For example rate making (as elaborated in Chapter 7 Social and Structural Influences) was occurring in all interviews with production workers and was supported during interviews with trade workers. Likewise changing mindset as a strategy (Chapter 6 Strategies) was consistent among production workers. Longitudinal follow-up interviews and the feedback of case summaries to participants provided for the opportunity for new themes to emerge, although it is recognized that the case summaries were in part framed by my emerging ideas about themes.

The restructuring at the plant, which resulted in a layoff of the third shift of workers in January 2008 and a total layoff of workers in March 2008 also influenced sampling. The layoff effectively limited sampling of workers coming back on the job to pre-Christmas of 2007 in order that return to work could be initiated.

5.2 Context

Data relating to context were derived from discussions and onsite meetings with occupational health, union, and management personnel, a tour of the plant. My previous experience in the
rehabilitation of workers from the plant and previous plant tours assisted in sensitizing me to the context.

Emerging from meetings with the occupational health physician, the plant employed approximately 2600 workers represented by the Canadian Auto Workers. These workers fulfill a number of roles in the plant including direct assembly work, support functions in relief, quality management, and supply, and maintenance trades. The workforce is predominantly male (approximately 80%) and older with an average age of 51 years\(^1\). Inquiries were made regarding administrative data relating to cardiac illness in the plant; however neither the occupational health nor human resource departments maintain databases relating to specific health problems among workers and their relationship to return to work.

The occupational health department has two physicians and five occupational health nurses. These contract professionals provide support for workers returning to work and workers with health concerns on the job. They do not assume responsibility for the ongoing care of workers.

Seniority provisions allow workers to “bid” into jobs based on their tenure. Accommodation provisions permit workers with documented medical restrictions to “shop” for jobs in the plant that meet their level of restriction. This process, known as placement, involves the worker, union, and a placement coordinator touring work groups and reviewing the jobs in the group. If the low seniority position in the group meets the worker’s restrictions, the worker can “bump low man” in the group.

Workers can retire with a full pension with 30 years seniority\(^2\). Short-term disability benefits are available for a period of one year at 80 percent of the worker’s gross pay. Long-term disability extends beyond the one year point at a reduced percentage of pay. During periods of layoff, workers receive a supplement to Employment Insurance benefits (SUB) to top up their wage. The union sponsors an employee assistance program and employees have access to an extensive

\(^1\) Information regarding plant demographics was gathered largely through the occupational health physician involved in the project, Dr. Don Mertens.

\(^2\) Information on benefits was derived from a number of sources including workers (and spouses), plant officials, and occupational health personnel.
extended health benefits package (not covering cardiac rehabilitation). An extensive gym facility is available onsite. A small membership fee is charged for its use.

Workers at the plant reside across a wide area in East Central Ontario, ranging from Durham to City of Kawartha Lakes to Peterborough to Northumberland and the lakeshore of Lake Ontario, although workers may commute from as far away as Kingston and St. Catherines. Major communities in this area include Oshawa, Whitby, Peterborough, Lindsay, and Cobourg. Workers may commute 90 minutes to work at the plant, either on their own or in organized car pools or “the van”\(^3\). There are cardiac care centres in Oshawa and Peterborough without interventional capacity. Intervventional cardiology (stenting, bypass) is performed in Toronto or Kingston. Oshawa has two cardiac rehabilitation programs; there is one in Peterborough, and one in Lindsay.

Vehicles are assembled on Automatic Guided Vehicle (AGV’s) platforms. These AGV’s run on electromagnetic tracks set in the floor. The work pace on the line is predetermined. Generally workers on the line have 25 seconds to complete a job “on time”. Should the worker go over 25 seconds, a red light on the AGV starts to flash. At 40 seconds, the light begins to flash more quickly and the job is “overtime”. A certain percentage of overtime jobs are acceptable (80 percent of jobs “on time”). If this is exceeded it can result in a visit from a supervisor and potentially disciplinary action. Workers occupying support roles may be exposed to production-paced, work if providing relief for workers on the line or supplying parts. Workers in trades are typically not exposed to production-paced work directly; however, their performance is critical when breakdowns occur as each minute the line is down costs the company the profit equivalent to a vehicle.

The plant underwent restructuring over the course of the project, with the loss of the third (midnight) shift. A new system of production (Global Manufacturing System or GMS) was also being initiated over the last months of data gathering. This was significant for a number of reasons. The restructuring created uncertainty for workers at the plant. Workers were concerned about the future of the plant and their job security. Layoffs meant that higher seniority workers

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\(^3\) One worker will operate a van and charge the other workers an amount for commuting.
were “bumping” workers with less relative seniority, causing them to move to other jobs of differing, and potentially higher, physical demands. The change in manufacturing systems was early in implementation but added to the sense of instability. Worker talk, as the study progressed, reflected this uncertainty, with considerable focus on the restructuring and future of the plant. While this perhaps detracted from the individuals’ focus on their situation (i.e., heart disease on the job), it amplified talk about the influence of market and industry trends and organizational direction on the day to day experience of the workers.

5.3 Participant Demographics

The demographic data presented was derived from the questionnaire as well as the interviews. A sample size of 12 participants was obtained over the 10-month recruitment period indicated in the methods. Descriptive data concerning the sample are given in the table below.

<table>
<thead>
<tr>
<th>Table 6. Participant characteristics</th>
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<tr>
<td>N = 12</td>
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<table>
<thead>
<tr>
<th>Male</th>
<th>100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age range (years)</td>
<td>43 - 63</td>
</tr>
<tr>
<td>Job tenure (years)</td>
<td></td>
</tr>
<tr>
<td>21 - 25</td>
<td>8</td>
</tr>
<tr>
<td>&gt;26</td>
<td>4</td>
</tr>
<tr>
<td>Married/cohabiting</td>
<td>11</td>
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<table>
<thead>
<tr>
<th>Disease</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coronary Artery Disease</td>
</tr>
<tr>
<td>Idiopathic Cardiomyopathy</td>
</tr>
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<table>
<thead>
<tr>
<th>Intervention</th>
</tr>
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<tbody>
<tr>
<td>Revascularization</td>
</tr>
<tr>
<td>Cardiac rehabilitation</td>
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</tbody>
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<table>
<thead>
<tr>
<th>Disability duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 6 weeks</td>
</tr>
<tr>
<td>6 - 12 weeks</td>
</tr>
</tbody>
</table>
All participants had greater than 20 years job tenure. Four were approaching or had exceeded the mandatory thirty years of service prior to pension (> 26 years). Nine had suffered a myocardial infarction with eight of those having undergone revascularization (six stenting, two bypass). One of the remaining participants had undergone a triple bypass. The other was still suffering from idiopathic cardiomyopathy. Six participants reported ongoing angina pain at the time of the initial interview. Eight had varying degrees of involvement in cardiac rehabilitation (elaborated below).

The sample provided a range of participants in terms of job positions. Six occupied line jobs, two production support jobs, and four trade jobs. Of the production support workers, one was a group leader, providing relief and support in his group of workers and the other occupied a materials handling position, keeping the line stocked with parts. Trades included an electrician, two tool and die makers, and a millwright. Thus, the sample provided a perspective both on jobs tied to the assembly line and those not (the significance of which will be elaborated further on).

In terms of demographics, all but one of the participants was married or in a common-law relationship. Ten had completed high school diplomas, one a college diploma and one a university degree. All tradesmen had journeymen qualifications. All were Caucasian. Table 4 provides the pseudonym used in the study, along with the demographic profile for each of the participants.
Table 7: Participant Age, Job Tenure, and Job Position listed in recruitment order

<table>
<thead>
<tr>
<th>Participant</th>
<th>Age (range in years)</th>
<th>Job Tenure (range in years)</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pat</td>
<td>55 – 59</td>
<td>25 – 29</td>
<td>Production</td>
</tr>
<tr>
<td>Bill</td>
<td>60 - 65</td>
<td>30 plus</td>
<td>Production support – Group Leader</td>
</tr>
<tr>
<td>Phil</td>
<td>55 -59</td>
<td>25 – 29</td>
<td>Production</td>
</tr>
<tr>
<td>Stephen</td>
<td>45 - 49</td>
<td>20 – 24</td>
<td>Trade</td>
</tr>
<tr>
<td>Stan</td>
<td>55 - 59</td>
<td>25 – 29</td>
<td>Production support - Materials handling</td>
</tr>
<tr>
<td>Jim</td>
<td>40 - 44</td>
<td>20 – 24</td>
<td>Production</td>
</tr>
<tr>
<td>Sean</td>
<td>55 - 59</td>
<td>20 – 24</td>
<td>Production</td>
</tr>
<tr>
<td>Derek</td>
<td>55 - 59</td>
<td>20 – 24</td>
<td>Production</td>
</tr>
<tr>
<td>Frank</td>
<td>55 - 59</td>
<td>20 – 24</td>
<td>Trade – Group Leader</td>
</tr>
<tr>
<td>Tony</td>
<td>60 - 65</td>
<td>25 – 29</td>
<td>Production</td>
</tr>
<tr>
<td>Jeff</td>
<td>50 - 54</td>
<td>20 – 24</td>
<td>Trade</td>
</tr>
<tr>
<td>Les</td>
<td>45 - 49</td>
<td>20 – 24</td>
<td>Trade (working on assembly line)</td>
</tr>
</tbody>
</table>

5.4 Disease Event

Seven participants suffered an acute onset of disease. Frank, Tony and Jeff suffered cardiac arrest with no prior indication of problems. Frank was administered cardiopulmonary resuscitation at the fitness facility where it occurred and revived multiple times on route to the hospital. Tony and Jeff had an acute onset of chest pain at home, were transferred to the hospital, and subsequently diagnosed as suffering MI. Stan suffered an acute onset of chest pain while at the coffee shop after his work shift. He reported suffering two mild heart attacks while undergoing the stenting procedure. Bill suffered his attack while driving with his wife to the U.S. for a holiday, necessitating a two-week stay in hospital there prior to coming home. Sean awoke to experience chest pain and went to the hospital. Jim suffered an acute onset of chest tightness and pain and weakness while performing yard work at home. He was subsequently diagnosed with idiopathic cardiomyopathy.
The remaining five participants’ heart problems were of a more gradual onset. Pat sought treatment after a bout of chest pain following helping his daughter move house. He had been experiencing exertional chest pain while climbing stairs for over a year. Phil was experiencing chest pain on exertion over a couple of months that was progressively worsening, eventually resulting in an episode of significant pain while on holiday and subsequent revascularization. Stephen experienced chest pain over a two-day period while working on his small farm, prior to seeking care. He had been experiencing dyspnea on exertion for several weeks prior to this episode. Derek suffered from a viral infection in the two months prior to the development of chest pain. He continued to have chest pain, not being diagnosed as experiencing an MI but eventually diagnosed with multiple blockages necessitating revascularization. Les suffered from what he thought was indigestion over a year prior to an onset of chest pain at work. He finished his shift, went to the local emergency and was diagnosed as suffering an MI subsequently undergoing revascularization.

5.5 Health History and Comorbid Conditions

Sean, who was the only participant to experience heart problems prior to the more recent disabling cardiac event, had a history of heart problems dating back 10 years with prior bypass surgery. Stan had been diagnosed with an aortic aneurysm at the time of his revascularization and booked for further surgery at that time.

Participants with significant comorbid conditions had greater problems. Stan and Sean reported a recent diagnosis of chronic obstructive pulmonary disease (COPD) and breathlessness under exertion as a more prevalent symptom than other participants. Stan had had a history of back pain and was being investigated for a bowel tumour. Sean had had a history of carpal tunnel syndrome and was on permanent work restrictions relating to these problems. Derek was a diabetic and reported energy swings. Stephen was a recently diagnosed diabetic but was younger

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4 The presence of comorbid conditions was considered in designing the inclusion and exclusion criteria. Comorbidities are common among individuals with heart disease with more than a third of working-age individuals reporting at least two other major illnesses such as arthritis, COPD or stroke ([504 Johansen,H. 1999; ]). I decided to include individuals with comorbid conditions as this is the reality of workers living with heart disease and it would have placed significant restrictions on the ability to recruit an adequate sample.
and reported no significant physical symptoms of diabetes\(^5\).

### 5.6 Intervention Involvement

The table below offers a summary of the participants’ disease characteristics and intervention involvement.

\[\text{Table 8: Disease type and intervention involvement over the course of follow-up in order of participant recruitment.}\]

<table>
<thead>
<tr>
<th>Participant</th>
<th>Disease and intervention involvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pat</td>
<td>MI with placement of 2 stents; follow-up with cardiologist</td>
</tr>
<tr>
<td>Bill</td>
<td>MI; 2 stents; follow up diagnostic testing and cardiology consult</td>
</tr>
<tr>
<td>Phil</td>
<td>MI; quintuple bypass; cardiac rehabilitation 6 months</td>
</tr>
<tr>
<td>Stephen</td>
<td>MI; 1 stent; follow-up with cardiologist; referred to cardiac rehab 7 months post</td>
</tr>
<tr>
<td>Stan</td>
<td>MI; 4 stents; cardiac rehabilitation 3 months; return to cardiac rehab 6 months following surgery</td>
</tr>
<tr>
<td>Jim</td>
<td>Dilated cardiomyopathy; cardiac rehabilitation over course of follow-up (10 months); multiple visits to ER for chest pain; multiple follow-ups and diagnostic tests</td>
</tr>
<tr>
<td>Sean</td>
<td>MI; quad bypass; cardiac rehabilitation for “a couple of sessions”; second MI; no subsequent intervention</td>
</tr>
<tr>
<td>Derek</td>
<td>Viral infection; emergence of angina; triple bypass; cardiac rehabilitation 4 weeks; multiple follow-ups and diagnostic testing</td>
</tr>
<tr>
<td>Frank</td>
<td>MI with cardiac arrest; 2 stents; cardiac rehabilitation for 2 to 3 visits</td>
</tr>
<tr>
<td>Tony</td>
<td>MI and cardiac arrest; 2 stents; exercise stress test; no further follow-up or intervention</td>
</tr>
<tr>
<td>Jeff</td>
<td>MI with cardiac arrest; no revascularization; cardiac rehabilitation for “a couple of visits” then dropped out; one episode of chest pain</td>
</tr>
<tr>
<td>Les</td>
<td>MI; 1 stents; cardiac rehabilitation for 8 weeks</td>
</tr>
</tbody>
</table>

Notes: MI = myocardial infarction

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\(^5\) He had stumbled upon his condition by accident when a diabetic brother had him try out his blood glucose-testing device.
All but two of the workers underwent some form of revascularization procedure. Jim suffered from what initially was suspected to be a myocardial infarction but was subsequently diagnosed as idiopathic cardiomyopathy. Jeff suffered what he described as a significant myocardial infarction (based on blood enzymes) and was treated with clot busters. He was referred to interventional cardiology; however, angiography indicated no significant blockage and he was discharged without intervention.

Cardiac rehabilitation experience differed among the eight workers referred to programs. Derek and Les completed four and eight week programs at private clinics, attending three days per week. Derek’s program was cut short owing to the program closing for the summer. Phil and Jim attended a six-month program, once per week at the local hospital. Jim’s program accommodated return to work through evening classes. Jim continued with this program over the entire course of the follow-up. Stan attended two bouts of rehabilitation; one subsequent to his heart attack, and the second following his cardiac surgery. On the first occasion, he attended three of the usual six months, twice per week at the local hospital. This program was cut short by his return to work (day shift conflicted with usual program hours). The second time he completed the six-month program, receiving a certificate of completion. All programs were exercise-based and had some element of education focusing on risk factor modification. None of the participants indicated that return to work preparation was a part of their program. Sean, Frank and Jeff attended for a few visits then dropped out.

Two other workers had been referred to programs but never attended; one not receiving a call from the program (Tony) and the other not having entered at the end of the follow up period (Stephen). Cardiac rehabilitation was recommended to Bill during his hospital stay in the United States, but never mentioned following his return to Canada, despite ongoing chest pain, physical limitations, and disability. Rehabilitation was recommended to Pat by his cardiologist and a family member that had attended and benefited from a program. He opted not to attend, indicating that if he did not return to exercise within a year, he would consider it. He did manage to resume some walking and jogging, albeit not on a regular basis.

5.7 Impact on Well-Being

As a means of characterizing health status and impact, participants completed the SF 26
questionnaire (Kelly, 1955) at the time of the initial interview. Results from this questionnaire are tabled below. As a means of reference, standardized scores (Z scores, mean = 0, SD = 1) are given in relation to Canadian males in the participant’s age cohort (35 to 44; 45 to 54; 55 to 64) based on normative information from Hopman and coworkers (Hopman et. al., 2000).

Table 9: Z Scores for eight health domains on SF 36 Health Survey in ascending order based on the General Health domain.

<table>
<thead>
<tr>
<th></th>
<th>PF</th>
<th>RP</th>
<th>RE</th>
<th>Vit</th>
<th>MH</th>
<th>SF</th>
<th>Pain</th>
<th>GH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sean</td>
<td>-3.14</td>
<td>-2.89</td>
<td>-1.10</td>
<td>-3.19</td>
<td>-0.13</td>
<td>-1.59</td>
<td>-1.46</td>
<td>-3.41</td>
</tr>
<tr>
<td>Stan</td>
<td>-1.99</td>
<td>NR</td>
<td>NR</td>
<td>-1.62</td>
<td>1.37</td>
<td>-0.13</td>
<td>-0.46</td>
<td>-2.61</td>
</tr>
<tr>
<td>Phil</td>
<td>-3.14</td>
<td>-2.89</td>
<td>-2.56</td>
<td>-3.19</td>
<td>-0.72</td>
<td>-2.31</td>
<td>-2.01</td>
<td>-2.35</td>
</tr>
<tr>
<td>Derek</td>
<td>-0.27</td>
<td>-2.89</td>
<td>-4.01</td>
<td>-1.31</td>
<td>-3.11</td>
<td>-2.31</td>
<td>0.54</td>
<td>-2.08</td>
</tr>
<tr>
<td>Jim</td>
<td>-0.12</td>
<td>-1.24</td>
<td>-0.55</td>
<td>-2.35</td>
<td>-2.25</td>
<td>-2.19</td>
<td>-0.89</td>
<td>-1.76</td>
</tr>
<tr>
<td>Stephen</td>
<td>-0.53</td>
<td>-1.30</td>
<td>-0.71</td>
<td>-0.16</td>
<td>-0.13</td>
<td>-0.69</td>
<td>0.94</td>
<td>-0.70</td>
</tr>
<tr>
<td>Les</td>
<td>0.33</td>
<td>0.43</td>
<td>0.45</td>
<td>-0.16</td>
<td>-0.39</td>
<td>0.59</td>
<td>0.48</td>
<td>-0.42</td>
</tr>
<tr>
<td>Frank</td>
<td>0.02</td>
<td>0.49</td>
<td>0.35</td>
<td>-1.94</td>
<td>-0.13</td>
<td>0.59</td>
<td>-0.01</td>
<td>0.03</td>
</tr>
<tr>
<td>Bill</td>
<td>0.30</td>
<td>-2.04</td>
<td>-1.10</td>
<td>-0.36</td>
<td>-1.02</td>
<td>-0.13</td>
<td>-0.46</td>
<td>0.03</td>
</tr>
<tr>
<td>Pat</td>
<td>0.88</td>
<td>0.49</td>
<td>0.35</td>
<td>0.26</td>
<td>-0.13</td>
<td>-2.31</td>
<td>0.99</td>
<td>0.30</td>
</tr>
<tr>
<td>Tony</td>
<td>0.88</td>
<td>0.49</td>
<td>0.35</td>
<td>0.58</td>
<td>1.37</td>
<td>0.59</td>
<td>-1.46</td>
<td>0.56</td>
</tr>
<tr>
<td>Jeff</td>
<td>0.61</td>
<td>0.43</td>
<td>0.45</td>
<td>1.03</td>
<td>0.93</td>
<td>0.59</td>
<td>-1.01</td>
<td>0.71</td>
</tr>
</tbody>
</table>

Notes: Scores were calculated based on the RAND scoring method and are standardized based on Canadian norms for males age 35 to 44, 45 to 54, and 55 to 64. Scores below zero represent scores below the reference mean. PF = physical function; RP = role physical; RE = role emotional; Vit = energy and vitality; MH = mental health; SF = social functioning; GH = general health

In relation to normative values, participants described the greatest impact in energy and vitality (Vit) with four (Sean, Phil, Jim, and Frank) having scores above or near two standard deviations below the mean, with Stan and Derek having standard scores 1.62 and 1.31 standard deviations below the mean respectively. Social function (SF) scores were greater than two standard deviations below the mean in four participants (Phil, Derek, Jim, and Pat) with Sean’s score at 1.62 standard deviations below the mean. Sean, Derek, and Bill indicated significant impacts on role function owing to physical health (RP greater than two standard deviations below the mean). Stan did not complete this portion of the questionnaire. Phil and Derek reported impairment in
role function owing to mental health (RE). Again, Stan did not respond to this section on the questionnaire. Three participants (Sean, Stan, Phil) indicated low physical function (PF) scores (greater than two standard deviations below the mean). Reductions in mental health (MH) were less prevalent in the sample, with Derek having a standard score of –3.11 and Jim a score of –2.25. Jim’s father had recently passed away and he was being treated for depression related to this bereavement; however, his reports of depressed mood extended to the end of his nine month follow-up period. Sean, Stan, Phil, Derek, and Jim reported significant effects on general health (GH). Phil reported pain as being problematic in relation to population norms.

The qualitative data produced a more descriptive, and nuanced account of the subtleties of impact on participant well-being, in some ways complimenting, in some ways contradicting and in some ways extending understanding of impact (e.g. financial impact) in relation to the SF 36. Participants elaborated a range of physical health impacts. Some participants carried on as if nothing had happened (Pat, Steve, Tony, Jeff) and indicated no lingering symptoms or impairments, these reports being consistent with vitality and pain scores on the SF 36. Two weeks following a mild heart attack Stephen indicated “Um, you know what to be honest, truthfully, I feel great”. Consistent with SF 36 scores, others described ongoing fatigue (Phil, Stan, Sean, Derek, Frank, and Jim) and chest pain (Sean, Derek, Phil) as lingering symptoms. Sean, having a history of a heart attack, quadruple bypass, a second heart attack plus the more recent emergence of chronic obstructive pulmonary disease (COPD) indicated:

Ah, shortness of breath, sweats that come right out of the blue, I mean that even happens here at home. I just will be sitting and all of a sudden it will just start running off me. Short of breath, weakness, fatigue, ah ..... that’s about it I guess but that’s enough.

This report was consistent with Sean’s SF 36 energy and vitality score. He described being “out of gas” by six hours into his work shift and having little energy to do anything around the home. Frank reported napping in the afternoon on days off and fear of falling asleep behind the wheel when coming home from day shift. Although not as apparent in the SF 36 data, Derek described resting more frequently during the day while at home owing to decreased energy. Phil and Jim indicated similar problems with energy.

Tony (neck pain) and Jeff (knee pain) reported pre-existing persistent pain in body areas not
related to their cardiac problem, which was reflected in higher SF 36 pain scores.

Along with the physical health impacts described above, workers reported cognitive, emotional, social, functional, and financial issues following the onset of work disabling heart disease. In tears during the interview, Jim described thoughts of mortality that were evidently resting heavily on him.

> I have been single my whole life…a bachelor. She [wife] was the first person that I could ever love that loved me back. She is my best friend and I love the kids. I waited 40 years for someone like her. I don’t want to lose them. [Yeah] I certainly don’t want to go out this way. So, I do what I gotta. That’s it.

Others dismissed any ruminative aspect to their illness “Do I dwell on thinking, am I going to have a heart attack? I don’t dwell on that at all.” (Stan).

Some workers described shifting views on illness and life. Frank described a change in view on his mortality as a consequence of his sudden cardiac arrest.

> Yeah, you look at things a little different now. I don’t worry about it anymore, you know what I mean like, before you know. How am I going to die and this and that and is it going to be painful, is it going to be this. Now I, I should not say I don’t care, it just doesn’t seem to bother me anymore. I don’t think about it. It is going to happen some time right? I survived it. Sheer luck.

Tony, whose father had died at a young age from heart disease, described his event as a wake up call.

> I don’t know, I guess ah, I have a better appreciation for life [Yeah] in general and I was always worried like …is that my destiny, I am going to die at 73, 72? That’s what I’m thinking of and it’s funny because, it’s not funny but I kept thinking that about that all these years since then and then I have a heart attack and wow, so ever since then I have a different outlook on life.

He went on to describe how he doesn’t ‘sweat the small stuff’, indicating that he saw this as an opportunity to take care of himself, suggesting his cardiac event was a meaningful experience.
Others like Phil and Stan did not share the same thoughts. Both shared a more fatalistic view of their illness, indicating no particular change in perspective such as a greater appreciation for life or dramatic changes in health behaviour.

Emotional impacts were not as evident during the interviews. Emotional expression, such as that described with Jim above was rare and acknowledgement of emotional sequelae was not prevalent during interviews. Derek and Jim had SF 36 standardized scores greater than two standard deviations below the mean score for their respective age cohorts. Jim indicated that he was ordinarily a “happy go lucky” guy but acknowledged that his family found his mood irritable (buying him a “grumpy” tee shirt while on a trip to Disney world). Beyond the initial contact, he continued to report persistent low mood and irritability throughout the follow up although his presentation was cheerful over the contact. By the last follow-up, he indicated that he was more settled with his condition as he had come to believe that it would be a part of his life that he had to deal with and there was no point in worrying and seeking reassurance. Derek described a pervasive sense of worry about his future at work and his family. His worry showed signs of lifting when he was able to complete a full day at work. Stephen’s mental health score was initially in the average range and he indicated no worry or emotional distress about his condition. Over the course of the follow-up he began to report greater “sensitivity” to previously innocuous events. At the fourth follow-up (six months following his heart attack), Stephen indicated: “I think my emotions run a little bit high. [Yeah] Yeah, so, yeah, I think I’m a little maybe more emotional so.”

Along with Stephen, Jim, Pat, and Frank all described an increased sensitivity to events (such as a tragic news story) that normally would not have bothered them. While Frank’s SF 36 score was near the mean, he also reported ongoing doubt regarding the reason for his cardiac arrest. While he described it as “concern” rather than “worry” it appeared to contribute to him not reengaging in his martial arts program. Pat indicated ongoing struggles with depression that ensued following his wife’s death 10 years previous. In spite of their limited expression or emotional fallout during interviews, Phil (Z = -2.89) and Bill (Z = -2.04) described significant impact of emotions on role function on the SF 36. Stan described a positive mental health picture, indicating no worries about health or disability and having a positive score on the SF 36 mental health scale. While information concerning local mental health services was offered to any of
the participants indicating distress, all declined, preferring to deal with matters using their own means and present supports.

Two workers (Frank and Tony) described memory problems with difficulties tracking conversation or remembering particular information. Frank for instance indicated:

> Memory problems are the worst, the worst thing that seems to be for me right now and it is not really huge it is short-term memory, seems to be. I will probably forget that you were even here; I’m just kidding. No, short-term stuff. They said it will get better as you go.

Social impacts were also present but varied. Two workers (Bill, Stan), both nearing retirement, described a more active social life during their period of convalescence. Bill indicated that he and his wife were socializing more with friends. “Actually, this one couple we are actually seeing more of them now since I had the heart attack because I am home and around because on shift work it is hard to make arrangements to go do this, do that eh,”. Bill indicated that his convalescence was akin to a “practice retirement”. Stan echoed the same sentiment describing an enjoyable trip to a U.S. city with his family as a highlight of his time off. Neither indicated adverse consequences of health on social function on the SF 36.

Phil, Jim, Derek, and Pat all had standardized social function scores greater than two standard deviations below the population norm. Phil described impacts on his church involvement, which was his primary avenue for social contact. Jim was involved in a choral singing group and had just resumed this activity at the time of the first interview. During interviews, Pat described a solitary existence (“social life, I don’t have one”) apart from visits from his daughters and his involvement with exotic animal breeding and shows.

Participants experiencing greater functional difficulties also reported reduced socialization through active leisure pursuits. In describing the shift from his prior active leisure pursuits, Sean (Social function score –1.59) indicated “Leisure now, I go to Mosport and I watch the stocks and stuff like that and I mean it is all watching events.”

Some participants described functional impacts that extended beyond the sphere of work and impacted on their typical role in the home and family. Phil and Sean, with physical function
scores less than three standard deviations below the mean both indicated abandoning yardwork and home maintenance as a result of physical limitations. Phil described his activities around the home:

Phil: I don’t do much. [Yeah] I get tired fairly easy, much more so than before and I think that is one of [wife’s] focal points. She observes that and says ‘You are not going to be able to do that but we’ll see’. I don’t move furniture any more. [Yeah] I don’t, well of course here I don’t cut grass but I just don’t do those kinds of things anymore.

Less affected participants, (Tony for example) described a progressive return to activities around his home, including home renovation work.

I helped the guy; did the floor in May [Yeah] this year and I helped, he’s a friend of ours, Al; I did the cutting, I was pretty active [Yeah] and he laid the tile, I was mixing the stuff and I was just as active as he was except I let him lay the tile. [Yeah] So, I did not have a problem.

Finance was also a consideration for workers who had prolonged periods of disability, particularly those with families. Derek indicated “It is just, never been through it before, I mean you know, of course Beth and the kids I got to worry because I got to pay bills too just like anybody else you know. We don’t own the house yet”. Reliance on sickness and absence disability insurance produced real financial hardship for Sean. “I almost lost this house the first time around with my bypass. I came real close. As a matter of fact I had borrow $2,500.00 off somebody I knew or we would have been out of here. That’s how bad it was the first time when I was off the year.” The heart problem and disability carried with them financial instability and uncertainty and caused significant stress at a time when the worker and family were in a vulnerable position.

Changes in health status over the course of the follow up varied in participants relating to disease severity, chronicity and behavioural response. Participants in a more acute stage of illness indicated a progressive increase in energy, physical capacity, and activity participation. For some this was reflected in a rapid return to pre-event status (as previously indicated by Pat, Stephen, Jeff, and Tony). Bill and Les realized a more gradual improvement in health and
function over time. For others, such as Phil, the improvement in well-being was more gradual and limited. He expressed his disappointment at not returning to pre-MI health status, but was satisfied enough with his recovery not to push himself with exercise in an effort to improve his health and function. Frank had likewise seen progressive improvement, but continued to experience reduced energy, which he indicated impacted on his job performance in the afternoon as well as his safety on the road when driving home from afternoon shift. Derek, who persisted over time with exercise and return to work, realized a slow but progressive improvement in his health status, demarcated by lapses in energy and the recurrence of chest pain. Jim’s health status improved, but he experienced the intermittent setbacks characteristic of cardiomyopathy. Sean and Stan had reached more chronic stages of illness. Sean described no change in health status over the course of follow up and had undertaken to accommodate his lifestyle to his limitations. Stan had undergone a second surgical intervention relating to a valve repair and had enjoyed a reasonable physical recovery but was experiencing the emergence of other health problems.

5.8 Work Limitations

A summary of responses to the Work Limitations Questionnaire (WLQ) is provided in the table below. Work limitation is reported as a percentage of work time that the limitation in that particular domain was experienced. Participant responses are placed in descending order from greatest average limitation to least.
Table 10: Work Limitations Questionnaire Scores in descending order

<table>
<thead>
<tr>
<th>Participant</th>
<th>Time</th>
<th>Output</th>
<th>Physical</th>
<th>Mental</th>
<th>IP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Derek</td>
<td>45.0</td>
<td>90.0</td>
<td>45.8</td>
<td>4.2</td>
<td>50.0</td>
</tr>
<tr>
<td>Phil</td>
<td>30.0</td>
<td>45.0</td>
<td>25.0</td>
<td>29.2</td>
<td>8.3</td>
</tr>
<tr>
<td>Les</td>
<td>0.0</td>
<td>35.0</td>
<td>8.3</td>
<td>16.7</td>
<td>0.0</td>
</tr>
<tr>
<td>Sean</td>
<td>15.0</td>
<td>10.0</td>
<td>4.2</td>
<td>8.3</td>
<td>0.0</td>
</tr>
<tr>
<td>Frank</td>
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<td>10.0</td>
<td>0.0</td>
<td>16.7</td>
<td>0.0</td>
</tr>
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<td>Bill</td>
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</tr>
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<td>Jim</td>
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<td>Stephen</td>
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</tr>
<tr>
<td>Jeff</td>
<td>10.0</td>
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<td>0.0</td>
<td>0.0</td>
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</tr>
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<td>Tony</td>
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<td>4.2</td>
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<td>Pat</td>
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<td>0.0</td>
<td>0.0</td>
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</tbody>
</table>

Notes: Work limitations are expressed as a percentage of time. Higher scores indicate a greater degree of work limitation. Time = limitations in maintaining time demands such as work schedules and not working with extra breaks. Output = limitations in meeting work output expectations. Physical = limitations in the physical activities associated with work. Mental = limitations in the cognitive and perceptual activities associated with work. IP = limitations in the interpersonal demands associated with work. Please refer to the appended questionnaire for specific items.

At the outset of their involvement in the study, participants cited the greatest limitations with work output (handle workload, work fast), followed by time (handle hours, maintaining routine), physical (body mobility, repetitive movement) and mental (concentrate, work carefully) demands, with lesser involvement in interpersonal demands (help others, communicate, manage emotions).

Derek reported the greatest degree and range of limitations, indicating that he felt limited in meeting work output demands 90 percent of the time. He also reported significant time, physical, and interpersonal limitations but fewer mental limitations. Interview data indicated that Derek experienced significant physical impairments in relation to work stamina, consistent with his
reports on the WLQ. “And ah, it wasn’t a hard job but it was a busy job ah, I did not realize that at the time but the jobs were something like 74 and hour. By noon I had all I could take of it eh, I had all I could handle.” In addition, Derek was concerned about his work output and how it was viewed by others, which may have influenced the interpersonal impact of his heart disease on his work ability.

Phil likewise described a significant range of limitations, identifying greater mental limitations and fewer interpersonal limitations than Derek. In interviews, Phil expressed limitations in stamina and ongoing chest pain, which limited his capacity to maintain work rates on 40 percent of his workdays. He did not describe the same concern in meeting others expectations or being able to help coworkers, which was consistent with his response to interpersonal limitations on the WLQ. Les and Sean reported moderate degrees of work limitation. Les completed the questionnaire early in his return to work when he was on modified duties and experiencing ongoing limitations in stamina. He returned to regular duties at the last contact with no reported limitations. Sean, in contrast, had maintained work with the same relative degree of limitation for the previous three years. Consistent with the WLQ, his interview data indicated limitations in meeting time and work output demands owing to problems with stamina. “Like when we are on day shift, day shift is 7:00 to 2:30, by 1:00 in the afternoon, 1:30 or so, I am almost on fumes right there. [Yeah] Like, I’m done. I have trouble walking out of there.” Additionally, Sean was on a “placement” job owing to prior musculoskeletal injuries, which reduced the gap between his significant physical impairments and his job demands, resulting in lower limitations on the WLQ than otherwise might have been expected.

Consistent with interview data, Frank and Bill reported minor work limitations on the WLQ. Both occupied “Group Leader” positions, which limited their exposure to high work demands and provided them with greater latitude in governing their work pace. Frank described experiencing fatigue at work that came with his heart problem and had persisted. “I’m tired around 2 o’clock in the afternoon….no matter what shift, [Yeah] that time of day I can be tired.” He went on to describe the problem this created driving to or from the plant at that time. Bill described the difficulty of returning after five months off work. “I thought ‘Jesus’. By the end of the day I said ‘I’m beat, I’m tired’. I said ‘I did not do hardly anything’ but I was beat.” He remarked further that it was a combination of demands, rather than just the physical activity of the job. Bill commented on the uncertainties associated with his return to work, reflecting the
views of his fellow participants who experienced ongoing impairments. “When I first went back I was a little, I don’t know if I can do this or not eh? You know physically, you know mentally can I do this or not? Always in the back of your mind you know…”.

Jim’s response on the WLQ indicated modest limitations in time, output, and physical demands. This was in significant contrast to the difficulties he reported during interviews in maintaining work output. For instance, Jim reported difficulty keeping up with work rates and made frequent visits to occupational health. His condition (idiopathic cardiomyopathy) has the potential for periodic regressions and exacerbations, which may explain the discrepancy between interview and questionnaire data.

Consistent with WLQ profiles, Steve, Pat, Tony, and Jeff indicated no limitation in work function. As Jeff indicated “I was off work on a holiday. [Right] Like, I did not have any, after two days I had no effects whatsoever. [Yeah] And going back to work was just like normally going in after a weekend”. Pat likewise reported no difficulties even with the more demanding aspects of his position. “Like I go in, I throw tires, I do rims and everything. Do all the hard jobs I used to do. They don’t bother me at all.” Tony and Jeff, in fact, complained that their absence from work was unjustified, as they felt fine and wanted to return earlier than they were permitted medically. In both of their cases, their cardiologists imposed work disability until they passed a stress test. Stephen indicated that his cardiologist wanted to impose what he believed to be unjustified medical restrictions on his return to work.

Stan returned to work following his heart attack on a materials handling job, driving forklift and supplying parts to the line. He indicated that “There were times where you had to get off and open baskets or get off and take gas lines out of one basket and put in another one. I would get a little bit winded but I could still do my job. Stan declined to complete the WLQ at initial contact and subsequently terminated his return to work plan. Subsequent chapters will refine the picture of return to work experience in the participants.

5.9 Summary and Synthesis

This chapter reviewed results relating to work context and worker experience of illness and return to work. Illness impact ranged in severity and nature among the group from minimal in the case of Tony and Jeff to significant in the case of Derek and Sean. For Tony and Jeff,
recovery took a matter of days, while Derek, Jim, and Sean continued to struggle with limitations that impacted their lives inside and outside of work life months and years following the onset of CVD.

Participants indicated that the primary health impacts from heart disease related to energy and vitality, with pain occupying a less significant role. Participants indicated better levels of function in relation to criterion-referenced daily activities compared to work roles with most having returned to activities around the home and leisure activities. This was evidenced in the interviews as well as responses to the role physical domain on the SF 36 questionnaire. Expressions of emotional distress were related to uncertainty about the etiology of the cardiac condition and future health prospects, distress about impacts on family life, and future potential to remain at work. Some participants described shifts in their views on life and the significance of life stressors and events, although all participants did not share this view. Social opportunities were viewed to increase by some workers during periods of convalescence akin to a “practice” retirement. For others, social life became more constricted in leisure activity involvement. Financial impact was a reality for workers with families to care for.

Return to work experience was characterized by varying levels of physical, emotional, and social adjustment to the work milieu. As health impacts in energy and vitality would suggest, work limitations were primarily described in terms of the participants’ abilities to keep up with work hours and rates with less interference in cognitive and social domains of work function. More specifically, workers with involvement in the production process and having residual impairments described difficulty with the demand of “making rate” on the assembly line. Participants described varying levels of emotional involvement in terms of worry about recurrence of their heart problem and being able to resume or sustain their normal work activities. Social reintegration into the workplace also varied with workers involved in modified work or experiencing limitations in maintaining work rates encountering friction from supervisors and coworkers.

A limited pool of energy to draw on also resulted in activity limitation outside of the work environment, with participants reporting reduction in activities around the home as well as active leisure pursuits.
From a conceptual standpoint, the degree of success of adaptation to the workplace was reflected in physical, emotional and social dimensions of adjustment. Thus, return to work, as an indicator of recovery, did not capture the levels of impact experienced by workers or the process through which they passed while returning to work. Likewise, adjustment to life outside of the workplace also figured in to the picture. Subsequent chapters will focus on results relating the processes through which participants adapted to their circumstances at work following a disabling cardiac event from the perspective of quality of work life and personal adjustment along these multiple dimensions.

While disease severity was a factor in return to work experience, it was not the sole determinant of adjustment. Participants with similar health profiles demonstrated different degrees of adjustment. Most decided to remain on the job and cope with the challenges and opportunities that work provided, whereas some did not. Results presented in the next chapter will focus on the role of participants’ agency in the return to work experience and how their individual perspectives and actions, management of the local environment, and use of supports influenced their ability to cope and adapt to the workplace.
Chapter 6

6 Individual Perspectives and Strategies

In the previous chapter, I provided a descriptive account of the experience of 12 workers following the onset of disabling heart disease. Varying disease severity, illness, and return to work experience characterized this sample of workers at the auto plant. They occupied different roles in the plant and were at varied stages in their work lives.

This chapter will present results relating to individual perspectives on illness and work and the influence of these factors on return to work experience. It will then shift focus to the strategies participants used to manage return to work and factors influencing the deployment of these strategies. The chapter will conclude by bringing these together into a framework that explains the return to work experience of the participants from the individual and local (that is situated) perspective.

6.1 Individual Perspectives

6.1.1 Views on Illness

Participants had varied views on illness that were, to varying degrees, inter-related with recovery experience and return to work. Views on illness varied along dimensions including the cause of their problem, the severity of cardiac illness, its likely duration (i.e., a “one time” event or a more chronic condition), their ability to control the disease and its sequelae, the effectiveness of treatment on the disease, and how well they might recover from the effects. Results from interview data are summarized in the table below

<table>
<thead>
<tr>
<th>Participant and RTW profile</th>
<th>Views on illness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pat - RTW, no limitations</td>
<td>Transient event “cured” with stenting, likely caused by stress and heredity, leaving no particular sequela, for which he is “trying to get active again”. Does not expect further problems.</td>
</tr>
<tr>
<td>Name</td>
<td>Status</td>
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<tr>
<td>---------</td>
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</tr>
<tr>
<td>Bill</td>
<td>RTW</td>
</tr>
<tr>
<td>Phil</td>
<td>RTW, ongoing limitations</td>
</tr>
<tr>
<td>Stephen</td>
<td>RTW, no limitations</td>
</tr>
<tr>
<td>Stan</td>
<td>RTW 3 months then off again</td>
</tr>
<tr>
<td>Jim</td>
<td>RTW, with ongoing limitations</td>
</tr>
<tr>
<td>Sean</td>
<td>RTW, with ongoing limitations</td>
</tr>
<tr>
<td>Derek</td>
<td>Graduated RTW</td>
</tr>
<tr>
<td>Frank</td>
<td>RTW, ongoing fatigue</td>
</tr>
<tr>
<td>Tony</td>
<td>RTW, no limitations</td>
</tr>
<tr>
<td>Jeff</td>
<td>RTW, no limitations</td>
</tr>
<tr>
<td>Les</td>
<td>RTW, modified duties</td>
</tr>
</tbody>
</table>

**Notes:** RTW = return to work
Participants’ views on the biomedical severity of their cardiac problem varied from minor to significant. For some participants (Pat, Tony, Jeff) their heart attacks were transient events that, while viewed as serious at the time, left no lasting emotional or cognitive imprint of fear or threat. Behavioural responses for these individuals relating to return to work and self-care were modest. Jeff stopped smoking, not out of a sense of threat but, as he described, no longer enjoying cigarettes. Pat exercised sporadically across the follow-up period. Tony’s primary response was cognitive, describing his heart attack as a “wake up call” that had provided a fresh perspective on life. “This whole experience is life changing. It’s good….. Onward and outward. I’m fine now, I expect to look after myself, be more careful, I don’t care like I used to but I carry on.” As a result, Tony took a more relaxed approach to his work, (discussed below under strategies) and cut down on sweets but remained a non-exercising smoker.

In some participants (Steve, Pat, Bill) views of severity were tinged with denial in acknowledging the diagnosis of a heart attack. In Steve’s case, he was initially concerned about having a heart attack at his age (< 50 years) seeing it as an affliction of the old and unfit. In the final follow-up interview, Steve’s heart attack had become insignificant to the point that he almost had not had a heart attack. “I think as far as a heart attack victim I was pretty lucky, I caught the symptoms before I actually really did have a heart attack you know [Hrm, hrm] so….. it was a very, very, very mild [Hrm, hrm] heart attack sort of you know.” While his return to work wasn’t problematic, Steve’s initial intentions to lose weight and exercise dissipated along with the initial fear brought on by his heart attack.

Jim and Derek both had significant disease, yet held somewhat illusory beliefs regarding the gravity of their situation and the possibilities for recovery. In their case, illusory beliefs seemed to provide hope that their efforts at self-management would be effective. Jim stated “…in the condition that I have, which is dilated congestive cardiomyopathy, a very small percentage can reverse itself and it will start, even though your heart has expanded, it will start adapting to that and will still beat strong.” Ten months following his return to work, Jim continued to encounter episodes of fatigue and chest “pressure” over the course of follow up. He continued to make intermittent trips to the hospital emergency. On the last trip he made, he indicated “I waited 12 hours and still did not get any help so I got up and left. I said to myself there’s no help here, I will just have to live with this and that’s what I’m doing.”
These initial beliefs of a quick recovery were also a source of distress when it did not materialize. Over the course of his return to work, Derek agonized over his ongoing limitations at work and the long time it was taking to build up his capacities and the seemingly constant setbacks to his progress. Several months after initiation of his return to work he came to the realization that he was not going to recover as quickly as he had from his previous injuries stating, “I’ve just got to realize that the damage was extensive and this will take some time to heal…”.

Others had views of disease severity and recovery potential that were perhaps more realistic. In discussing the nature of his heart problem, Stan indicated, “Well I understand when you have a damaged heart it stays damaged”. Phil discussed his heart surgery as being “very extensive”. These more realistic views of severity were also coupled with more negative (but perhaps realistic) recovery expectations. In relation to his prospects for recovery, Phil stated “I kind of think it is about as good as it is going to get. Um, whether something worse will happen that’s unknown”. Along the same vein, Stan indicated, “I don’t see it getting any better but I don’t expect to push it too hard you know, I don’t want to, you know, I don’t want to make it any worse than what it is.”

Views on the amount of control the participant could exert over their condition to cope with return to work and/or prevent recurrence also factored into some of the participants’ response to cardiac illness. Jim recognized that his cardiac problem could not be cured, but he viewed his lifestyle choices as putting the odds in his favour. Derek and Les believed that they could gain control over their heart conditions through exercise and its effect in reducing associated physical impacts. Bill saw return to work as an opportunity to gain control over his heart condition through a return to his normal routine. Conversely Phil and Stan viewed behaviour change as futile in the face of disease that they felt little control over. Both viewed the damage to their hearts as being done, with little opportunity for self-care behaviours either improving cardiac function or preventing a recurrence of problems. In fact, Stan viewed “overdoing it” physically as potentially having negative consequences. For other participants (Steve, Pat, Tony, Jeff) who viewed their cardiac problem as transient and “cured”, personal control had little relevance.

Positive expectancies for recovery and control depended on the experience of individual. For example, Derek had a previous history of health problems that necessitated concerted efforts on
his part to recover. His success in persevering and overcoming these particular problems persuaded him that with persistence, he would eventually succeed in managing his present health problems, thus providing him with an optimistic perspective. While not as significantly affected by his heart disease, Pat shared this optimism, having overcome prior adversity relating to injury and personal challenges. He approached his heart condition as another challenge to overcome. Phil on the other hand saw his mother and uncle fight losing battles with heart disease and cancer (respectively), involving extensive and debilitating treatment that he viewed as futile and contributing to their suffering. For him, the excessive pursuit of “cure” carried high personal cost and suffering and wasn’t worth it.

Unexplained chest pain was a source of uncertainty and distress for participants over the return to work period and influenced return to work trajectory in some cases. Bill discussed the difficulty he was having dealing with unexplained chest pain.

It is not through activity or something like that because one day I might be sitting doing nothing and I will have chest pain, the next day I will be active and I don’t have the pain. So it is not due to exercise or stress or something like, that it is just, no idea why they come back on to me.

Phil likewise described chest pain of uncertain origin. “So, yeah it’s been a bit difficult. I have pains in the left side of my chest, not in the heart area per se but I don’t know it’s in the chest wall or something. I don’t know what it is.”

Both of these participants had repeated trips to hospital emergency and medical diagnostics, which revealed no further blockage as a basis for the chest pain. Bill’s return to work was delayed and Phil took time off and considered leaving work due to the uncertainty he was experiencing with the ongoing chest pain. An episode of chest pain (again unexplained biomedically) resulted in interruption in Derek’s return to work. In all cases, participants had further medical diagnostics, however continued to express limited acceptance of explanations that these symptoms were benign.

Uncertainty over the nature of the cardiac problem could also be a source of distress for participants. Frank, who had experienced sudden cardiac arrest, understood the implications of
the blockages in his coronary arteries. However he felt that he wasn’t provided with adequate information about what caused his heart to stop. “But the thing that sticks in your mind is why did it stop? …if it can happen once it can happen again.” As such, he was unsure about impact of stress on his heart arrhythmia and what impact return to work might have on it. Owing to this uncertainty, he requested further monitoring prior to return to work. Further arrhythmia was identified, which concerned the occupational health physician, who delayed his return to work until he had further follow up with his cardiologist. Frank experienced continued uncertainty and had another period of monitoring following return to work, which resulted in adjustment to his medications.

Participants’ generally did not view work as a factor in the etiology of their cardiac problem. Therefore, work did not represent a potential threat that needed to be avoided. Sean reported a relationship between strikes at the plant and his events in that both heart attacks occurred immediately following his return to work after the stressful period of a strike.

6.1.2 Views on Work

Participants’ views of return to work varied in terms of the nature of the challenge it would pose and the value that work had at that point in their lives. Contrary to a biomedical view of disability, return to work was viewed by participants as involving both psychological and physical challenges to which they had to acclimatize. As Bill stated:

I think a lot of it is basically, I don’t know, I don’t think it is really physical, [Yeah] I think it is more of I guess your mind has got to adjust, everything is different eh, different train of thought or whatever it is. It is just, completely different situation eh, different atmosphere and everything else when you go back there [to work].

Human functions as simple as urination become a consideration for workers on the line during return to work. Phil anticipated the effect that increased urinary frequency would have on his work on the assembly line.

See too, you find too that you have I think the correct term is the pathological changes in your body after surgery. Um, like I find that I can’t, I don’t know it’s
a, to use the washroom more. [Hmm, hmm] To go back on the line you can’t just go when you want to.

The social situation of work also presented challenges. Phil again indicated:

Yeah. The worst part about it is really the work situation. … Like you can come to grips with the physical part but work generally treats you like crap.

Yet all of these workers made the decision to return to work. “But at some point you know you have to just make a sort of a calculated decision and go for it one way or another.” (Phil) There was a universal credo among them (whether their return was sustained or abandoned) that “you have to give it a try”. As Bill put it “I am retiring, it is only going to be four months, if something does happen after a month I said well I will call it quits then and say I can’t handle it and at least give it a try. So I figure at least I will give it a try.”

Nevertheless, workers held differing views on the value of returning to work. Some viewed return to work as a part of recovery and that view influenced their decision to return. Although Bill was only four months away from retirement and could have “pushed it” with his doctor to remain on disability, he stated:

I wanted to try it. [Yeah.] To just see, like the wife said, go back and try it, it is better to go out of work healthy than go out sick and you know everything else. It might give you a different outlook or something as she was saying so, and I guess she is right in a way.

Bill went on to talk about the importance of the social aspect of return to work. “You get back and you socialize with your friends even if it is for four months and I will be gone eh? Pat likewise described that he wanted to “go out on my own terms” and not as a result of a health problem.

Return to work was also described as a way to become activated in order to “feel better about yourself” (Derek). Sean, who experienced the most significant impairment of the entire group, described the psychological benefit of bringing home a paycheck and having his mind occupied with other things apart from illness. “It makes you feel better about yourself for one thing and
you earn income for another but ah, I think if you sit around too long you will sit around and feel sorry for yourself and all kinds of stuff will go on in your head eh?” Les perhaps described it in the most positive terms:

Sure, I think ah that’s part of the problems with the healing thing too. You know if you can get back into some type of former routine, you would feel well… ‘I know I can say I’m completely recovered you know.”

F: So you’re saying that return to work is kind of therapy?

Les: Damn right, for sure. It makes you feel like you’re getting some type of progress here. You know if you can get back onboard, earning the income you know, supporting your family, doing what you did before, yeah it gives you satisfaction you know.

Others were ambivalent about the value of return to work as a part of recovery;

F: Has getting back been helpful to your recovery?

Phil: No. No, I don’t really think so. Recovery wise no.

F: Unhelpful?

Phil: No. [Okay] no.

F: Not really, just …

Phil: It has been just something to do.

Others viewed return to work as potentially risky for their health. Sean held the view (which he indicated was shared by others that he worked with) that if a worker with heart disease could not perform their regular job, they should not be coming back to work at all owing to the potential grave consequences of heart disease. “If your heart isn’t in good enough shape for you to be here and come to work then you should not be here. Not that you should be going on an easy job – you should not be here at all. You are going to drop dead on the line.” To support this, he indicated that he did not know anyone on placement (permanent work restrictions owing to a
medical problem) owing to heart problems. Ironically, Sean was on placement himself for wrist problems, which he admitted enabled his return to work with his cardiac limitations.

Jim viewed overwork as being counterproductive to his condition, a reasonably accurate assessment considering the nature of idiopathic cardiomyopathy causing insufficiency in blood flow. “I look at it like the saying, the hurrying I go the behinder I get. [Yeah] The harder I work, the faster I go, the more my heart works but my blood pressure and my pulse slow down. [Um] That’s the way I am looking at it right now.” Jim described his sole motivation for return to work as providing for his family. As to the value of return to work apart from financial responsibilities: “Being able to return to work, not really. I love being home with my wife and kids. [Yeah] If I could be a stay-at-home-mom I would do it”.

As such, workers who viewed work as providing other benefits besides financial means (nine of the group) expressed more favourable views on going back to work versus remaining disabled. These workers described greater social attachment to the workplace and/or viewed work as a means of “feeling normal” and good about oneself. For those who saw no intrinsic value in work, return to work was a necessary evil. Participants who were in a position to retire or remain on disability benefits, chose to leave work (Phil, Stan). Jim, who was not in a position to retire, was heavily involved in the union, with a goal to advance to a top executive position. As he valued his union activities more than work, he sought opportunities to get off the line and do union work as much as possible.

Besides the relationship between illness, disability and return to work, participants also articulated their views on the bigger picture of work and cardiac illness. Workers talked about return to work in the context of the lifespan; how it fit into plans for retirement; their stage in life in terms of caring for and supporting children or parents.

Return to work was most often a goal couched in the ultimate aim of “getting to retirement”. Sean described this as follows:

I am going to do everything I can to [stay at work]. I can’t afford not to get there [retirement]; get some kind of a pension deal. Like, if I saw I could go down there [union hall] tomorrow I would, but I just can’t. I am just trying to hope I
can get another three or four years in where I get to the point where I am close and [company] is in the mood they want to get us all out of there.

In this respect the goal was persisting at work until some condition that would permit retirement was reached. For example, Phil returned to work with the specific goal of making it to his 60th birthday, at which point he could retire. Pat could literally recite the number of days he had until his 30 years of service would permit him to retire.

6.1.3 Perspectives on Life

Views expressed by participants relating to life challenges also played a role in return to work experience. Maintaining an optimistic attitude was important for some workers. Derek, for example, made a conscious effort to maintain an optimistic perspective in persisting with a difficult, graduated return to work process that took place over nearly six months. When asked how he managed, Derek offered the following:

Basically trying to look on the positive side, you know maybe I’ll change a few months down the road or a few weeks something like this and [Yup] ah, and it does help if you’ve had a rotten day and then a day or two later things, you feel quite a bit better and all of a sudden it kind of puts you back in the mood that things are going to come back and you know it’s going to change.

In keeping with this optimistic attitude, Derek maintained perspective by comparing his situation with those that he deemed less fortunate. “Yeah, well there’s days, like there’s days you kinda get down but you just if you look around there’s always somebody else that maybe is in a worse mess than you are.” Similarly, trade workers compared themselves to the production workers in examining their more favourable situations in relation to job demands. “I can’t speak from the production end of it because some of the stories we hear, you know the guy he can’t even get off the line to go to the washroom because he just had a break an hour ago type of thing.” (Jeff) Workers off the line also described perspective in terms of the constancy of work demands. In describing the intermittent nature of heavy work in his position as Group Leader, Bill indicated:
The way I look at it, is that is not going to happen every day. [Right] It’s this isolated incident eh? Like you have to work every single, almost every minute of the day, that is isolated eh, that is not going to happen. If it happened every single day of the week it would be a little different story eh? [Yeah] But it doesn’t.

6.2 Strategies for Managing Return to Work

In an effort to manage work demands and adapt to the situation, workers used a variety of cognitive, behavioural, and social strategies at varying intensities and depending upon a number of factors. These included changes in mindset, maintaining a positive perspective, techniques to improve efficiency and work capacity, self-regulation of work pace and negotiation of work output, selecting into less demanding positions, and using supports such as the union, plant medical and cardiac rehabilitation (broadly conceived as mindset and perspective, taking action, managing the environment and using supports). These efforts were contingent upon a variety of personal (e.g., past experience with injury and rehabilitation) and social (e.g., relationships with coworkers and supervisors) factors. Workers talked about their efforts to manage return to work from a local perspective; that is the situated strategies used to adapt and their relation to work demands, work relationships, and aspects of daily life. As workers were at different ages and job tenures, they described different goals in terms of return to work, with younger workers needing to find ways of sustaining return to work long term, and workers nearing retirement needing to get by for a few months or a couple of years. This, in turn, influenced the coping strategies deployed by the worker in order to sustain return to work. Job tenure also affected their ability to change jobs in the plant to lighter work demands.

In this context, participant workers were active agents in managing the multiple demands of return to work while dealing with their health problems. These strategies permitted workers to adapt physically, psychologically and socially to the workplace after the onset of illness with varying degrees of success.
6.2.1 Changing Mindset

Production workers returning to the job were faced with the unyielding demands of maintaining an external, invariable work pace, while contending with the reductions in stamina associated with cardiac illness and a period of convalescence. Faced with this prospect, production workers described changing their mindset to manage the incessant stress of “making rate” and the limited nature of control they could exercise over their work pace. As Jim described, “I don’t care. I care about me, I care about my family, I go into work, I do my eight hours, I come home.” Jim further elaborated “I do my job, I do it as good as I can and they keep on going and if it’s not fast enough for them then there is something wrong.” For these workers it was not a matter of not caring about the quality of the work or their productivity but rather detaching themselves emotionally from the imperative to keep up with the timing of the assembly line. An ‘I’m doing my best’ attitude permitted an emotional detachment from the unyielding demand of the line, allowing them to deal with work in a more objective fashion and use strategies to manage work exigencies including work pace and interpersonal demands.

The detached mindset described above manifested itself emotionally, behaviourally and socially. Changing mindset allowed participants to regulate their own emotional response to reprimand from supervisors or chiding from coworkers. As Les put it “You know, I’m trying to learn to not take things to heart too much eh, you know. [Mellow out] Mellow out a little bit yeah….“ Conversely Derek, who remained concerned about rate making, experienced ongoing worry and emotional upset, this being reflected in his mental health score on the SF 36 as well as his reports of distress, which continued over the course of the follow up. On one occasion, where he could not make rate and stay on the line for the entire shift, he reported breaking down in his supervisor’s office and being consoled by both his line supervisor and the shift foreman. In addition, changing mindset and the emotional regulation it provided, permitted the worker to self-pace activity to the extent possible and negotiate the social consequences of slowed work rates (described further in the next two sections).

6.2.2 Optimizing Function

Participant production workers described strategies focused on optimizing their function by reducing energy demands through pacing to the extent possible, improving their mechanical
efficiency with their work tasks and improving their physical capacity in relation to the demands on the job.

Participants described self-pacing of activity within the bounds permitted by the timing on the line. The on time limit for “jobs” or production units is 40 seconds and workers are supposed to maintain an 80 percent “on time” rate. However, it is possible to maintain a lower percentage and still keep the line moving. On “bad” days and when fatigue would set in towards the end of the shift, workers would pace their work to the extent possible. If this meant going overtime on a higher number of jobs and getting a visit from the supervisor, they were willing to accept that consequence and deal with it (explained further below in Managing the Environment).

Motor proficiency on the job also played a role in conserving energy and improving efficiency. In describing this in relation to his job Tony stated: “You got two wires and you got a gun with a screw in it, you got to get that in there and you got a tab that’s got to go in that hole, you don’t do it right, you’re going to screw it up. But I’ve gotten it down to a science [Yeah] I know how to do it.” Sean described in a very particular and detailed fashion how he could become more proficient with a specific work tasks by “hitting the nut first time with the gun”, not making any mistakes, and cutting corners in eliminating any excess movement necessary to perform the work. Again, while all workers could undertake to optimize efficiency, it became particularly relevant for workers with reduced capacity coping with the demands of the assembly line.

Improving individual physical capacity was another element of acclimatizing to work demands. Workers reported on the difficulty of going “back in cold” to the line and the time it took to acclimatize to the physical aspect of the work. Bill described a self-imposed work hardening strategy that he undertook during the initial phase of return to work. “I watch them first. [Okay.] Then I do part of their job, then I will do the whole job for a short period, maybe five or 10 minutes, then I will walk away from it eh? So that is how I have been gradually working my way back into the jobs.” Bill went on to indicate that he was playing “catch up” with his physical conditioning for approximately three weeks before he felt comfortable with the work pace.

Derek, meanwhile, participated in a protracted, graduated return to work over the course of a number of months, gradually building his capacity and tolerance. Les indicated that exercise helped to improve his functional capacity and speeded his return to work. Workers generally
described a difficult period of fatigue and pain upon return to work irrespective of their involvement in exercise or keeping active around the home. Bill and Derek, who were both off work for a long period, indicated that activities around the home were not sufficient to build tolerance for being on their feet all day even if their work was light. Phil was involved in a modified work program in a call center at the plant. In spite of this, he also described a difficult period following return to work as the call center work was sedentary and a return to modified duties at the call center had resulted in him curtailing his exercise behaviour. Remaining active was valuable but not sufficient to prevent this period of acclimatization.

These optimization strategies were less apparent in the experience of trade workers. Trade workers described greater control over their work pace and involvement than in the case of production workers. “But like I say if all of a sudden you feel you want to stop, have a tea or whatever, I got a kettle there I will put the kettle on or um, want to walk around and talk to somebody, I can do that too. [Okay] You know.” (Steve) When work had to be accomplished, it was important for them to work at a fast pace but this was periodic and they knew that there would be plenty of recovery time. Thus, the need to build physical capacity and improve motor performance was not as apparent in the case of participant trade workers.

In the same sense, Jim described being cautious about building his speed and tolerance and being able to make rate as he feared having his job further enlarged. “I will work at a working normal pace and I will, you know, but I am definitely not going to run my butt off because as soon as I run my ass off and I make rate, then they are going to have something else to nudge on again.”

6.2.3 Managing the Environment

Workers also used strategies aimed at managing their work relationships, using time in their favour, and managing their job demands through selection of work. Workers described managing interactions with supervisors to negotiate work pace. If approached or reprimanded by supervisors about work rates, workers would indicate that they were doing their best under the circumstances.

I just say listen, I am not feeling well and doing my best you know.

Basically, you have two choices. You can send me to Medical or you can get somebody else. [Yeah] And usually they say well you know just try to
pick up the pace a bit, you know do what you can and that type of thing. Then he will kind of leave me alone and we manage to get through the day.

Phil went on to describe resituating the responsibility with the supervisor as follows:

You know, put the onus back on them, because there is nothing else I can really do you know my hands are tied as to control I have. [Yeah] So I just have to put it back there, listen you know if you are not happy get somebody else, you know do something [Yeah] and work around it.

As well as negotiating slowed work rates, purposive resistance could also be offered to supervisors’ insistence on making rate. Pat indicated that “Guys do their best.” He went on to describe how insistent supervisors might be dealt with: “….. a foreman comes over and tells you to pick up the speed and half the guys just stop and talk to him, and then suddenly realizes that he has lost three jobs because while he is talking they are not working.”

Workers with ongoing limitations used time as a strategy by taking advantage of their sick days, extra benefit time, and scheduling return to work in a strategic manner to ease the transition back to the workplace. In dealing with insulin-dependency that arose following his heart surgery, Derek strategized by returning to work on the day shift. “I have kind of got it worked out now we are thinking and the union yesterday agreed with that, why not go back and on the day shift because on the day shift I already take my needles before I leave the house in the morning.”

Workers would manage the return to work schedule strategically to go back in the middle of the week in order to subsequently have a rest on the weekend prior to a full week of work.

The first two weeks I go back, I kind of maneuvered it, the first week I am going back for three days because I am taking the Monday off, so then I will only have to work three days because it is a long holiday weekend, so the second week I will be there, I will work four days and then I will be back to the regular five day routine. (Phil)

In follow-up, Phil also described taking sick days and booking unpaid days off to work out the
last few months prior to retirement. While this worked for him coming up to retirement, this strategy was not favoured by younger workers with dependents, who were less able to deal with the financial ramifications of taking unpaid leave.

Finally, workers self-selected into less demanding positions as a means to reduce workload. Pat, for instance, used his seniority to “bid into” a desired Quality Trainer job that took him off the line and into a support position. Stan had enough seniority to get a material handling job off the line, enabling his return. After coming back to work, Jim likewise bid into a Utility Repair job that provided him with a variety of jobs and demands. Phil decided that he would take advantage of the “60 and out” provision to take retirement at age 60 and obtained a job as a building superintendent, which provided him with greater control over his work schedule.

6.2.4 Using Supports

Workers also accessed formal sources of support both in and outside of the workplace to ease return to work. Internally, most workers in the study used support from the occupational health department during return to work. Workers would attend “First Aid” to address symptoms such as dizziness, chest pain, or severe fatigue.

I can go and talk to the doctor in there if I want, if I need to. The nursing staff in there is great. I hardly ever go in but when I do they are super. You know, if I want my blood pressure checked, they keep a record of it for me, so if I want to take the record of how my readings have been I can take them in when I see my cardiologist, it gives her some idea of what is going on. (Pat)

Along with monitoring of cardiovascular status, workers experiencing symptoms such as fatigue or dizziness could rest and receive oxygen until symptoms subsided. Derek reported using the occupational health physician to help deal with disability benefit problems that arose over the course of his disability. As indicated previously, workers also used attendance at “First Aid” as a negotiating chip when discussing work rates with supervisors. In this way, occupational health was looked upon as a buffer for dealing with work relationships and the demands of production work, as well as their disability benefit system.
At the workplace, workers also accessed the union in times of conflict or to ensure their rights were respected. Phil sought union assistance to ensure he could access a modified work program when it became uncertain that the plant physician would recommend it. Les described a conflictual situation with respect to his return to work and ability to work overtime, which necessitated involving the union. Derek described having union representation present when discussing his job assignment upon return to work. In these cases, the worker used union involvement to resolve the return to work problem. In the same vein, Jim described using his “Committee Man” (the union representative in charge of his area) to deal with hassles with supervisors. “If he has a problem with that, then call my Committee man because I am not going to waste breath arguing with him and get myself worked up any more. It ain’t worth it.” Jim, who had long-term union involvement, also described the value of self-education about rights and procedures for addressing problems, indicating the importance of knowing the appropriate terms to use when making requests to involve the union in a contentious issue. Participants’ use of resources and supports was an important strategy for coping with return to work issues.

Rehabilitation programs provide those who choose to participate with a structured opportunity to improve physical capacity and increase their knowledge about the management and secondary prevention of cardiovascular disease. Eight of the participants accessed formal cardiac rehabilitation programs. Les was singular in his endorsement of cardiac rehabilitation as permitting an earlier return to work.

I don’t think that I could get back to work as fast without it for sure. There is no way in this world that ah I would be back so fast. Mind you, you would have to be dedicated to going every other day and you know set some goals as far as what you wanted to accomplish you know and I think that was the big thing.

Derek indicated that cardiac rehabilitation moved him along in terms of his level of function but was not of sufficient duration or intensity to increase his physical stamina in relation to the demands of an eight-hour shift and three hour commute to the workplace. Jim viewed cardiac rehabilitation as helping him to adopt a better lifestyle and avoid future problems thereby being of benefit in sustaining return to work although he indicated no specific benefit in it permitting him to cope with his physical work demands. Other workers completing programs (Stan, Phil)
indicated no benefit from cardiac rehabilitation in terms of return to work. Sean, Frank and Jeff attended a limited number of program sessions, not seeing cardiac rehabilitation as relevant to return to work. Derek, Tony (who had not attended any program) and Phil advocated the value of formal programs to allow physical capacity building prior to return to work on the line. Phil reported on “job hardening” program that had been available in his previous plant and workers had found it beneficial. He described this program as an “on the job” program of graduated work activities, taking place in the plant, but off the assembly line to allow the worker greater control over work pace.

Oh yeah because it gave you a time to, rather than having to spend eight hours on the line you only get four so even if you were tired after four you could go home, you know rest and then you know you are building it up slowly [Yup] so that was a good program, they don’t do those kind of things any more. You either do the job or you don’t.

While this type of formal plant-based program was not available, Derek was provided with five months of graduated hours to build his tolerance back to a regular workday on the assembly line. In spite of this accommodation, Derek still saw the value in an intermediate program to help reduce the gap between physical capacities and work demands.

Participants also described the possibility of using medical sanction for disability in order to support decisions not to return to work. Stan, for example, had been disabled from work for six months following his heart attack and stenting procedure. He returned to work for a three-month period prior to his second cardiac surgery. When questioned what his physician said at that time about return to work, Stan indicated that he had not consulted with the physician, deciding that he was fit in spite of a pending aneurysm repair and valve surgery and only partial completion of his rehabilitation program. He returned for three months and then underwent further surgery.

Subsequent to the second surgery, Stan had not returned to work, indicating that his return to work this time would be contingent upon determination by “the doctors”. He had completed a cardiac rehabilitation program and his discharge documentation indicated that he possessed sufficient capacity to perform his material handling job. At
the time of the second interview, Stan indicated that “the doctors” had decided that he should not return to work and he would not be continuing with further efforts in that regard. In Stan’s case, medical sanction for disability was constructed through the use of his physician based on his particular motivations. With respect to his initial return to work, he indicated, “you can only sit around the house so long”. Going back to work provided him with a way to fill his time until his pending surgery. In deciding not to return to work a second time he indicated, “I’m close to retirement anyway”, stating that with medical sanction, he would remain on disability until his retirement date, approximately eleven months from that time.

This finding is consistent with reports from other participants that they had been advised to “get a doctor’s note” to remain off work until they would be eligible for retirement. Bill reported that he could have stayed off “if I pushed it with the doctor” until his retirement. On the other hand, Derek and Jim both indicated that, in spite of significant physical impairments, they declined any medical restrictions on their return to work. These instances suggest that sanctioned medical restrictions and disability are perhaps less “medical” than one would think.

6.3 Relationships between Strategies

The strategies used by workers were interdependent. Changing mindset was a precursor to taking action around self-pacing and negotiating reductions in work pace with supervisors. Mindset provided an objective way to manage the pressure workers felt if they were forced to slow their work pace. Changing mindset also provided the worker with confidence in negotiating slowed work rates. As Sean put it:

And if he comes up and says something to you, like most of the times now, I would have at one time had a big argument with him but I don’t any more, I like just look at him and say this is as good as you are going to get. You don't like it get yourself a pair of gloves, I am going down to First Aid.

Taking this perspective therefore, allowed participant production workers to negotiate demands with supervisors, offering to stay on the line at the pace they were capable of or going to plant medical and having a replacement worker fill in.
Some workers (Derek, Jim) expressed that their use of support through occupational health provided them with a greater degree of confidence that help would be available should they run in to trouble, thereby enabling taking action to engage in tolerance building on the job. The suggestion of going to plant medical was used as a lever to negotiate slowed work rates with supervisors. In the example above, Sean provided the supervisor with the option of putting up with his slowed work pace or deal with the hassle of replacing him on the line while he attended the plant medical department. In a sense, Sean brought the Supervisor into his situation and gave him or her the choice as to whether his work rates were sufficient.

6.4 What influences the deployment of these adaptive strategies?

From a general perspective, the extent to which adaptive strategies were used to facilitate return to work depended upon the severity of impairment, workers’ views of illness consequences, chronicity of their problem, and of susceptibility for future cardiac events. Workers who did not have significant disease sequelae and viewed their illness as transient did not enact any particular strategies to ease or maintain their return to work (e.g., Jeff, Tony, Pat). In contrast, workers who viewed cardiac illness as having the potential for ongoing problems were active in their use of strategies to manage return to work and minimize future difficulties (e.g., Jim, Derek, Les, Sean).

Job demands were also a factor in the use of strategies for return to work. Workers in trade positions had a greater degree of control over work pace and volume and, therefore, did not have to engage in cognitive or behavioural strategies to manage work return although they did indicate the use of support from coworkers and occupational health. There were also influences specific to certain strategies as evidenced below.

6.4.1 Influences on the use of Mindset and Perspective

The nature of the worker’s job was a major determinant in whether mindset changed in relation to work demands. Workers on the line saw no choice in the matter. They had to maintain a certain prescribed rate of work independently and, therefore, had limited options in terms of behavioural strategies and the use of support. For example, activity pacing was not a strong
option for them as their work pace was regulated. While not directly involved in assembly tasks, Les, a trade worker, likewise viewed his “hands on” work in the monitoring and maintenance of robotic systems as involving a constant demand on him, feeling the pressure of keeping the line moving. Changing mindset was a strategy universally held by workers returning to externally paced work. Trade workers, other than Les, involved in routine maintenance or breakdowns had more control over their time, and did not discuss this strategy.

Mindset as a strategy was acquired both through the worker’s own experience as well as the experiences of other workers with similar problems. Les described coming to the independent conclusion that he would have to change the way he related to his work. Tony and Jim, on the other hand, described how they had acquired this technique from a coworker who was dealing with long-term heart problems. Pat described this as a long-term perspective, which had allowed him to maintain an even keel in the workplace, indicating that he acquired this perspective based on his experience at work prior to encountering heart problems. In this sense, mindset was a strategy that emerged from the conditions present in the context of this workplace and specifically ratemaking and production demands acquired proactively or reactively in response to a heart problem.

Changing mindset required a change in personal attitude towards work and work relationships, thus necessitating flexibility on the part of the worker. Shifts in mindset such as those already described would be more difficult for a worker who viewed work output in more black and white terms. Les described changing mindset as a process of adaptation, indicating that he struggled with the idea of relinquishing control while interacting with management. When describing the extent to which he was willing to take reprimand less seriously, he indicated; “I don’t let it go but I just I’m not just going to sit and soak something up like a sponge but I did not get into it as much as I would have before.” Consequentially Les described ongoing conflictual dealings with management and more emotional involvement in his return to work, although this settled as he resumed his normal work hours and functions.

6.4.2 Influences on Optimizing Function

Efforts to improve mechanical efficiency by optimizing motor performance worked well until the worker was bumped to another job, in which case the process of optimizing motor performance
would start over again. Sean described a run in period on any new job that would require more intensive effort initially until motor skills improved. He also described that the intensification of work over the years (squeezing time and manpower on the line, discussed further in the next chapter), as working against this strategy in that the jobs became more complex and difficult to master. He described that a job that could be mastered in a matter of days now took weeks, stressing the worker’s reserve capacity over that time.

The value of improving physical capacity as a strategy to ease return to work was not universally shared among participants. Workers who had more negative expectations with respect to their ability to control their condition were less likely to take action around strategies such as exercise. Stan for example, had participated in two bouts of cardiac rehabilitation over three and six months, denying any benefit for return to work. His view on his heart problem was one of conservation - to “take it easy” and not to overdo it in order to avoid problems. Phil, likewise, decried the idea of pushing exercise too much, indicating “I have tried to push myself more with the physical, the treadmill but physical exercise like that is not my thing. Like I am not down there every day pounding the treadmill, you know miles and miles, it is not my priority in life.” Neither of these participants enjoyed exercise. For Phil it was not a priority and Stan viewed it as potentially worsening his condition. Both Phil and Stan viewed their disease as static at best and progressive at worst. Hence, they did not view efforts such as exercise as beneficial in managing disease or allowing them to stay at work.

Conversely more optimistic expectancies on the potential for physical adaptation and personal control of illness (Individual Perspective) increased exercise and self-care behaviour in building stamina and reducing the risk of recurrence. Specifically, those who were more optimistic that their condition could improve through their own actions persisted to a greater degree over time with exercise and efforts to build work tolerances.

In addition, Phil and Stan had different, yet in some ways similar, views of disease playing out from a lifespan perspective. For example, when discussing his aneurysm repair and valve replacement procedure with the surgeon, Stan did not see himself being alive past the 10 to 15 year lifespan of the valve and so smoking, (being something he enjoyed), and exercise (something he did not particularly fancy) were not behaviours that he was prepared to change. Phil’s religious belief in the afterlife created a more transcendent view of life and so taking
particular care with diet or exercise to extend his life was less important to him. Phil did not have time to “knock himself out” on the treadmill to improve his fitness, citing other priorities. In fact, what was important to Phil was his preaching and door-to-door ministry work. He returned to this aspect of his lifestyle months earlier than he did his work, enacting pacing and gradual exposure strategies and gaining support from other elders in the congregation.

Stan indicated that smoking was something that he enjoyed and would not give up, concluding that cessation would be more stressful and damaging than the behaviour itself. Their views differed insofar as Phil simply did not see things getting any better over time, while Stan saw the potential for his condition worsening. Neither made significant changes to health behaviours and both withdrew from the workforce over the course of the follow-up.

The influence of career and life stage on priorities also influenced taking action. As noted above with Stan and Phil but also with others such as Tony, building physical capacity was less important for those workers within “striking distance” of retirement. All three were within eight to 15 months of retirement and saw no particular value in “knocking themselves out” with exercise as they had enough physical capacity to work for the remainder of their time. Tony and Stan both indicated “I get enough exercise at work.” Conversely, when the participant was further from retirement and needed to ensure sustainability, he viewed capacity building strategies as more valuable. Derek, Les and Jim all viewed their involvement in cardiac rehabilitation and exercise as valuable in building capacity and/or preventing further events to enable them to remain on the job. Sean did not exercise but viewed skill and efficiency as an important part of him remaining on the job for so long with significant impairments. Participants who valued their involvement in work and those that viewed return to work as a necessity, persisted to a greater degree in physical capacity building and/or recognized the important role of working efficiently.

A history of involvement in physical activity (and associated skills, knowledge, confidence, and expectancies built through experience) was also important in the use of exercise as a strategy for building physical capacity. Derek and Les both had previous experience with exercise and were adherents throughout the course of the follow-up. Derek had used exercise-based rehabilitation to recover from previous injuries and exercise as a strategy to manage a prior problem with diabetes. Les viewed a period of inactivity as one of the reasons for him developing heart
problems and was therefore determined to maintain an exercise program. Jim involved himself
in “cardio walks” at his program but was less adherent, having not been previously physically
active. Steve specifically indicated a lack of previous experience with physical activity and lack
of confidence in enacting exercise (from a motivational standpoint) as a barrier to exercise.

6.4.3 Influences on Managing the Environment

The quality of work relationships enjoyed by the worker was important in being able to negotiate
demands amicably with supervisors, while retaining the support of coworkers. Derek, who had
significant impairments, was able to manage a long-term, graduated return to work program,
owing in part to the good relationships he had cultivated with his supervisors and coworkers. He
described being chided by a coworker not familiar with his situation, indicating that this
coworker resented him being accommodated in this manner. He described receiving immediate
support from others, with whom he had worked for a number of years. Phil, who self-described
as a loner at work, did not cultivate or utilize relationships as a means to manage. Given this
perceived isolation, he saw a further five years on the line (to full retirement) as a prospect too
daunting to undertake and decided to retire early. The influence of work relationships will be
elaborated further in the next chapter.

Seniority was a major factor in selection as it permitted the worker to “bid” into jobs that were of
a more acceptable demand level (e.g., Pat). A less obvious factor was that of permanent
accommodation or “placement”. Both Sean and Tony were on work restrictions that curtailed
their involvement in heavier work or activities that would involve significant amounts of upper
body mobility. While not increasing their ability to select into easier jobs, such work restrictions
protected them in a sense as other workers who are likewise on placement and have higher
seniority can bump workers on placement. Seniority, placement, and accommodation will be
discussed further in the next chapter.

6.4.4 Influences on Using Support

Workers balanced the use of occupational health services or a visit to the local emergency
department in terms of the necessity, based on the urgency of their problem and the benefit they
might accrue in relation to the cost and inconvenience of, for example, waiting for long periods
of time. As Phil stated, “They [occupational health nurses] told me that a few times eh but I
don’t do that because I know that it [intermittent chest pain] is going to sort of regulate itself shortly and I don’t want to go sit in hospital for six hours. That is more stressful than having the aches and pains.” Jim described the balancing exercise involved in deciding to attend the local emergency on a work night where he may get assistance, but may also have to wait half the night and miss precious sleep prior to his work shift the next day.

Accessing support through cardiac rehabilitation was influenced by the worker’s expectancies of the value of this treatment generated through experience with previous rehabilitation and exercise. Both Derek and Les, as described above, had histories of involvement in exercise and/or rehabilitation that were evident in their respective decisions to become involved in rehabilitation. Jim described his event as “scaring” him into involvement in the rehabilitation program. The frequency of his self-directed walking program decreased as his fear dissipated until he was only walking once per week at the cardiac rehabilitation program. This adherence was positive for Jim as he reported not possessing good “will power” and had failed on previous attempts at adherence to programs. Stan and Phil, not having previous exposure to physical activity, cited physician referral as the reason for their attendance, both of them having more lukewarm views on the benefits of the intervention.

Frank, who initiated a program but dropped out, had a long-term history of involvement in martial arts. He cited a lack of congruence between his needs and those on which the program was focused, elaborating that the program was populated with older people with evident mobility problems and offered insufficient challenge to his level of fitness entering the program. Jeff, not an exerciser, was extremely active with golf and cited the same reasons for discontinuing his program. When he attended, Sean felt that the program was too strenuous as prescribed and could not be adapted to meet his needs. He specifically stated that he could not sustain an adequate heart rate response to derive benefit and therefore discontinued. He had been previously active with sports but not a structured program of exercise.

As mentioned previously Pat had an extensive history of self-directed activity and felt himself in good shape in spite of his heart attack. Tony felt that he got enough exercise at work. Bill was not referred and preferred to not be around “old people talking about their illness”, a view that was shared by Pat. Steve was on a program waiting list at the end of follow up.
Lifespan and proximity to retirement also figured into the use of supports by workers. Derek, who had a further four to eight years to retirement made extensive use of health care services and resources in an effort to stay in the workforce. As the sole breadwinner in the house, Derek had young children at home and needed to get to some type of retirement package. Stan in contrast was at the end of his work life. Children gone and wife with a good job, Stan used medical sanction to withdraw from the workforce (despite having the functional capacity to remain based on his discharge report from cardiac rehabilitation).

### 6.5 Summary and Synthesis

From the description above, it is evident that individual perspectives held by workers in relation to illness and work and their enactment of strategies to manage return to work influenced their return to work experience. Views on illness varied in terms of personal control and treatment expectations. Views on work varied in terms of its value and necessity for the participant and influenced motivation to return to work and sustain work over time. Multiple cognitive, behavioural, and social strategies were used and participants accessed social supports within and outside of the workplace (supports will be further discussed in the next chapter). Changes in mindset towards work enabled workers to detach themselves emotionally from the pressure of making rate, enabling adjustment from an emotional and behavioural perspective. Workers took action to optimize motor efficiency and physical capacity and compensated for decreased work capacity by self-pacing to the greatest extent possible. Workers negotiated problems in maintaining work rates with supervisors and selected into less demanding positions when possible to reduce workload. Workers also used supports including the occupational health department in the plant to deal with health issues and cardiac rehabilitation to optimize physical capacity. Strategies were inter-related with changes in mindset being foundational to behavioural strategies including self-pacing and negotiation of work pace. Strategies such as mindset were acquired through experience and the tutelage and modeling of other workers. Strategies were contingent upon a number of personal and situational factors and developed over time among participants as summarized in the table below.

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<tr>
<th>Table 12: Strategies for managing return to work and influences on the use of those strategies.</th>
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<td>Strategy</td>
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A substantive theory synthesizing return to work experience and individual and local influences on experiences is presented in the diagram below.

Figure 3: Schematic representation of adaptation to work following disabling cardiac illness in the sample of autoworkers.

Participants’ adjustment to the workplace following disabling cardiac illness varied along dimensions of quality of work life (limitations, relationships) and work/life balance, affecting the quality of physical and emotional well-being. Specific strategies were present in the process of adaptation. Changes in mindset allowed participants to emotionally detach themselves from the imperative to maintain prescribed work rates. Changing mindset also allowed workers to take different approaches towards work and deal with the negative social and economic outcomes of reduced work rates. Participants also acted by selecting into less physically demanding positions.
or even out of the workplace or workforce when possible. Supports were used to enable return to work that helped participants to optimize function or deal with ongoing limitations on the job.

The process of adaptation and outcome of adjustment was influenced both directly and indirectly by individual views on illness and work. Views on severity, recovery expectations and personal control influenced personal adjustment directly but also influenced actions used to cope including strategies for optimizing function and managing the environment. Views on work influenced whether return to work was valued and the extent to which participants would extend themselves in efforts to stay on the job.

It is important to note that the efficacy of these strategies was not without limit. Some workers (Phil, Stan) opted out of the workforce over the course of the study, while others struggled to regain their physical capacity and sustain their return to work (Jim, Derek). These difficulties reflect, in part, the constraints on agency imposed by the nature of the work and the workplace. The next chapter will present results from the perspective of social and structural enablers and constraints affecting the return to work experience of the participants.
Chapter 7

7 Social and Structural Influences on Return to Work

The results reported to this point indicate that cardiac illness produced physical, and functional impacts in these workers that ranged from experiencing no residual problems to barely having enough energy to finish a work shift. Participants also described emotional impacts, including problems with mood and worry about their illness and prospects for return to work with some participants being more emotionally involved than others. The onset of heart disease resulted in some participants adopting a more transcendental view of life (“not sweating the small stuff”), while others described no change in experience on an existential level. Heart disease also had social impacts on the job as participants negotiated their way through graduated return to work programs and/or dealt with ongoing limitations in work performance and outside of work in terms of active leisure pursuits. Together, these physical, functional, emotional and social facets represented dimensions of adjustment and reflected the success to which the participants were able to adapt to circumstances at work following disabling heart disease.

Significant to the process of adapting to work, were participants’ construal of their problems in terms of their potential for recovery, the likely timeline of cardiac problems, and control they could exert over their problems. Also significant were views held by participants relating to work. Some participants expressed significant attachment to work as an important life activity, some viewed work as an important part of recovery, while others considered return to work an undesirable necessity. In managing these impacts, workers described using a variety of strategies (mindset and perspective, optimizing function, managing the environment, use of resources) to manage return to work. These were deployed contingent upon personal and situational characteristics. Personal influences included the flexibility of the worker in mindset change, stage of career and job tenure (seniority). Situational characteristics included the quality of work relationships and availability of supports such as occupational health services.

While these situational influences shaped the deployment of strategies, the workers’ return to work was also influenced by social and structural factors operating both in concert with, and independently of, strategies. I will now relate how the practice and structure of work at the plant, work relationships, organizational policies and practices around seniority provisions and
accommodation, the occupational health department, the union, relationships with family and medical providers, and the relationship between the worker and the company in an industry sector in turmoil influenced return to work experience.

7.1 Immediate “Practice” of Work

Everything is in minutes and seconds. So say you are doing the dishes there and I will come over and you are suppose to be doing say 20 dishes an hour and you are only doing 18, you come in just for an example you are not feeling very well, you got a cold or something, so you are only doing 18. I’ll come over and say no I want 20, I want 20 from the time you start until the end of the shift. (Derek, drawing analogy between line work and the simple household task of doing the dishes)

The quote above represented the most common talk of production workers involved in the study relating to return to work experience - the practice of “making rate”. “Making rate” is how production workers describe the activity of meeting the time deadlines of completing “jobs” on the assembly line. As previously described, a “job” is a circumscribed set of activities focused on a specific aspect of vehicle assembly. Deadlines are set for jobs in order to maintain production output of approximately one truck per minute. Workers are provided with feedback on work rates through a red light situated on the Automatic Guided Vehicle upon which the truck is assembled. The light begins to flash after 25 seconds and then flashes more quickly after 40 seconds, signifying that the worker has gone “overtime” on the job. Along with this visual feedback, work rates are monitored by computer technology. Workers are generally expected to “make rate” on 80 percent of all jobs. Rates are invariable; in other words, it doesn’t matter whether or not you are not backing the line up, it matters only that you have fallen behind on your rates. Likewise, this “imperative” to produce is maintained from the beginning to the end of each shift, through each workweek, and over the span of a worker’s career without variation or consideration for fatigue, health problems, or age.

The system of surveillance monitoring ratemaking operated at multiple levels. Workers also described ratemaking as “making the lights”. As such, the “lights” provided feedback for self-monitoring of rates as maintaining work pace was a source of personal pride and competence for
production workers. The lights were also an indicator to coworkers of the worker’s output and whether rates were being made. Lastly, through the computer system, supervisors monitor rates and workers may be reprimanded and penalized if they don’t maintain adequate rates.

While “making rate” was present before the participants’ heart problems emerged, and is present for other production workers in the plant, it took on additional significance to production workers participating in the study. In particular, the participants attempting to build their physical capacities or those with more persistent physical limitations found the challenge of making rate to be the most significant barrier to return to work. As indicated in the previous chapters, participants (perhaps experiencing autonomic nervous system disruption) also experienced the “insidious” stress demand that came with rate making, as well as the social pressure created by negative interactions with supervisors and coworkers (discussed further below).

In contrast to their fellow participants working in trades, workers on the line had to maintain this pace, with a minimal number of breaks over the course of the work shift. Workers described that the work pace was the primary barrier to meeting work demands as opposed to the “weight” of load handing. “It is not so much the weight like, the tire room might be bad for somebody with a real bad heart but it is the speed factor, you know there is very little recovery time. They want you to work, they try to get you to work 58 seconds out of a minute if they can do it.” (Pat) As well, as the work shift progresses hour to hour and the worker fatigues, the stress to maintain rate increases. As Derek indicated, “So by the end of the shift, the last hour say if you are feeling kind of lousy, tired and that and having a hard time doing it, that doesn’t matter. You are timed in minutes and seconds in how you do your job.” Rates likewise do not change on “bad days” where workers are having difficulty. Phil described the difficulty of keeping up with rates day to day, indicating that some days were good but some (40%) were days where his energy would be down and he would have difficulty keeping up with the rates and potentially have to deal with reprimand from supervisors.

The psychological manifestation of the production imperative was, thus, an “insidious stress” that pervaded work on the line. As Phil described, “it is difficult to put your finger on it, but it is there”. Socially, rate making was the major source of friction between workers with ongoing impairments and supervisors. For production workers, making rate was the most problematic
aspect of their return to work experience. While a degree of wiggle room existed, and the workers described strategies to try to manage the production imperative, the line was a relatively unyielding entity and ultimately constrained the effectiveness of self-pacing or negotiating demands as outlined in the previous chapter.

Along with the production imperative for ratemaking, workers were, in a sense, physically “tied to the line” and worked in relative isolation. Workers on the line cannot leave their work area without relief. While this might not be an issue under normal circumstances, it is a problem for workers dealing with the physical changes associated with cardiac illness and medication intake. Phil described the very practical problem of increased urinary frequency and the difficulties associated with this while working on the line.

To go back on the line you can’t just go when you want to…… I mean it is crazy, you have to think about all of these things as to your well-being to go back to work. What can I do, you know I will need to go to the bathroom maybe a little more often.

Although production workers in the study were organized in groups, ostensibly their work was performed in isolation. “Like my end of the group there’s 12 men and they are all basically on their own. [Yeah] Like you might be only 10 feet away from the next guy but you’re busy enough that ah really the only time to get to chat with them is the break or lunch.” (Sean) Some workers expressed that this arrangement limited opportunity for support from coworkers, while others were quite happy with this arrangement, preferring the solitude of line work.

Trade work was different than production work insofar as rate making did not play a role in shaping return to work experience. However, participant tradespeople were still required to work quickly and accurately when ‘push came to shove’. As Frank put it:

Ah the stress of trying to get things done quickly. It’s a production thing, you know what G.M. is like, [Yup] we got to get our count, we got to get this and that. As maintenance our job is when the machinery goes down, you get it up and running quickly [Yup] you know. Well they say every 68 seconds you make a truck so, the profit on that is about $10,000.00 or more per truck [Yup] you know. You are down one minute it is $10,000.00
Even though the physical demands and insidious stress associated with ratemaking were not present in trade jobs, trade worker participants were under pressure when breakdowns occurred. The stress associated with the production imperative was present in a less continuous but perhaps more intense fashion.

The pace of work, in the view of all of the production worker participants had intensified over time. As Pat put it, “And now it’s all hard push and pounding and everything, that is everything single thing that is done is recorded on the computer, as far as times and everything.” Workers reported an increased scope of jobs, which raised their physical workload as well as caused suspicion that should they maintain or exceed the work pace, the job will be further intensified. “I am definitely not going to run my butt off because as soon as I run my ass off and I make rate, then they are going to have something to nudge on again.” (Jim)

Workers also reported an increase in the surveillance aspect of making rate in terms of monitoring through information technology. The increase in surveillance was viewed as contributing to the psychological intensification of work by reducing the workers’ activities to those of an automaton and making return to work more psychologically stressful. Participants’ reports indicated that intensification had taken place through the years of lean production initiatives. New styles and modes of work had been introduced but seemingly with the same fundamental methods of maximizing production - intensifying work rates, increasing surveillance, and using social (i.e., reprimand from supervisors) and economic (i.e., threats of days off) sanctions as a tool to manage work output.

7.2 Work Relationships

Interview data indicated that return to work was affected by the quality of work relationships with coworkers and supervisors and that familiarity and reciprocity were mechanisms that influenced the quality of work relationships. Coworkers and supervisors differed in their influence on return to work experience as a function of their formal roles in relation to the participant. Data also revealed the presence of an informal network among workers with cardiac illness that provided different types of support for workers coming back on the job.

Coworkers could be supportive or antagonistic of workers returning to the job. Bill indicated that coworkers provided tangible support in helping him heavy lifts. “Well the guys are quite helpful,
like especially the two guys, one operation is lifting a hood off a rack and tailgate off a rack and putting it on a mobile carrier taking it over to the main line …. they say don’t lift it yourself, we’ll help you lift.” Others indicated antagonistic views on the part of coworkers to limitations in their work pace.

See the guys that work on the line around you, they are used to the supervisors coming over and yelling at them and telling them to hurry up and make rate so now they’ve got the attitude that when they get a person like me in there working, they start yelling at me, come on, hurry up, make rate, and they start squawking…. Oh yeah, your coworkers right around you. They are on to you. It’s like an intimidation thing you know.” (Jim)

Jim went on to say that he employed a “Don’t take it to heart attitude” to deal with such coworkers (see Changing Mindset in the previous chapter). Derek reported a similar situation with a coworker harassing him about his modified duties; however, he indicated that other workers did chime in to defend him. The offending coworker then apologized the next day.

The degree of support provided by supervisors was likewise seen as variable, based at least in part on the quality of relationship (further elaborated below). Some workers indicated supportive relationships with supervisors. Derek, in particular, felt well supported by both of his supervisors, having worked for them for years. “They’ve been very supportive the people there and as I say they’ve had other people that has been through some it and ah, same with cancer patients and all this kind of stuff so. They’re not as bad as everybody makes them out to be at times, I don’t think.”

Nevertheless, supervisors were not always supportive. Sean and Jim returned to work with ongoing functional limitations but without specific medical restrictions. They complained that they were put on heavy, stressful jobs on their first day back at work. In Sean’s case, he described this as a lack of thought on the part of the supervisor, who assigned the work without being familiar with the demands of the job, implying that it was an “easy” job. Jim, on the other hand, had a history of conflictual relationships with the supervisor and felt that, while it wasn’t a purposeful attempt to sabotage his return to work, his work assignment reflected a lack of consideration by the supervisor that was influenced by their previous dealings.
Derek attempted to return to work with “light duty” restrictions. He was scheduled to start a particular job and arrived at the plant only to find out it had been posted and given to someone else. Phil, who also returned to work with ongoing limitations, transitioned directly from a sedentary position at the call centre back to the line without any planning. These participants all recognized the influence of production demands and the pressure it put on supervisors in terms of manpower deployment. When probed about these situations, these workers indicated no prior planning around their return to work process. Likewise Bill, who was supposed to be provided with a helper for the first few days following return to work, indicating losing this individual during the first hours because of manpower shortage issues These workers were, in many ways, left to their own devices in negotiating supports and work conditions.

Data indicated that supervisors’ general views of workers influenced how they were placed in jobs. Jim indicated that supervisors could influence which worker might get “bumped” from a group with a worker coming in on placement.

Okay I will have you bump Jim down there and that job falls within your restrictions and you can go do it. Well what about Joe Blow and this guy here or this girl here? You know well, the supervisor may like that girl. She may make rate on her job and that guy there he comes to work everyday, shows up on time, doesn’t miss any time, he’s a good worker but that guy down there, he missed a day last week, takes time off, doesn’t make rate, whatever it be, may just rub the supervisor the wrong way – let’s bump him out.

In other words, workers with good records who would make the supervisor’s work easier had the potential to receive higher levels of support from supervisors and arbitrary decisions based on personal feelings may come into the picture as well.

Data also indicated that the influence of work relationships was dependent upon role – i.e. supervisor vs. coworker. As described above, coworkers were happy to help participants where they could; however, the degree of help they could provide was determined by their position as a coworker. Coworkers could help with heavy lifts for instance but could not determine job assignments. In contrast, supervisors were in the position of assigning work (within the provisions of the collective agreement); but would not help with the physical aspects of task completion. The degree of assistance that could be provided by a coworker also depended upon
the type of work they performed. For example, a trades person could readily get help with a job task from another tradesperson; however the ability of a worker on the assembly line to help a coworker was limited as that worker would place maintaining their own work rate in jeopardy. While coworkers might not support workers having difficulty with work rates, supervisors held the power for sanctioning inadequate work performance.

As suggested by the above data, familiarity and experience were important qualities in relationships with supervisors during return to work. Pat describes how familiarity influences the situation:

If I come back and I got one of my old foremans and said I can’t do that, they know for a fact that I can’t do it, [Yeah] but if I come back and say to a new forearm, I can’t do that, they figure he is shooting me a line, he wants an easy job. There is a difference there, there is a hell of a difference. (Pat)

Similarly, Phil alluded to having just “trained” one foreman and then had to start all over when he was switched. “…the last foreman I had, which I just kind of got him trained now they switch foremans on us so now it’s a matter of starting all over with another one.”

Familiarity was dependent upon continuity with supervisors and therefore continuity in supervisory personnel could influence the return to work experience. Derek had changed work areas upon his return to work and his immediate supervisor, A, had coincidently moved to the same area. Derek viewed this as helpful, indicating greater confidence that he would receive the help that he needed from people familiar with him as a worker and his particular situation.

Right now my supervisor, A, got moved and he’s on the door line so right now I am pretty sure he is going to be my supervisor, D is going to try to get me something on the door line [Yeah] so and, of course, they both know what is going on and everything too so I know they are going to try, they are going to try to help me out one way or the other.

Human resource practice influenced continuity and, therefore, influenced the quality of worker-supervisor relationships. As Phil described, new supervisors had to be “brought up to speed” in their familiarity with the worker’s situation. As well, the practice of contracting supervisory
positions influenced the supervisor’s familiarity with the worker and the work. Contract supervisors are brought in for terms of work and are viewed very differently by workers than permanent ones. As Stan describes, “Well they [contract supervisors] can be shit on and they moved around, they can be let go and no questions asked but when you are a General Motors Supervisor it’s different, you know.” According to Stan and other workers, this difference in status placed the contract supervisors in a precarious position, reducing the amount of leeway they felt they had in accommodating workers.

Along with this, Tony described how contract supervisors did not have the same familiarity with line work and therefore a limited capacity for empathy with production workers.

A lot of guys come in, on contract, who has never worked on the line type of thing. You know, they just jump out of school, college and bang they are a manager. Like we don’t really like those guys because they don’t know what is going on and they are by the book people and are the first to be on your case and stuff like that. We don’t like that. We like guys that come up through the ranks, who’s worked on the line, who understands our problems.

Being on contract, these supervisors may also have been in precarious work situations themselves and therefore felt the need to push workers to maintain their own productivity indicators with less regard for the participant’s limitations.

Reciprocity was another mechanism influencing the quality of work relationships. Reciprocity generated a “tank” of social support that the worker could draw on in this time of need. Good work relationships were built over time through the give and take of social interaction; workers that valued work relationships described taking care of the interests of others and then, in turn, being able to rely on their support. However, this was not evident for all participants as the contrasting cases of Pat and Phil exemplify.

This quote is how Pat described the day he returned to work.

“I had a sore arm. [Yeah] I had to shake everybody’s hand in the place and there is, I don’t know…. [Laugh. Laugh] Everybody was good. Everybody was
concerned about me and, nobody babied me but yeah the URs, you know they said if the jobs, any jobs are too tough for you just tell us and we’ll change…”

Pat evidently valued his work relationships and indicated that his coworkers were willing to help in this time of need. Then, Pat went on to indicate that this support had been built out of years of Pat taking care of them: “….you got to remember though that I had looked after them for years, for I am the guy that is giving them the good jobs.”

Pat then described what he means by that. He worked as a UR – utility repair person. These are workers assigned to work groups who fill in for absent workers, covering breaks etc. Normally, the jobs that they get are assigned based on seniority; that is “good” jobs go to the most senior UR. However Pat had developed a system within his group that bypassed this formal structure such that the UR’s in his group rotated though jobs so that no one got stuck with the “shitty” work.

“Ours is the only group I know that does it because I can’t see the sense of somebody going on UR if they are going to a shitty job every day. [Yeah] So, I have done this for years and years, and years. I have looked after the guys for years and I don’t fight with anybody. There is no arguments over who is doing what. If we had a QT [Quality Trainer] job open, if you get it Monday you will get it again Friday, but everybody, all four of us will get it at least one day that week.”

Thus, Pat had pre-emptively built himself a tank of support, through reciprocity. Pat had an outlook on the natural give and take of work relationships, which he described simply as “I always find you get more of a person if you treat them decent.”

For Phil, the experience was different. In anticipating limitations, he indicated that he might require assistance. However that assistance was not and should not have been contingent upon any degree of reciprocity. As he stated: “I mean they won’t like it if they have to help me with the job but that is not my problem.”

Further, Phil’s outlook was that support is a meagre commodity in the plant and that good people were “few and far between”.

Like I say you might get the odd supervisor say listen Joe is not feeling good, I am going to cut him a bit of slack, put my spare man on his job, give him something easy to do but that is few and far between. So you can’t have any expectation of that. It is either do the job or don’t.

For Phil, therefore the work is not a place where the development of relationships had any particular value. “Like at work, I don’t have any real socialization with any of the people, you know, a lot of people play cards at lunchtime or they will get together for this and that, that doesn’t interest me.”

Phil, Jim and Les described limited and/or problematic relationships with coworkers and supervisors and all three had described the greatest problems negotiating demands and eliciting support during return to work. In contrast, Pat, Bill, and Derek described cohesive relationships built through reciprocity and indicated supportive transitions back to the workplace.

Another aspect of relationships frequently discussed by workers (8 of 12 participants) was the support offered through informal “networking” with other workers with heart disease. “It’s funny; you kind of join a club… there’s another guy I talk to over in group XX; we’re always talking back and forth. He’s had the same experience. We kind of exchange experiences and medication history and stuff like that. It’s quite a club.” (Tony) Many workers made a social bond around heart disease upon return to work. This informal networking arrangement provided support and mentoring for these workers following their return to work.

Specifically, Jim reported that another member of his group that was affected by heart disease provided him with advice to “roll with the punches” and do the best he could in terms of making rate but not to ‘kill himself’.

And one guy in our group who has had two heart attacks has shown me that. [Yeah] Yeah, he says you can’t, you can’t let things bother you, you can’t let things worry you, you can’t let him get under your skin. Just do what you got to do, get your paycheck, go home, that’s it.

Derek stated that he had advice from a fellow heart case about symptoms that he was experiencing that provided him with reassurance.
I just met him the once but he, it was kinda nice to run into somebody that had it done because it kinda give me a few ideas how he felt when he had it done and what I could kinda look for or how I was feeling at the time and all that. [Yeah] So that made me feel pretty good (Derek)

Informal networking provided not only informational and instrumental support, but also “felt” support. Workers reported a heightened level of awareness that cardiovascular disease was a prevalent problem in the plant. This awareness contributed to participants not “feeling alone” in their situation and that others around them were “in the same boat”; able to understand their situation. “I feel better in a way that I know I’m not the only one going through that in that place either; there’s a lot of people.” (Sean) Workers also reported extending their social contacts at the plant owing to the bond of heart disease. “Like [coworker] for instance. I knew he was in maintenance and I always said hi but now we’re kind of buddies. Hey [coworker], how are you doing? Oh we joke and fool around something like that. It changes the way you approach each other.” (Tony)

While they did not necessarily report reciprocal acts of tangible support on the assembly line, workers who reported informal networking involvement were those who valued and had developed strong relationships with coworkers. In this sense, informal networking also involved reciprocal interaction and sharing of experience and perspective; however this sharing did not extend to supervisors.

The workers’ experiences with heart disease also became an avenue for communication with workers without cardiac problems. Steve, for example, indicated the surprise of his coworkers upon hearing of his heart problems.

A lot of them were saying they were surprised you know at my age and they said geez you are, I mean there are guys that are you know really out of shape like fat [Hmm, hmm] and they said geez you don’t seem too bad out of shape, [Yup] they were surprised that I got that but I said well it’s cholesterol, you know built up in my arteries.

Fellow workers would ask about symptoms and tests, concerned about their own risk for heart disease. “…but a lot of them are ah going to get their heart checked. [Yeah] And they’re asking
about this being able to look at the arteries.” (Frank) Frank went on to say that these workers want information about their cardiac health besides “eat right, exercise, and don’t smoke” – things that they all know but don’t necessarily do.

This sort of networking led to suggestions by workers to establish programs for sharing information on heart problems. “There are some things they could do though [Like what?] on the company’s part. Like I say I don’t know why they don’t have a little club. What’s going on, what kind of things are we seeing going on here, how can we help you?” (Sean)

### 7.3 Accommodation and Seniority Provisions

The most frequently discussed organizational practices influencing return to work were the use of seniority provisions to obtain preferable work assignments and formal accommodation through “placement”. Seniority provisions in the collective agreement enable all workers to select into work assignments held by workers with lower seniority. This option was used by workers to select into less demanding positions. Stan described the value of seniority provisions for workers in general in talking about the job that he had been on, prior to his disability.

> They call that a preferable job, the one that I had [Yeah] because my seniority got it, right, and it was a preferable job. People would stay on that job and retire off that job, you know it was on a side, you could build up, if you worked with all the right people and a regular operators were on the job you could build a bank, run out and have a cigarette and come back, build another bank and you know, sit down or whatever you wanted to do.

As described in the Managing the Environment Section in the previous chapter, Pat used seniority provisions to bid into a Quality Trainer position, which took him off the line and reduced his physical demands. Jim bid into a Utility Relief position, which he felt provided him with greater variety in job demands and prevented him from being stuck in a difficult job.

Nevertheless, seniority provisions could also work against a worker with shorter job tenure as Phil describes.
Ah, so what do I do to be able to get out the door early from General Motors because there is no way that I am going to make another five years there….unless they gave me an office job with a pencil, which is not going to happen ….my seniority will not take me off the line, so it [another five years on the job] ain’t going to happen.

This was also relevant to Jim’s situation; he was subsequently bumped out of his “UR” job and back on to a less favourable job on the line. Over the course of the study, Jim changed jobs a total of three times, bumping in and being bumped out of these based on his seniority and experiencing periods of “sluggin it out” on a demanding job.

Even with seniority provisions however, workers could find themselves on physically demanding assignments upon return to work following disability. Jim described how his supervisor put him in a demanding assignment because of Jim’s previous experience on that particular assignment, despite there being a “kid” in the group with lower seniority. Jim described the supervisor’s rationale:

‘Jim I want you there, you know how to do rads, you are good at it, you make rate. The kid knows how to do [Worker’s] job. I don’t have to spend any time; everything is good – run’. The line is going, get the jobs moving, get the trucks out of the groove that’s it. That’s production time.

Sean also viewed the intensification of work assignments (described above) as not only eliminating the “wiggle room” within each job assignment but also having the effect of homogenizing job assignments. He indicated that the options of ‘good jobs’ described by Stan, had become less prevalent, leaving fewer options for higher seniority workers with limitations to bid into to reduce their work demands.

Placement provisions are another means through which a worker could be accommodated. A worker goes on “placement” when specific medical restrictions are placed on him or her when returning to work following disability. When this occurs, the worker has to go on a job hunt, going from one group to another to “shop” for a job that meets the restrictions. Once a job is found, the worker can be bumped only by another worker with higher seniority, who is also on placement.
Placement was not used directly by any of the participants in relation to their cardiac problems. In fact, some of the workers with ongoing limitations eschewed placement for two reasons. Workers did not want to be stigmatized as a “placement case”. In discussing why he had requested not receiving any restrictions from his cardiologist, Jim indicated: “I’m not going to use the fact that I am handicapped against me. I don’t want people looking at me going look at Jim he is using the fact that he’s now got a bum ticker to get a better job, get an easier job.” Jim went on to express how placement results in stress for workers:

That’s where a placement is not a good thing. You don’t like doing that to your fellow worker to begin with and then when it actually happens they get down on you which makes it even worse and it plays head games, stress all that on you. It puts all of that on you.

Other workers looked upon placement cases as taking unwarranted advantage of some medical condition to obtain a more favourable assignment. Some of the participants (Jim, Phil, Derek) indicated that coworkers openly or covertly harassed workers on placement. Jim outlined how one worker in his group was driven out by coworker reactions to work restrictions imposed following a serious shoulder injury requiring surgical intervention. “And then stuff is scratched on the bathroom walls upstairs, which is the final straw but by then he ended up leaving and going to the body shop.”

Secondly, formal work restrictions requiring placement was viewed as putting the worker in a precarious position. Some participants described how they could be “put out the door”, owing to work restrictions that made it difficult to be accommodated.

No, you are better, basically in my own book you are better not to have any more restrictions than you got to because it is a lot harder to get another job, maybe pick up a job, because if you go in there and well you can’t do this and you can’t do that, they said you know you can only do one thing and we don’t have that job anyways so they might just send you down the road for good. (Derek)

Derek’s view on accommodation may have also been influenced by the uncertainty in the plant during the course of the study. This will be discussed further below.
Interestingly, two of the workers (Sean and Tony) were already on permanent restrictions for other previous injuries. Sean, in particular, indicated that the job he had by virtue of his previous restrictions made it easier to return to work following his heart attack. As he explained:

I’m on a restricted job already because I have had both my wrists done at work. This one done twice, this one done once, carpal tunnel [Yeah] so I am on a restricted job already, which kind of helped me out. If it wasn’t for that I would be just on a regular jobs fighting to get a half decent job [Yeah] and slugging my ass off a little more than I am now. I got a break out of it.

Unlike Jim, both Sean and Tony denied feeling singled out or treated any differently as a result of being on placement. Sean’s ‘battle scars’ from previous surgery may have had something to do with legitimizing his situation. Tony had a less visible neck problem but had been on restrictions for 18 years. Sean in fact derided a coworker (placement case) who had bumped him off a job that he preferred indicating, “I had a guy bump me last week. He has a back problem or at least that’s the story [emphasis added].” This type of derision was identified by Jim as a means of social norming, which he indicated was used by the company to control or reduce the use of medical restrictions. His view was:

Well the company has twisted it around in such a fashion that now these placement cases are now looked down upon by their peers. No longer respected. ‘All he is going to do is come over and bump me off my job and I got a good job. I have been working my tail off for years and now this jerk, because he’s got a bad ticker is going to bump me off my job’.

To avoid the stigma of being identified as dependent upon medically imposed restrictions and the precarious position of being restricted and having their options for accommodation limited, participants with functional limitations and not otherwise accommodated, preferred seniority provisions over provisions for placement.

7.4 Occupational Health Department

Workers viewed the Occupational Health Department as a buffer of support during return to work. This influence was felt in a number of different ways. Onsite occupational health
personnel provided the workers with a sense of reassurance that if they had a problem or recurrence, it could be dealt with immediately. As Bill described, “I guess knowing that they are there if you need them eh. [Yeah] To put your mind at ease in a way, instead of having to wait for somebody to show up maybe 10, 15 or 20 minutes later eh, [Yeah] say for an ambulance or from another plant or something like that.”

Participants experiencing problems had the benefit of immediate attention from occupational health personnel. As Jim elaborated:

> Monday it started happening again but then I started getting pains in my chest as I was working. So, I went to First Aid to check…..my pulse was just all over the place. She says you got an arrhythmia going, …she gave me oxygen. It started feeling better, the pains went away in my chest…..

As Jim’s symptoms returned, the nurse arranged for an ambulance to take him to the local hospital emergency for cardiology follow-up.

The Occupational Health Department also provided support for ongoing checks of blood pressure and the like. Pat described how he used occupational health to monitor his blood pressure during the initial phase of return to work. "You know, if I want my blood pressure checked, they keep a record of it for me, so if I want to take the record of how my readings have been I can take them in when I see my cardiologist, it gives her some idea of what is going on.”

Occupational health also provided a bridge between recommendations for return to work by outside medical professionals and the realities of work in the plant. Derek described how the plant physician was able to rework the unworkable recommendation for “light duties” by an outside physician into a progressive return to work program that would be feasible in the plant setting.

> Dr. M said yeah but I can’t get you eight weeks of light duty so he said what do you say he said on that job he said the first week you go for 4 hours which he marked, you got the paper here we could show him, he said I will mark 4 hours for the first week and then try 6 the next week and then hopefully you can go back working your full shift.
This plan eventually facilitated Derek’s return to a full-time position. In Derek’s case, the plant physician was also able to help him to interpret “functional” gastrointestinal symptoms he was having owing to the compounded stress of his health problems and return to work.

And he said sometimes that can do it too if you are worrying about something or anything like that. [Like irritable bowel.] Yeah, that’s what he said, irritable bowel and I had not heard of that before. So he said sometimes that can happen too Derek, he said don’t worry about it, he said just take a day at a time is all you can do. [Yeah] So but as I say he was very good about things too.

While not a prevalent attitude, Phil perceived a conflict of interest for occupational health personnel, suggesting that decisions about return to work made by occupational health providers may be influenced by the fact that they are employed by GM. “I think he [the company physician] is not a bad guy but he is also a GM employee. [Right] He gets paid by them. [Yup] So obviously his focus is to get you back as a productive employee.” Jim suggested the same while talking about the incumbent plant physician. “He is probably one of the best ones we have ever had in the truck plant. We have had some guys in there that are nothing but paid by General Motors and they will do anything that G.M. tells them to do.” Despite this caveat, participants were unanimous in viewing the occupational health service as valuable.

### 7.5 Union

The union provided reactive support in helping workers deal with benefit and work accommodation issues. Two workers received assistance from the union in relation to problems with work accommodation. In both cases, the workers indicated that the union had been helpful in resolving the issues. Benefit issues were another area where the union was supportive. Derek, for example, had a tumultuous course of setbacks during his return to work, resulting in benefit interruptions. At one point, the benefits insurer requested completion of a disability form by his physician, who he could not see until the following week. With a mortgage payment due and with insufficient funds to cover it, the union representative stepped in to help sort out the issue and ensure that a benefit check was provided. The union also provided counsel to workers regarding extended disability and early retirement, coaching optimal use of benefits.

In a general sense, workers described that the union provided a sense of security from arbitrary
reprimand and dismissal relating to work problems that might be associated with their heart condition.

The union was also credited with the high wages and good benefits that workers enjoyed, which made work disability easier to manage. “I know some people say, well you may as well work for a non-union company. Why even have a union? Well, a union is what got us $30.00 an hour and benefits and a pension.” (Jim)

7.6 Family and Medical Influence

Data relating to the influence of family and outside medical personnel on return to work experience was also sought in the interviews with participants. In Derek’s case, spousal support played a major role in his return to work experience. His wife Beth was present at the initial interviews and during some of the subsequent follow up contacts. While this may have influenced the data in terms of Derek’s representation of his experience, it provided additional perspective on the possibility for spousal influence on the process. Beth took care of all of the paperwork relating to Derek’s medical interventions and benefits. She booked appointments, sorted out problems with benefits, picked him up from work when he could not stay on the job, and accompanied him to meet with the union, medical appointments and his surgery. Considering his long and difficult road to recovery, her involvement was undoubtedly a tremendous benefit.

Sean indicated the support his spouse had provided over his years with heart disease.

I don’t know how I would survive without the wife. It’s a good thing she hung around. I mean, the kids and the wife both help me out and anything I need. If I find something I can’t do or to remind me about things. I have all kinds of trouble with doctors appointments and stuff eh, different times, different places, and that kind of stuff and you’ve got to have some support at home, if you don’t you’re in big trouble.

Others described spouses as “keeping tabs on me” (Bill), indicating that their wife was watchfully concerned. Frank’s wife did not want him driving to and from work. “She doesn’t want me driving eh, all the hours on the road? [Yeah] I think they’re all afraid that I’m going to
she was pleased when Frank lost his job as group leader and returned to a regular shift so he could commute with a coworker to work.

Only Phil indicated that his wife opposed his return to work – “My wife is dead set against me doing it” – indicating that she had witnessed the decline in his physical stamina and worried about the damaging effects of work stress.

Involvement by family physicians and medical specialists in the return to work process mainly related to reassurance regarding their condition and the possibility of recurrence. This was important in the initial decision to return to work. As Pat put it “…the big factor there was the fact that they told me my heart was really good, that had blockages and since it opened the blockages up.” Bill put off his return to work on two occasions. He cited diagnostic testing as important in his decision to return to work. “I passed my stress test, no problem at all and the echo came back and everything is working eh. And the doctor said the chances of another one are pretty nil.”

Reassurance was also important for participants experiencing ongoing problems. Derek, Phil, and Jim all experienced ongoing problems of one type or another, affecting their ability to stay on the job. For these participants, ongoing diagnostic checks provided them with greater peace of mind. “But ah the one pain I’m not sure about and then it bothered me two or three days fairly good after that so, so just to be on the safe side, they tell you you check it out and be sure.”

Frank was concerned that further arrhythmia might result in a recurrent cardiac arrest. Holter monitoring was employed prior to and on two occasions following his return to work to check his heart rhythms. While he remained uncertain about the cause of his cardiac arrest, this monitoring seemed to help quell his doubts and gain some piece of mind.

Participants indicated that physicians took a “play it by ear” (Pat) approach in evaluating the fit between physical capacities and job demands. In some cases, physician advice on managing work demands was completely incongruent with the production demands of the assembly line. Jim, for example, indicated that his specialist advised him to sit down if he became fatigued. “You get tired, you feel pains in your chest sit down. With 22 years seniority there are no sit down jobs, it is just not feasible.” In others, well-intentioned recommendations for “light duties” were incommensurate with the severity of the worker’s condition and the already light demands of the job. Steve, for example, discussed his cardiologist’s recommendation for two to three
weeks of light duty work with his supervisor, who retorted “how much lighter can you get". Recommendations for light duties did not fit in with the work of production workers. Derek returned to work with an initial recommendation for light duties, which had to be modified by the plant physician to meet the exigencies of the assembly line. Les indicated that his cardiologist advised him to address concerns about his work to the company.

He said if it causes excessive stress then what you should be targeting for is something you know that’s going to ah be more amicable to you … I mean obviously you have to make an allowance somewhat you know. It is not to say you are going to be an invalid or whatever but [Yeah] but you know if the company can do something to help you then you should exercise that option to explain to them, ‘Well I don’t believe this is good for me, what can we do to make this job work for both of us’.

Ironically, this advice resulted in Les being restricted in his overtime hours, which resulted in a protracted dispute between he and the company about the company’s right to limit his overtime work. This dispute was a major source of tension over the initial time period of his return to work.

No participants indicated that physicians gathered any information in any detail about their job. Steve, for example, had a very light job as a tradesman. His cardiologist asked him where he worked (not what he did) and automatically recommended light duty work. Likewise, no cases indicated that they were aware of any communication between their physician and the plant or plant medical, also limiting possibilities for sharing of information and understanding about their case in the context of the work environment.

7.7 Just a Number

In contrast to the human quality of immediate relationships with supervisors and coworkers (positive and negative), workers viewed the company itself as an impersonal, cold and calculating entity. “General Motors does not care about you. You’re just a number. You know, I mean corporate. I mean the people like the foremans, they care… but the guys [corporate] they don’t care, they don’t see you, they don’t know you, they don’t care….he died on the line, get him out of the way.” (Tony)
This view was generated through their interactions (or lack thereof) with “the company” and came from simple situations, such as the lack of response of the company towards workers when they had problems:

I find them [the company] a little cold hearted in a way, in a manner of speaking eh. Like when my son died, nobody from General Motors called me. Nobody. Actually nobody, to see how I was, whether I was returning to work, if I needed any assistance, do you need any programming, nothing, actually nothing. (Bill)

This feeling of depersonalization also came from what workers reported was a lack of the company’s practical involvement in their return to work. For example, participants indicated receiving no information about work accommodation despite some being off for extended periods. This left many with the sense that they were expendable; having no value apart from meeting the production needs of the organization.

In relation to the return to work experience, some participants viewed this lack of caring as important. They would have at least appreciated a call or card to show concern. “I realize it is not their responsibility to run your life but you put so many years into a place you think they could at least call you, send you a card, how you doing?” (Phil) Others normalized the relationship by taking the view that “its just a business” and accepted the lack of a social bond beyond selling their labour. “No, I’m just a number there, same as everybody else. [Yeah] If I died tomorrow, no big deal then they would hire somebody else.” (Sean) This more detached perspective was perhaps helpful in dampening emotional reaction to the depersonalization experienced. Whether the worker adopted this more detached perspective or lamented the lack of relationship, there was an evident lack of social bond with the company from the standpoint of the participants.

7.8 Extralocal Influence

At the same time their work had intensified and fell under greater scrutiny, participants viewed their job security at the plant as decreasing. During the of course this study, an entire work shift was eliminated and, subsequently, an announcement was made that the plant itself would close the following year. Talk of insecurity flavoured the interviews with workers. Jim described the irony of his position well: “Yeah, yeah you feel like you work, where do you work, General Motors, you work for the largest corporation in the world [Yeah] and yet your job security, other
than what the union can promise you, is basically nil [Yeah] at this point of time.” Workers described the precarious nature of their position in relation to the larger forces creating instability in the auto sector including the North American Free Trade Agreement, the strong Canadian dollar, and strong offshore competition. Thus the participants, particularly those with ongoing impairments, found themselves squeezed psychologically between steadily intensifying work demands and steadily eroding job security.

Workers in the study described an environment of insecurity owing to an auto industry in turmoil. Participants described the larger socioeconomic influences on the plant and the industry, relating these influences to their own experience. Pat described his view on the competitiveness in the industry and how it has impacted on management practice.

It is a fast pace and the way it has changed I guess with all the offshore, you know the competitiveness and that of the industry, they got to get as much out of you as they can. I think they changed for the worse with the management approach because it’s more threats and that’s not good.

Pat viewed the heavy-handed response to improving productivity as one that pushed workers, negatively impacting on workers with ongoing functional limitations.

Participants described a “trickle down” effect, whereby the intensification of work output generated stress, starting with management and working its way down to influence their experience. Supervisors were sometimes described as “being caught in the middle” when it came to enforcing ratemaking.

Detroit watches everything and calls the shots. [Right] So, you know it may be even more so if somebody’s, you know over time management wants to know how come and so you know like the General Foreman he watches on his computer, he calls my foreman, my foreman has to answer well how come. [Right] So even though our area is not backed up or held up and he may be okay with it, you know the General Foreman of the department is not going to be okay. (Phil)
The pending layoffs at the plant also had an impact on individual participant’s return to work experience. Jim discussed the difficulties he was having on a particular job that he got “bumped into” and how the layoffs were playing into this, “And with the third shift being eliminated people coming from third shift, there’s jobs that have been eliminated, and one of the guys who got eliminated off his Utility Relief job had more seniority than me, therefore he had the right to bump me and he did.” As a result, Jim wound up “just struggling away” on the job he had to move to.

The rationalization and resulting uncertainty extended beyond work touching the participants’ lives in other ways such as personal financing, raising the level of uncertainty for workers vulnerable from health problems.

So, ah, it’s pretty bad, you know, we don’t even know that I work with General Motors and the announcements that’s hit the papers with the auto market moving to China and Mexico and such, I don’t even know whether we would qualify for another mortgage right now with the banks. (Jim)

Participants were savvy about other current economic issue and their view of the ramifications of these issues for their jobs.

I was watching on the news tonight, they figure there’s going to be another million people have the mortgage foreclosed on them in the next four months….And these are all people who would be buying vehicles. And then you got the housing industry because that’s all a big mess and you know you got construction people and labourers and all that. None of them are going to be able to buy new vehicles either. It’s just a vicious circle. (Sean)

Participants also referred to the high Canadian dollar, shifts in consumer preference, differences in environmental policies between jurisdictions, limited access to overseas markets, high energy prices, overcapacity in vehicle production in the company conspiring to pressurize the situation at the truck plant. While all workers in the plant faced this stress, those with ongoing impairments owing to their heart conditions felt vulnerable in terms of their prospects for alternative employment should their jobs be eliminated.
7.9 Summary and Synthesis

This chapter has outlined the social and structural influences on the participants’ return to work experience. Both the production imperative and the degree of control the worker was able to exercise were major factors influencing return to work experience. Making rate was a major constraint on production workers dealing with ongoing impairments while the lesser demands and greater control of trade work were relative enablers to return to work. The intensification of work and erosion of job security were identified as intensifying the influence of ratemaking as a barrier to adjustment to the workplace.

Work relationships could buffer this influence to an extent but could also intensify its effect. Coworkers and supervisors could be supportive of or antagonistic to efforts by these workers to adapt. Familiarity was an important factor in relationships with supervisors as supervisors having experience on the line and familiarity with the worker were viewed as having a greater capacity for empathy and support. Workers who built a tank of social support through reciprocity were able to use it to elicit support from coworkers and supervisors while those with less developed relationships perceived more limited support. An informal network of workers with cardiac disease was identified that enabled workers to deal more effectively with their problem cognitively, behaviourally, and emotionally through the provision of information, advice, modelling adaptive behaviours and leaving the worker not feeling alone in his situation.

Workers with ongoing impairments preferred to seek accommodation by enacting seniority provisions and bidding into less demanding jobs. The formal practice of placement for work restrictions was not favoured owing to its stigmatizing effects and the worker’s perception that it created potential for a precarious situation in limiting job options for return to work. Ironically, placement had helped two workers with permanent restrictions avoid being placed in heavy jobs they would have had difficulty managing.

Support from the Occupational Health Department was viewed as a buffer during return to work. Occupational health provided ongoing monitoring of cardiovascular status and a sense of reassurance to workers that more immediate assistance would be available to them, should they run into difficulties. In fact, occupational health did provide immediate assistance to workers who were experiencing an exacerbation of signs and symptoms. The service was also valuable
in bridging to the medical world outside of the plant in terms of interpreting and making feasible work restrictions and helping workers interpret health changes arising out of the stress associated with the return to work experience.

The union was another formal source of support accessed by workers. The union provided reactive support to workers experiencing benefit problems, intervened on their behalf in any disputes around return to work process, and provided counsel regarding the intelligent use of benefits to ease transition from work to retirement.

In the majority of cases, family influence was more indirect in providing general support to the worker, having no formal involvement in the return to work process. Participants described receiving extra assistance around the home. In some cases (Phil), spouses opposed return to work, fearing for the safety of the participant. Other participants (Tony, Stan) did not indicate any awareness of their spouse’s view.

Medical practitioners primarily provided information relating to the participant’s condition and the likelihood of recurrence. For some participants this was important in influencing their decision to return to work and/or stay on the job with ongoing problems.

In contrast to the relationships between participants and coworkers, the company was viewed as an uncaring and depersonalizing influence. Participants described the lack of involvement in their return to work, with no contact by the company with them during periods of disability. Some were fine with this taking a matter of fact approach to their relationship with the company, while for others it was emotionally perturbing.

Participants were sophisticated in their discussion of the extralocal influences on their experience. They described how the global aspects of competition had resulted in intensification of work, which “trickled down” to their experience through pressure from foremen, being bumped into more demanding jobs, facing the stress associated with layoffs and the financial implications that all this carried.

The findings relating to social and structural influences might be broadly conceived as moving out from the participant workers and their immediate interaction with the practice of their work, to relationships with coworkers and supervisors, then more broadly to practices of seniority and
accommodation and structures including the Company, Occupational Health Department and Union. These influences could also be looked at in terms of their degree to which they were informal and contingent versus formal and structured. Results indicate that the practice of work on the assembly line was highly structured and governed while that of trade workers was more contingent and permitted greater control on the part of workers. Results indicate that the influence of work relationships was role-dependent and therefore structured; however their quality also influenced return to work and this was contingent upon familiarity and reciprocity. These perspectives will be further elaborated in the discussion section, in terms of the potential they offer for understanding return to work experience.

Considering these results with those of the previous chapter, social and structural influences also influenced the deployment and potential effectiveness of adaptive strategies used by participants. The type of work engaged in (production vs. trade) determined whether activity pacing could be employed to optimize function. As production workers had no control over work pace (beyond the small degree of wiggle room available), the primary strategy left for them was to change their mindset in relation to work. Managing the environment by selecting into a less demanding job position was a function of seniority provisions. Even with this option, the intensification of work had reduced the value of this strategy as job assignments had become more homogenous. As Sean stated “All the jobs are shitty now”. Managing the environment through negotiating work output was dependent upon the quality of work relationships enjoyed by the participants. Participants enjoying more positive relationships indicated less friction and more support from coworkers and supervisors during return to work. The use of support provided by the Occupational Health Department and Union was contingent upon their accessibility to participants. The description of participants indicated that these supports were readily accessible and beneficial during return to work.

Participant experience, the influence of individual perspectives and strategies, and social and structural influence on the return to work experience provide a large scale view on the return to work experience and influences affecting it. Less evident in the representation of the results so far is how these experiences and influences were reflected in particular return to work trajectories and how they played out over time in the lives of these participants. The final results chapter will bring the individual participants back into focus. Specific cases will be used as exemplars of particular return to work trajectories to look at the temporal aspect of the return to
work experience and highlight how the influences described in the previous chapters became manifest in particular cases.
Chapter 8

8 Case Studies

Results to this point have focused on the larger themes that emerged from the study. Participants described a range of illness and return to work experience, influenced by their perspectives on illness and work, the strategies they used to adapt circumstances at work, and social and structural influences in the workplace and beyond. These influences were inter-related and contingent.

Less apparent in the thematic perspective developed to this point, is the process of participant adaptation and the trajectories that characterized participant experience and how individual perspective, adaptive strategies, and social and structural influences figured into these trajectories. One of the strengths of qualitative research is its capacity to retain the continuity of experience in participants, permitting the reconstitution of experience over time and examination of how individual, social, and structural influences shaped the process of adaptation to the workplace. This chapter will describe the results of the secondary analysis of cases, which followed the thematic analysis of data.

8.1 Cases Studies of Return to Work Experience

A range of trajectories emerged from the analysis of cases: one end was characterized by direct return to the pre-disability job with little or no residual impairment; a middle trajectory characterized by a return to work with gradually resolving limitations; and a third characterized by return to work with ongoing limitations. This last trajectory had two possible outcomes. Workers would either attempt to build tolerances and remain on the job with ongoing impairments or withdraw from work at the plant.

Considering both trajectories and stage of return to work, Pat’s case exemplifies a direct return to pre-disability status at work, sustained over time. Derek’s case illustrates the early stages of a graduated return to work with significant impairments and uncertainty regarding sustainability over time. Phil’s case represents the later stages of a graduated return to work, with ultimate withdrawal from work at the plant. Lastly, Sean’s case, provides a perspective on long-term coping at work with significant residual impairments with a goal to sustain work until retirement.
8.2 Pat - Direct Return

Pat's experience exemplifies the direct return to his pre-disability job sustained over time. Pat suffered what he described as a "mild" heart attack in June of 2006 while helping his daughter move house. Prior to this event, he had been experiencing chest pains while climbing stairs at work but was otherwise physically healthy. He had been treated pharmaceutically for long-term depression relating to the drowning death of his wife some 10 years prior - a tragedy that he continued to grieve. He was very close to his daughters, who he raised alone for the most part. He had never become involved romantically since.

At the time of his heart attack, Pat was assessed at the regional cardiac centre then sent to Toronto. Pat had one stent implanted immediately with another implanted approximately three weeks later. By early September, 2006 he felt ready to return to work. I interviewed Pat for the first time eight months following his heart attack and five months following his return to work.

Pat's heart attack had produced negligible long-term health impacts. At initial contact, Pat's SF-36 scores were all at or above the mean for men in his age cohort and he expressed no limitations on the Work Limitation Questionnaires. In addition, Pat possessed a robust "If it ain't broke, don't fix it." attitude towards his physical health, reflected in his description of dealing with other health problems. "Because they wanted to do a spinal fusion me, I have never had it done. They wanted to rebuild my ankle from torn ligaments from a motorcycle, so I have never had it done and I am still going strong."

Despite a recommendation by his cardiologist, he declined to participate in cardiac rehabilitation indicating, "If I can’t get back into doing something then I will go back [to rehabilitation], but I still keep myself fairly active. You know, even though I have had a heart attack, I am in usually better shape than most of the guys a lot younger than me, seem to be anyway." Pat expected that his cardiac health would remain stable or get better. He viewed the heart attack as a transient event, which was well controlled by stenting. From a functional standpoint, he reported being back to his pre MI status. "I feel fine. Like I go in, I throw tires, I do rims and everything. Do all the hard jobs I used to do."
Finances were a primary consideration in return to work for Pat. He wanted to clear up existing debt, reasoning that should he have to retire because of his health, he would prefer to have his finances in order.

It was also evident that Pat valued work itself. When asked if life would be different had he decided not to return he replied, "I don’t think I would be as happy. [Yeah] I honestly don’t. I mean I want to retire but I want to be totally ready to retire." When the question was reversed to ask how return to work had been helpful he indicated, "Well, it has got me back around people I am used to being with. Made me feel like I got some worth still."

Pat’s reports indicated that he was proud of his role at work as a troubleshooter and a straight talking guy who helped to maintain product quality. "They call me the pit bull. If there is any problems with stuff they send me out to straighten it out." Work was also Pat's major source of social contact and he felt a tremendous kinship to those he worked with. "I would say it is more like, a lot of them it is more like family, is actually my family." In this sense, return to work served to "normalize" his life as he was back in his element, with his major source of social contact, doing something that was meaningful for him. However, Pat balanced this positive view of work with his consideration for his health "I would certainly feel lazy if I packed it in before I got my 30 years without really having to, but I mean I would have no qualms about retiring if my health started to deteriorating."

Medical reassurance was important for him in considering return to work. During follow-up prior to return to work, his cardiologist told him that he had not sustained any permanent damage to his heart. A subsequent stress test gave him the green light for return to work.

Pat also believed that his prior healthy behaviours had left him in good condition. "I did not really have any concerns at all because once they told me....my heart was really good, and it opened the blockages up, I did not have any real concern because I have, like I say I did take tremendously good care of myself for a lot of years."

Pat did not feel the pressure to "make rate" was a problem for him, although he was aware of the imperative to produce; and he recognized the role it could play for a production worker with heart disease.
I would say for a person like me, other than well even the tire room and that doesn’t bother me anyway but, it should not bother a person in my condition. Somebody that has a really bad heart, some of the jobs might be too much because of the speed factor. It is not so much the weight like, the tire room might be bad for somebody with a real bad heart but it is the speed factor, you know there is very little recovery time. They want you to work, they try to get you to work 58 seconds out of a minute if they can do it.

At the time of the first contact, Pat was confident in his ability to keep up with the job and deal with supervisors should he be approached. "If can’t make the rate then there is probably something wrong with the job. I don’t find its stressful for somebody to come over and tell me to do the job." However, Pat was not contending with the persisting impairments and functional limitations experienced by other participants.

As his function was good and although he could have requested accommodation, Pat indicated that he did not feel that “light duties” were for him.

I could have gone in and got light duty and everything else, and I don’t think that would have helped because I think you just stagnate. I think I am better off going in the way I am, doing all the jobs, if there is job there I could not handle pass it off to one of the other guys until I was feeling up to it, and I haven’t had to pass anything off.

He returned directly to his regular job and regular duties.

The biggest health concern he faced upon return to work was a “sore arm from shaking so many hands”. Pat placed high value on cultivating positive work relationships, believing "what goes around comes around". As he put it "I'm looked after from both sides [workers and supervisors], I really am." His coworkers and supervisors voiced their concern and pledged their support - "You know, if I started working too hard they would tell me to come on and smarten up sort of thing. If I was starting to throw tires or something, they thought it was too heavy for me, you know, tell me to take it easy." He did not indicate any particular cameraderie developing with other workers around his heart condition, however, one would not necessarily expect this given Pat's view that his condition was transient.
Pat felt that company policy on hiring had eroded the effectiveness of supervisors and the cohesion between the workers and supervisors. He indicated "Well it used to be that foremans would come up off the floor. They would experience working on a line."

Pat went on to state that the lack of experience on the assembly line made it difficult for the supervisor to understand the impact of ill-fitting parts or job design on rate making. Further to this, it impacted directly on return to work experience through the familiarity of the supervisor with the worker.

Well, the older ones have known me for so long they will have a rough idea what you are going to be doing when you come back. If you are going try hard or not. Because they will know before you left whether you, if you have intentions of working there are not. Whereas the younger ones, they are going to figure I got a placement case coming back, I got to find a light duty job.

While he wasn't a big user of medical services in the plant, Pat appreciated the presence of occupational health as a support.

I can go and talk to the doctor in there if I want, if I need to. The nursing staff in there is great. I hardly ever go in but when I do they are super. You know, if I want my blood pressure checked, they keep a record of it for me, so if I want to take the record of how my readings have been I can take them in when I see my cardiologist, it gives her some idea of what is going on.

At six-month follow-up, Pat had been successful in bidding into the QT position, which entailed checking jobs and providing the odd relief for workers; effectively take off the line and the pressure of making rate. This helped to bolster his confidence in his ability to finish the last three years prior to his retirement.

At this follow-up, he reflected on the impact of rate making, he indicated that even some people without health problems could have difficulty keeping up the pace at work. People were notified continually if they were late on the line with no consideration given for “poor fit” on a job. The example he provided was the use of plastic washers, which did not work well and resulted in slowed work rates. He described the surveillance of rate monitoring by supervisors as a
“constant needling and intimidation” and a lot of “underhanded stuff” used to keep speed up on
the line.

At follow up nine months after the initial contact, Pat remained on the job with no difficulties.
As with the prior contact, he felt that moving into the QT position would allow him to finish the
“1196” days (he was counting down) he had to retirement. "It was exactly three years on
Saturday, yesterday, I had three years to go. So that would be ah 1196 days, I believe, no 1196
days because there is a leap year in there." An echocardiogram in November 2007 was clear. Pat
found the medical reassurance valuable in setting his mind at ease. "I just went and had my
stress test and everything and all that went really well so, and I had my echo whatever the hell it
is, like the ultrasound thing it went well apparently. And my blood pressure at work is usually
like 110/74 or something like that."

He struggled with resuming physical activity outside of work, indicating "Well, a lot of days I
come home I am pretty bagged, especially on day shift, I don’t handle days well at all." In spite
of good intentions and some tentative moves towards resumption of exercise, Pat found it
difficult to get back into a regular routine. Despite the loss of the third shift and pending layoffs,
he did not feel any particular threat to the possibility of him being bumped out of the QT
position, owing to his seniority.

No, no they can’t. Any QTs on third shift they just come back as regular
production. [Oh yeah] The deal was when third shift was started you just took
your chances. [Right] If it fizzed out, it did not matter what you had for seniority
you just went back and you bumped somebody, a regular operator with less
seniority. They start at the bottom and worked their way through.

8.2.1 Summary - Pat

Pat’s experience was shaped by a number of factors identified in the prior chapters. Pat
held a representation of his cardiac illness as mild and transient owing to the lack of residual
impairments, and medical reassurance. Pat valued work as an important part of life and wished to
ensure his financial security as well as maintain a sense of control by returning. Ratemaking did
not phase him, as he felt capable of keeping up. He felt supported by coworkers with supervisors,
with whom he had developed positive working relationships through a give and take attitude and
believed that this support would carry him should he encounter difficulties. His move into a lower demand position as Quality Trainer was for him the “icing on the cake” as far as sustaining work until his retirement. Pat watched his weight and felt that while he had not resumed a regular program of physical activity, he was still in superior shape to workers around him and this would hold him in good stead.

8.3 Derek – The Long Road Back

In contrast to Pat, Derek faced a challenging ordeal of sickness and disability. I initially interviewed him eight months following the onset of his cardiovascular problems although he had been on and off the job for the two months prior to that owing to the flu and a sinus infection. Follow-up interviews carried on over nine months during his return to work.

He explained that he began to develop chest pains in the middle of December 2006 and attended hospital on two occasions undergoing investigation for myocardial infarction (negative on both occasions). The second day back at work following the Christmas holidays he was taken by ambulance to the local hospital Emergency with chest pain, fatigue, and shortness of breath. While tests were again negative for MI, this episode eventually lead to cardiology referral, diagnostic testing, and referral for bypass surgery, which he underwent in mid-April (quadruple).

Following release from hospital his recovery was slow. Derek indicated that he was able to gradually start doing things for himself, beginning with his own care and then progressing to light activities around the home.

Derek attended Cardiac Rehab that summer for four weeks. Owing to his previous experience rehabilitating injuries, Derek viewed taking action to rebuild his tolerances as an integral part of recovery - "sort of like a broken foot or broke ankle, once it’s healed and you get back on and make it do what you want it to then you feel a lot better about things". The local program closed down in August so he was sent home with a home program of exercise and purchased a treadmill to continue his walking as well as some weights. Derek said that he was in a good exercise routine prior to his heart attack and typically walked three miles, several days per week. Derek was also diabetic prior to the onset of heart problems, which he managed through his exercise program, diet and oral medication.
During this period of convalescence, Derek solicited assistance from the union to deal with a threat from the company to terminate his employment owing to his absenteeism. The union was able to rectify the matter; however, this incident put him and his family under considerable stress at a time of vulnerability. Derek is the sole breadwinner in the family as his wife Beth stays at home with the children, one of whom has a serious immune disorder necessitating regular hospital visits to Toronto. A week without pay creates significant financial difficulty in their household.

I first interviewed Derek in early September, four days after an attempted return to work. Derek was anxious, and at the same time excited about the prospect of returning to the job. He reported that he enjoyed the social aspect of his work. He also took pride being able to remain for years on a demanding job that other workers viewed as "too hard", evidently valuing work as an important source of self-worth.

Derek's perspective helped him to cope with his illness and disability. He used social comparison to maintain perspective on his situation - "I have said no matter how bad of shape you are in probably somebody else is in worse, you know too. Like and when you are mom you have to cope. So that way you can get down the road a little easier."

While he hoped for the best, he also discussed the possibility of changing work to something closer to home (he commuted 90 minutes each way). However, Derek was making an excellent wage at the Plant, which would be hard to replicate working in small-town central Ontario. His wife Beth would have had to work outside of the home and with an unwell child, that option wasn't favoured. Derek felt it was important for him to get back to work in some capacity both as a sign of and an aid to his recovery.

Derek knew that he would be incapable of returning to his previous job given his ongoing limitations and the physically demanding aspect of the job.

When I got sick and found out it was the heart and that I decided to post the job. A lot of the guys said how come you posted the job. I said I know goddamn well I will never be able to do this job of all these, the air guns were heavy [Yeah] to pull around and yank around on all the time, they were heavy.
Derek was worried about what type of job he might be put on and whether he would be able to make rate on the line. He wasn't sure what type of job his seniority would allow him to bid into and, with the ongoing limitations in work tolerance he was experiencing, he wasn't sure about his ability to get through an entire work day on any job.

He had gone to work September 7th thinking that the supervisor had a light job set aside for him matching new trucks to their keys. When he arrived at the workplace however, this job had been posted and was occupied by another worker. As well, the supervisor indicated he would not be able to accommodate his cardiologist’s recommendation for “light duties”. Derek was sent home for a further six weeks of convalescence. Derek preferred not to work under formal restrictions and go on placement as he felt it placed him in a precarious position, so he went along with this plan.

....basically in my own book you are better not to have any more restrictions than you got to ...because if you go in there and well you can’t do this and you can’t do that, they [company] said you know you can only do one thing and we don’t have that job anyways so they might just send you down the road for good.

However, the clock was ticking at that point. At one year of disability, Derek would move from short to long term disability and experience a change in benefit status that neither he nor Beth wished to happen.

Derek knew that he would have to rely on the support of his coworkers and supervisors but he felt he had built good relations with them that would hold him in good stead. "I got along good basically with supervision and people you work with and that doesn’t happen too often." To help matters, his immediate supervisor had also been moved to the area he was going to and Derek thought that the familiarity would be of benefit to him.

Right now my supervisor, A, got moved and he’s on the door line so right now I am pretty sure he is going to be my supervisor, D is going to try to get me something on the door line [Yeah] so and, of course, they both know what is going on and everything too so I know they are going to try, they are going to try to help me out one way or the other
It was evident during interviews that Beth was providing a great deal of support to Derek, both tangible and emotional. She was making all of the calls to the disability insurer and union regarding benefit problems, setting up appointments, and keeping a file on all of Derek's medical and benefit information.

At the time of my next contact eight weeks later, Derek had returned to work October 17th, exactly one year following his initial disability date. The plant physician had reworked the recommendation to “light duty” work to make it manageable for his supervisor. His supervisor, in turn, had agreed to provide a graduated return program with a helper.

In the interim, he had been keeping up diligently with a home exercise program of walking and weights as well as home maintenance and yardwork. He indicated that he had been emotionally keyed on the day prior to his return. "I don’t know what to call it, worried or excited."

Back at work, he found going tough for the first two weeks:. "Well, I think I’m gaining a bit. I don’t know what to tell you. One minute things look not bad, the next minute I’m not sure about things." He had tried a regular job on the line, but was unable to keep up so he was put on light duties. Derek elaborated:

The first day I went back I done five hours and I found it pretty rough that day. They thought I did not do bad considering I’d been out as long as I had been and with type of operation I had and stuff. I was kind of upset ‘cause there was nothing like I could, well they said that’s going to take some time so, I guess I just got to get that in my head.

It was evident that he was disappointed in his inability to manage a full shift. Derek tried to temper his expectations and anxiety around recovery with the reality of his condition. "It’s only been six months roughly since they done the operation so…." However, it was evident that he was conflicted in dealing with his work abilities and limitations.

You know like everything on your mind [Yeah] sort of thing, it can be upsetting at times and, as I say when I first started back I wasn’t planning on doing miracles but I actually thought I could do better than I did but [Yeah] they all did not seem
to think I did not do too bad so, maybe I did not do as bad as I thought, I don’t know.

At this time, Derek was struggling with his feelings of uncertainty about being capable of returning to work at all, considering he was on light duty work. “I’m still worried in a way if ah it comes down to where you can’t do a job or can’t do the job, I think things tend to bug me some too because as I say right now what I’m doing is just light duty work and I’m finding that hard enough by the end of the day.” In his light duty work, he was assigned duties off the assembly line and working in a self-paced fashion.

He indicated that his supervisor was taking good care of him and he was being supported well by the union and plant medical. Derek described what happened at the end of his first shift: "...then I got kind of upset and went to the Medical Centre and then D for the company there he came over and a couple of the union guys so, I was kind of upset that I could not do more than I could do, so then they tried to tell me well the first day back and they thought I had done alright". In addition, the company nurse attempted to reassure him that he was still early in his recovery. "Like the nurse was telling me too, she says Derek you might be good on the outside but it doesn’t mean your healed on the inside and she said that takes longer”. This intervention seemed to help him to gain some perspective over the situation and confidence to keep at it.

Derek expressed greater doubt about how coworkers might view what might be considered "favourable" treatment in terms of his accommodation. "Everybody is getting paid the same money so some guy is working his ass off and the other guy seems to be having a pretty soft day you know they kind, sometimes they say like 'What’s going on here?'. While at that point, he did not report experiencing any backlash; he reported feeling uncertain about how coworkers might react to his situation.

To compound worries of work and health, his son was sick again as well at that time. His son’s illness necessitated multiple trips to Toronto, creating additional stress and tapped into his limited energies. His life was in turmoil and balancing these demands was taking its toll.

In the middle of the second week, he experienced a bout of chest pain and was off for the remainder of the week. Uncertainty about the nature of his pain was a concern. "It just the way some of the pain is and the way it acts, I’m not 100% sure if it’s a muscle or not.” Derek was
weighing the benefit of a further angiogram and the reassurance it might provide against the residual groin and thigh pain it would produce and how this pain might interfere with his work.

Derek had the following week off owing to a "spa" week (holiday week provided to the workers in the spring and fall), which gave him a further few days to recover following this episode. He and Beth had planned his return to work to coincide with the spa week to allow him a rest break following the first two weeks; one that he put to good use.

Derek indicated that the plan his supervisor had for moving ahead was as follows:

What he said he is going to do is ah until he gets me where I figure I can do things ah he’s going to have me checking jobs ..where I can sit down for a minute .. and ah, when I think I’m finally ready that I can do a job or maybe try a job and go on it for an hour or so and then go back off it until the next day or something like that and just check jobs again

The company had announced the termination of the third shift at the plant, which would result in the elimination of some 900 jobs. The uncertainty relating to the stability of the plant began to come into Derek’s talk in a more prevalent way, becoming more of a concern for his future and that of his family. "Another thing they went and done they built a new truck plant in Mexico which did not help us. We figure that’s why we are losing this third shift more so than anything because they are going to be building our trucks down there." At that point he was taking things one day at a time but finding it difficult. "As I say I’m just trying to deal with it day by day ...it’s hard to, it’s kind of hard to".

At the time of the next contact, six weeks later, his tumultuous journey back to work life continued. This contact was brief as he had just come home and was tired from a day out. He indicated that following the spa week, he was beset with diarrhea, which resulted time off work and reopening of his sickness and absence claim. Owing to the recurrence of chest pain reported above, he underwent a stress test and angiogram, the results of which were negative. This provided reassurance to continue with return to work. He had to leave work one day as he was experiencing "breathing problems" and was readmitted to hospital for two days, resulting in more lost time. Over this period, he did not manage to put in a full week at work. In spite of these difficulties, he persisted with the return to work program and was hoping to get a full week
at work the following week. Christmas was just around the corner and the family was feeling the financial strain of Derek's work absence. To aggravate the situation, he was being laid off for two weeks following the Christmas break. His supervisors continued to provide him with accommodation and support.

The next contact was in the middle of January and Derek was returning to work the following day. He had managed to put in a full week on light duties prior to Christmas. While he had not been able to put in a full shift on a particular job, he had progressed from checking jobs and was able to bid into a lower physical demand job on the line putting harnesses in doors. His supervisor continued to provide him with a helper to provide relief when he needed a break. The helper would finish the shift when he could no longer continue. He was provided with a stool for rest breaks in between jobs.

Derek completed the WLQ during this time period as he felt that he was on the job where he would be likely to remain. He indicated significant limitations in all domains of work functioning including meeting time (45 percent), work output (90 percent), physical demands (46 percent) and interpersonal demands (50 percent). His scores were consistent with his reports of limitations in stamina. His elevated interpersonal limitations score was consistent with his reported difficulties in meeting the expectations of his supervisors and inability to provide assistance to coworkers.

Derek had found it helpful to talk to a fellow worker who had successfully returned and remained at work following the onset of cardiac problems. This worker let him know that the symptoms he was experiencing like shortness of breath and soreness in his chest were normal and something that the other worker had contended with during his return to work. Derek reported that this contact reassured him that he could work his way back to the job. He said, “you feel like you can still do a job there” (“there” referring to the plant).

Another factor that he found helpful was reflecting back on his course of recovery since the previous Christmas. "I know that I can do alot more this year than last you know. Like I was able to shovel the snow this year and I did not do that last Christmas.”

Relationships also played an important role in his experience at this time. He described a negative interaction with a coworker who harassed him for being unable to keep up with the line
and do a full job. His other coworkers chimed in and told the offending worker to "shut his mouth". The guy came and apologized to Derek the next day stating that he did not know what Derek’s situation actually was.

Reflecting on medical involvement in his case, Derek indicated that he felt that his doctors had been "pushing" him back into the workplace too aggressively. He opined that time should be allowed for workers to gradually build themselves back up to their regular duties. He felt that this was due to a poor level of understanding on the part of physicians relating to the demands on workers in the plant. "They don’t understand that things are measured in minutes and seconds at GM." He said, “just to step in and start doing the jobs over again is too much”. He likewise felt that his cardiac rehabilitation was too rushed, that he could have used more time in that intervention. He suggested that the rehabilitation providers would be able to give the employer a better idea of how long it takes to progress and get back to work than the medical professionals involved in his case.

The last contact, three months later, found Derek back to a regular job on the line. He continued to express his hopeful, positive attitude and perspective as influences on his ability to manage the tremendous adversity of his return to work program. "Like there’s days you kinda get down but you just if you look around there’s always somebody else that maybe is in a worse mess than you are or something happened...if you keep trying something will work. If not, can’t say you did not try anyways is the way I see it so."

In the interim, his supervisor had continued to support a graduated return to work, providing him with a helper and a stool to sit and rest between jobs. "Ah, they were good with me if I needed somebody to help me they’d get somebody or get somebody change me off for a few minutes." Derek also found the moral support and encouragement helpful. "they were happier with what I was doing, they thought I was doing all right, the amount of work I was doing, how I was doing so. I was tickled about that." He reiterated the important benefit that familiarity with both of his supervisors provided over the course of his return to work.

Derek also reported on the benefit of others involved in his case (including the researcher) as well as his family in helping him through this period. "I think that another thing that has helped me a lot is like yourself and everybody I’ve had anything to do with they used me really good."
Um, Beth she has been behind me and done a lot for me, her and the boys and that makes a big difference too you know. People treat you decent."

8.3.1 Summary – Derek

Derek’s story of return to work was the most arduous of all participants due to his ongoing limitations but also the vivid quality of watching events in his life unfold in real time. His own perseverance and perspective were important in allowing him to advance as far as he did. Previous experience in rehabilitation influenced his idea that with gradual exposure, he could gradually work his way back into work. Derek struggled with his limitations and not being able to maintain work rates as he had previously done; both as a result of his own standards as well as the desire to please his supervisor. Coming to accept his limitations seemed to provide him with relief although his reports did not reflect the change in mindset of some of the other participants in relation to work rates.

Support from his supervisors and plant medical were important influences on his return to work. A talk with his supervisors after a difficult start in his return to work helped decrease his anxiety at the time, and the persisting support received from his supervisors eventually helped him to adjust to the new reality of his diminished capacity and accept the fact that it would take time to resume work. A talk with the plant physician helped him to understand how the stress of a graduated return to work may be playing out in his physical health.

His wife Beth was a huge source of support for him, taking care of many of the peripheral stressors surrounding sickness absence and disability including dealing with insurance claims. Medical diagnostics provided him with reassurance regarding his condition but he felt “pushed” by medical professionals to return to work, feeling that they did not understand his situation in the plant. Rehabilitation intervention was helpful but was not viewed as being sufficient to enable him to rebuild adequate function for return to work.

8.4 Phil - "Another five years, that ain't gonna happen."

Phil’s case demonstrated an example of a challenging return to work, undertaken with accommodation, taking place over months, leading to early retirement and a shift into alternate employment. Health and spiritual beliefs, his views of work and illness, managing his
environment, work accommodation, work relationships all played a role in his experience and eventual outcome.

For Phil, the first hint of heart problems came in the form of fatigue and reduced work capacity, which manifested during a house move in December 2005. He attributed these initial symptoms to “getting old”. With the onset of chest pain in February of 2006, Phil thought that something must be wrong and, with the encouragement of his wife, attended his general practitioner and was referred for consultation with a cardiologist. An angiogram revealed major blockage in four coronary arteries and Phil underwent quadruple bypass surgery in March. Phil indicated “I did not see it coming” having been healthy and active up to this point.

Phil completed a program of exercise-based cardiac rehabilitation, attending once per week over six months. The program consisted of supervised exercise training sessions, education seminars and an independent walking program on off days. He did not place much value on his participation in the program for a number of reasons. Apart from some information on nutrition, he did not feel that the program was providing any additional useful information. "They talked general information about perhaps what causes these sort of things, what you can do after to benefit yourself. Um, a lot of it was kind of casual talk, which um, to me it was a waste of time."

Fitting into the group was difficult. Phil was not enthusiastic about the sharing of experience among participants. "I’m not much for group association activities such as that. I have a very different mental set....I am one of the Jevohah Witnesses. My lifestyle and my thought process is a lot of different than, I’ll just use this term 'worldly groups'." Owing to his religious beliefs, he also felt uncomfortable with the casual banter and occasional off-coloured remarks made by other participants. "I don’t like to be around people who tell off-colour stories, remarks, and there was a lot of that nonsense." He found it difficult to relate to the older clientele indicating that the program was not geared towards his needs in terms of getting back to work. "The problem is that 80% or maybe more are retired people, or in that age category where you know they are not working any more, so it is not slanted to that [return to work]."

He felt that his heart was “as good as it gets”. As he related “The doctor said that the surgery was very extensive and you may just have to learn to live with it”. This was disappointing, as his expectations going in to the bypass procedure had been elevated. As he put it:
So many people before I went in had said and people had told me, ‘Oh yeah you are going to feel so much better’ you know, ‘I know Joe and he is up and around and he is doing this and that’ and… to me it did not happened, it still hasn’t happened. I don’t feel that I have returned to my pre-problem status... I don’t have the energy I had before. I don’t have that, being able to just go, go, go all the time, can’t do it any more.

While not the preferred outcome, Phil stated that he was willing to accept this and move on.

"I am kind of coming around to be resolved of that. I have tried to push myself more with the physical, the treadmill but physical exercise like that is not my thing. Like I am not down there every day pounding the treadmill, you know miles and miles, it is not my priority in life."

Phil's religious practice and spiritual beliefs interacted with his health beliefs in this instance. His belief in an afterlife provided grounding for his views that death would bring him to a better place and excessive efforts to prolong life on earth were of questionable value. "Because of my religious beliefs, that when they do the surgery I will either wakeup in a better place if I die in the future through the resurrection or, I will wake up and everything will be okay. So, either way it is a win-win situation for me." He also felt that the best approach to dealing with a problem such as this is getting on with things and “letting the cards fall where they may”.

He did not particularly enjoy exercise, having “better things to do with my time”. Phil’s religious practice entailed door-to-door canvassing and other ministry work, which he considered more important. Therefore, he wasn’t spending an excessive amount of time in self-management activities focused on reducing his risk for further cardiovascular problems. "I am not watching every little everything I eat. I am not watching every little thing I do. I’m doing what I like to do and what I need to do at the moment and it is kind of, well see what happens."

Phil returned to work in October, some eight months following his bypass surgery. He initially returned to a modified position, doing quality checks on a new line of trucks coming off the assembly line. Following a six-week stint doing quality checks on the trucks, he was put to work in the company call centre on a marketing survey.
"Dr. M phoned me and said ‘listen we got this program, here is what required. If you open the hood of the truck and check the oil eh, you think you can do this?’ I said yeah, okay I will give it a try. So everybody did that for about six weeks. Then, we went into a Call Centre, so all I am doing now is really on the phone all day".

While maintaining his attachment to the workplace, neither of these jobs was of sufficient demand to prepare him for the rigours of the assembly line.

Phil did not describe himself as a "rah rah union guy" but was happy of the assistance provided when necessary. Phil accessed support from the union to ensure accommodation at the Call Centre.

So when, actually when this Call Centre started for after the end of the driving program, I did see Dr. M and it was kind of a, are you ready to go back to work? And I said well I understand I am going to go to the Call Centre. ‘Well that will be my decision’ he says. So I thought okay now I know where we stand here with this. So I called the union guy, one of the head guys and said look here’s the deal. He said don’t worry about it, I’ll go talk to the guy that is handling the people going into the Call Centre and he says I will take care of it. And he must have because I went.

My first contact with Phil occurred the week prior to his return to work on the assembly line. I followed up with a further three contacts over a 10 month period until his retirement from the Plant in December 2007. At first contact, Phil was preparing for return to work on the assembly line the following week. His self-report of health at that time was poor, with all SF 36 subscales, apart from mental health, two standard deviations below the mean for Canadian men his age. His Work Limitation Questionnaire scores were elevated with a 45 percent limitation in work output, 30 percent limitation in meeting the time demands and mental aspects of work and 25 percent limitation in meeting physical requirements.

Phil’s primary motivation to return to work was to gain enough time to be eligible for pension. I interviewed Phil in April. He planned on working until December when he turned 60 years of
age, feeling that he would be unable to sustain work for any longer owing to his limitations in stamina and the constant demand of the assembly line.

The heart problem had changed Phil's retirement plans. His "A Plan" had been to work a further five years when he would be eligible for full pension and then retire to Northern Ontario, where the cost of living was lower. With the emergence of heart problems, he indicated that his wife felt they should be closer to specialized medical care and so had to remain in the south. Following the onset of heart disease, "Plan B" became working to pensionable age (60) or a bit longer and retiring with partial pension. Phil's flexibility in adjusting to life’s demands was important in making this adjustment. "You know life is fluid, so I figure it out as best I can. My next plan, Plan B at the moment is to take a job as a building superintendent where it provides rent and a small income. That allows me to get out the door earlier."

Phil did not see any intrinsic value of remaining on at work in the plant any longer for his identity, health, or social opportunities it might provide. Return to work was neither a benefit nor detriment in terms of his recovery but, as he put it, “It has been just something to do”. His focus and energies were directed to sustaining work until he was eligible to retire. “There is value for me to make it to December; when I am in the driver’s seat as to retirement. There is value for me to make it to there. So my plan is to do whatever it takes to stay in the door until then. However I maneuver it.”

In anticipating return to assembly line work, Phil was unsure of his abilities. "I haven’t had to do anything like physical so actually how it is going to be next week when I actually go to work, back to my regular job to try it, that may be a whole different story." He felt that he could handle the load requirements but the main factor was the pace of the line and what he referred to as the "insidious stress" of making rate.

I think the physical job I am sure I can do. [Hmm, hmm] I don’t feel any problem with that. Whether you can maintain the pace all day long that is a different story and whether you can put up with the sort of the psychological pressure of it that is another story. That I won’t know until I actually try it. But the physical job, I have been down there half a dozen times and talked to the different guys and what not. The physical job is not hard.
He indicated that "You have to make a calculated decision to return to work" and only “giving it a try” over time would tell whether he could manage.

Phil was preparing himself mentally to look for signs of stress and take action to deal with potentially stressful situations.

"I think I know a lot of the signs, you know maybe you get a little bit irritable, a bit snappy, you know short with people eh, or there are signs that maybe you are being a bit stressed and so I try, I recognize that and I try to watch it. [Okay] If I see anything like that, wait a minute hang on, let’s go for a walk, let’s you know rethink this."

Another aspect of the job that Phil anticipated difficulty with was the physical attachment to the line, given his experience of increased urinary frequency. "See too, you find too that you have I think the correct term is the pathological changes in your body after surgery. I find that I use the washroom more. To go back on the line you can’t just go when you want to." He worked on a “stop and release” job whereby the truck stops at his station and he releases the job when he is done so he felt better about this than working on the drag line, where the truck is always in motion. He felt that he might be able to slip off the line if necessary to go to the bathroom.

Phil indicated that he did not anticipate significant support from the company for return to work. "Now when I go back they have had a girl who has been on contract working on that job. They may leave her for a day or two with me just until I get back into the routine. [Yeah] But other than that you are on your own." As suggested in this data, Phil did not anticipate significant support from coworkers or supervisors. By the same token he did not place a great deal of value on building strong relationships at work.

Um, I have my own circle of friends, my [Hmm, hmm] that maintain the same religious values that I do, the same standards that I have. I don’t like to be involved. Like at work, I don’t have any real socialization with any of the people, you know, a lot of people play cards at lunchtime or they will get together for this and that, that doesn’t interest me.
Phil had limited contact with coworkers or supervisors during his convalescence and had no particularly strong ties with supervisors or coworkers. Phil’s view of support was that it should be provided irrespective of the quality of work relationships without consideration for the usual reciprocity involved. He viewed support as a meager commodity in the plant, dependent on the good will of his supervisors and coworkers and not on the quality of his relationship with them.

Phil did not feel that permanent accommodation was an option. His view was that medical restrictions would place him in a precarious position, making it more difficult for him to return to work in the plant and potentially making him vulnerable to layoff. As he explained:

If you can’t do the job the company doesn’t care. They don’t want to be bothered with you. You are just a liability to them. So it becomes kind of a precarious position to be in. If they put you out the door, say we don’t have a job for you and let’s say six months later you say you know I feel better I want to go back to work, that could be really hard because they might say you know what, we don’t even want to be bothered with this guy.

Phil's wife did not encourage his return to work. "She knows the drain on a person physically you know. She’ll, and she understands the mental strain of it too. [Hmm, hmm] So she is concerned." He reported limited support from medical professionals involved in his case, indicating that the surgeon had "done his job and doesn't want to see you again". With respect to involvement from a primary care practitioner, he indicated:

I don’t have a family doctor for this none available. [Right] So yeah, you come in, you plead your case and he was good about filling out the S & A papers and things like that, but after that it is basically well you know, here is what happened, here’s where we are, take your meds and see how it goes.

The second contact, three months after the initial interview, was of limited duration owing to a decline in Phil’s health. Phil was struggling with increased symptoms of fatigue and chest pain. He was concerned that it may represent further blockage in his heart but was unsure of whether it was angina pain or chest wall pain. He was consulting again with the cardiologist and had been referred for diagnostic testing. Phil was unsure whether he would continue at work at this point or go off on disability.
The picture had stabilized by the third contact, six months following the initial interview. Diagnostic tests had come back negative for further blockage. Although Phil expressed discouragement about his ongoing difficulties, this reassurance provided him with confidence to continue at work.

He indicated that the initial period following return to work on the line had been rough. "Generally the day starts out at a pace well enough to keep within the lights [Yeah] and you find yourself fading off, sometimes I have to tell myself okay pick it up eh, pick up the pace, be consciously aware of what I am doing." Phil estimated that his work rates were slowed on two out of five days per week. He adjusted his approach to the job to meet the new reality of his reduced capacity.

I gradually kind of adjusted to pace and kind of decided you know okay, I’m going to do this the best I can and if they don’t like it they will have to get somebody else, whether they, you know if they don’t have a job for me off the line they can lay me off, if they will do whatever they have to do.

Phil indicated that his health was more important that staying at work at all costs and he was prepared to return to disabled status if necessary.

On days that he could not “make rate” or at the end of shift when he was fatiguing, he adopted a “that’s as good as it gets” attitude, negotiating with his supervisor if approached about work rates.

Well, I usually listen to the foreman whine a lot. I’m not keeping up. That’s how I cope. [Yeah] And I just tell him. I just say listen, I am not feeling well and doing my best you know. Basically, you have two choices. You can send me to Medical or you can get somebody else. [Yeah] And usually they say well you know just try to pick up the pace a bit, you know do what you can and that type of thing. Then he will kind of leave me alone and we manage to get through the day.

In managing his relationships with supervisors, Phil noted the issue that discontinuity in supervisory personnel created for him.
Of course the last foreman I had which I just kind of got him trained now they switch foremans on us so now it’s a matter of starting all over again [Oh yeah] with another one, so he is fairly reasonable but then again he has to answer to his boss and you know I understand that too."

While Phil did not value relationships at work he recognized the need to negotiate accommodation for his slowed work rates and recognized the position that his supervisors were in and the fact that they also had to answer to someone above.

Phil's anticipated difficulty of being tied to the line was a problem as he felt embarrassed requesting relief more frequently. However, in spite of his pessimistic view of support, Phil indicated that his group leader had been "pretty good" in providing him with extra relief when he needed it.

Phil had been an occasional user of occupational health services in the initial phase of his return to the assembly line, attending plant medical to check his blood pressure or if he were having a spell of dizziness or fatigue. He did not report that this involvement was critical for return to work as he believed that his symptoms would subside on their own. He did benefit from information he received from the plant physician, which helped him make sense of his ongoing fatigue.

The company doctor mentioned to me that the meds that you take [Yeah] these beta-blockers and that they limit your adrenalin [Yeah] that produced, therefore normally during the day for an ordinary person as their energy level started to dwindle their adrenalin you know can kick in [Yeah] and help them keep the pace up. Whereas for me that doesn’t happen. [Yeah] Or happens less. [Yeah] So that makes it a struggle as well.

He had also discussed the possibility of medical restrictions with the plant physician, who advised Phil to consider the possible consequences prior to going that route. Phil elaborated:

"He said well, he said maybe we would have to put a restriction on you for 'work at your pace job', of course there is no jobs with my seniority level that I would
qualify for so that would immediately put you out the door on lay-off. [Yeah] So he says if we do that you are going to have to be prepared to live with the consequences."

In the end, he decided to stay on his usual job.

In reflecting, Phil suggested that a "job hardening" program, whereby workers coming back after a heart attack could gradually build up their stamina over time, might be helpful for easing the transition. "Oh yeah because it gave you a time to, rather than having to spend eight hours on the line you only get four so even if you were tired after four you could go home, you know rest and then you know you are building it up slowly." This type of program had been available at the previous plant where he worked but was not available in the Oshawa plant. He also suggested that an initial consultation to vet concerns about return to work would be valuable.

As with other participants, the threat of layoff at the plant was flavouring Phil's experience. Along with the difficulties he was having with making rate, he indicated:

Yeah, and you know now especially of course they are in to these heavy layoffs, you know they are shutting down the third shift and things, you probably read about it, [Yup] that creates more tension, more hassle, you know they are more on the line from Detroit to be more efficient, because Detroit watches everything and calls the shots.

Phil had the strong belief that workers with compensable injuries (injuries attributable to work and compensated through the compensation system) were dealt with more favourably than workers with disabling illnesses that were non-compensable.

Because Comp cases they have to bend over backwards for. [Hmm, hmm] Well they don’t have to but they like to because it costs them money. [Yeah] You know if they, if you go out and stay out on Comp that costs them money and they don’t like that but with any heart problems or any other health problems, you know what you are on your own. It’s not their fault, [Hmm, hmm] or you know, something that was caused by their work programs or that and therefore you are in a whole different category.
Phil cited examples of worker's with compensable injuries receiving more extensive accommodation, non-economic loss payments for pain and suffering, and being provided with transportation to and from the workplace if a work injury created difficulty driving. Phil felt like a "second class" disabled worker owing to his view of this discrepancy in treatment.

Phil also felt like he was "just a number" in the company's scheme of things.

I mean I was off for eight months, never once did anybody from say the financial end call, say well so how you making out, you know are you getting your money regularly, how are your finances, nobody cares. Like they really don't. [Yeah] They really don’t. I realize it is not their responsibility to run your life but you put so many years into a place you think they could at least call you, send you a card, how you doing?

The last contact with Phil was just before he retired at Christmas. He was pleased to have gotten through the last few months. In addition to changing his mindset and negotiating slowed work rates, Phil indicated that he had been using his sick time and taking days off without pay when he had to. He had been working three to four days per week over the past two months and indicated that the pacing had permitted him to maintain his energy levels. He had found a job as a building superintendent in another city and he and his wife were moving that week - happy to move on from his work at the plant.

As I say next Thursday, like a week this tomorrow is the last day I work so. I just decided I would set a schedule what suits me and they can you know live with it, in reason you know, I’m not being hard nosed about it or anything but I’m just doing what I can do.

8.4.1 Summary – Phil

Return to work at the plant was a necessary evil for Phil to be eligible for pension. He did not see a lot of intrinsic value in work and did not believe that his impairments would allow him to work on the line for a long period. An initial, relatively prolonged period of accommodation allowed him to decrease the amount of time he had to put in on the line prior to retirement. His seniority did not permit him to bid into more favourable positions off the assembly line. He believed that
returning with medical restrictions would place him in a precarious position. He strategized that he would work until his pension eligibility date at his 60th birthday, retire and take up work as a building superintendent. Return to work on the assembly line was difficult.

Medical reassurance was important for Phil in enabling him to continue with work until he could take early retirement. Spiritual beliefs in the afterlife influenced his behavioural response to heart disease by reducing his perceived need to put effort into self-management through exercise and diet. Phil recognized early on the negative impact that work stress could have on his ability to remain on the job and enacted cognitive strategies (changing mindset) to mitigate this impact. Friction with his supervisor was present, however, Phil negotiated his reduced work capacity with his supervisor and his group leader was helpful in providing him with extra relief when he required it.

As his career at the plant came to a close, Phil also managed through the use of sick time, holidays and unpaid time off. A combination of these strategies enabled him to successfully finish the last few months at work. In the end, Phil selected out of work at the plant and into a job that he felt was more congruent with his physical abilities and health status, with his pension enabling this. Phil’s case may be looked upon as a failure in terms of return to work at his previous job. However, he demonstrated adaptability in sustaining work until he could shift into a situation that was more congruent with his physical limitations and perspective on health.

8.5 Sean – “Sluggin it out”

Sean's case provides a good example of a worker sustaining work over the long-term, despite significant impairments and functional limitations. His heart problems began in 1996, when he suffered an MI. He was waitlisted for an angiogram, and, after significant delay, underwent testing and bypass surgery. Three months following bypass, he was back to work, just shy of one year of disability.

Sean did fairly well for the next 5 years. His energy was good and he was able to work and do all of his home activities, although he had stopped playing recreational baseball. About 2001, he started to take a downturn, with increased fatigue and reduced activity tolerance. Another MI in 2004 resulted in short-term hospitalization and diagnostic testing, which revealed one artery with
100% blockage. Unfortunately, the cardiologist indicated that further surgical intervention would be futile.

My first contact with Sean was three years following the more recent MI and return to work. In the time prior to the interview, he had been experiencing increasing fatigue and breathlessness and was diagnosed with early COPD, which compounded the impact of his cardiovascular problems. "Like if I go up a double flight of stairs by the time I get to the top I can feel my heart just pounds and I am into a sweat and [Wow] and that’s where I am. I have been like that for a while. I can’t do nothing."

Chores at home and leisure had become taxing. "I don’t cut the grass, I don’t do anything around the house any more. The kids do it or [wife] does." As far as recreation went, Sean was limited to passive participation, indicating: "Leisure now, I go to Mosport and I watch the stocks and stuff like that and I mean it is all watching events."

Return to work was necessary for Sean to earn a paycheck. "Why did I decide to go back to work? [Yeah] In the short of it, I had to. If I could be out of there tomorrow, I would be out of there." He felt the pressure of being the sole breadwinner in the family, supporting his wife, three children and mother-in-law. When discussing what it was like for him to return to work he indicated: "I was just concerned I was going to be able to [work] that’s all......As long as I was going to be able to do that, I mean, it’s not a matter of being happy with that but I was okay.

He indicated that he had to remain at work until a satisfactory retirement package might come about. Sean reported that he could leave work two years prior to his retirement date and bridge this time with disability benefits and unemployment insurance but he was still two years short of this being possible.

In spite of his lack of enthusiasm about work at the plant, Sean recognized the value of occupation and felt that having meaningful activity was important. "It makes you feel better about yourself ah for one thing and you earn income for another but ah, I think if you sit around too long you will sit around and feel sorry for yourself and all kinds of stuff will go on in your head eh." Following retirement, he planned on taking up computer repair, which had been a hobby since his initial heart trouble.
Sean continued to "slug it out" at work as he put it, finding it increasingly difficult to manage a full shift. "Shift is 7:00 to 2:30, by 1:00 in the afternoon, 1:30 or so, I am almost on fumes right there. [Yeah] Like, I’m done. I have trouble walking out of there." His life was focused on being able to manage the ongoing demands of work and not much else. "I do pretty well to get the work each day and work and get home."

In terms of preventing further heart problems, Sean believed that he is at the mercy of his genes. "Even now I am on a diet with medication and stuff, Lipitrol that stuff and it is still too high. [Oh yeah] They just can’t get it down and that is basically it, it just clogged up my arteries and that is my problem in a nutshell."

As far as reducing the impact his health problems, Sean felt little control. Exercise was difficult to the point that he could not manage it owing to breathing problems. "I still would like to exercise. They tell me it is something I need to do but I can’t do it." Sean attended cardiac rehab for a couple of sessions but a bout of pneumonia resulted in him withdrawing from the program. He finds that he is out of breath before he can get his heart rate up into the training zone prescribed at cardiac rehabilitation. Sean was left with the impression that unless he can elevate his heart rate to a sufficient level, exercise will not be of any benefit to him. He found it difficult to achieve this intensity and therefore discontinued the program.

Sean had put on weight after stopping smoking owing to an increase in eating but felt that he could not do anything about it because of his limited capacity for physical activity. Sean's reports reflected that of the downward spiral of physical impairment, limited beliefs and self-control, leading to further physical limitation.

At work, his perspective on control was somewhat different. He attempted to keep the work stress at bay by managing his involvement and relationships. "At work, I get along; I stay very low key at work. I don’t, I am not involved in the union at all. I don’t let things bother me." He managed work demands by pacing his activity over the work week as well as for his "jobs."

   Well, I don’t work any extra overtime [Yeah], ah I don’t rush like I used to. I used to at one time I would rush to be done the job early and then you watch the lights and you got a release button to let the job go and that could happen maybe 10 or 12 or 14 seconds before I even had to send the
job, I could maybe read a paragraph out of the paper or maybe have a couple of words with a person 10 feet away from me, but I don’t do that any more, I pace myself more now I find. So I don’t need to rush and I know it is not good for me so I don’t. So generally I just go at a fast enough pace to beat the lights, that’s all.

Sean also was a strong advocate of adopting the "that’s as good as it gets" mindset when dealing with the issue of workrate. By mindset, he referred an attitude that balanced the work rate with his capability on the day.

Big brother is looking over your shoulder every second of the day off the timers. And if you are having a lit bit of a problem one day and you are struggling and let’s say you are 2-3 seconds off 20 or 15 jobs in a row the foreman will come down and he’ll either say something to you or else he will just stand there and stare at you, one or the other. And if he comes up and says something to you, like most of the times now, I would have at one time had a big argument with him but I don’t any more, I like just look at him and say this is as good as you are going to get.

Changing his mindset permitted him to assert himself when challenged about his workspace by supervisors. He ignored coworkers that passed remarks on his limitations. He goes in, works his 8 hours and goes home, leaving the stress of the workplace behind him. He stated that work could completely stress you out if you let it - "its big brother in there all over the place. You might need some of it but not to that extent."

He also reported that motor proficiency was a critical aspect of keeping up with job demands. "By repetition you get real good at it, doing exactly right the first, you put the gun right into the hole, hit the trick and away it goes." Practice allowed him to become efficient on jobs and reduce his energy expenditure. "Like most of the jobs in there, even the real tough jobs really if you spend enough time on them, you can get to where there is a minimum amount of energy required to do the job but you got to already know the job to be able to do that." He indicated that with lean production initiatives, the jobs had become more difficult to find efficiencies on and it would take longer to become proficient.
Sean viewed himself as very much alone on the line and preferred it that way. He would not like anyone to be "hovering" over him. Sean indicated that his support came mainly from home. His wife was present for a period of time at the initial interview and it was evident that he was well supported by his wife and kids around the home.

He has had no accommodation for his cardiac limitations. "Ah, well I thought that if I had bitched and whined I could have got it. My work probably would have given it to me if I had asked them. [Yeah] But ah, it is not my style. I thought I could do my job so I did." He feels that accommodating impairments due to cardiac problems would be difficult, viewing it as a black and white thing - "With a heart problem, you should either be here or not". He viewed heart problems differently from discrete impairments such as wrist injuries (which he has also sustained) in that those conditions can be accommodated through specific biomechanical precautions. Interestingly, one of the things that he attributes his longevity at the plant to are restrictions imposed on him because of previous wrist injuries, suggesting that the situation with heart problems may not be as black and white as he suggests.

Shortly after the initial interview, another worker who likewise was on placement for a work injury had bumped Sean’s off this job. Ironically, Sean expressed suspicion about this worker's complaints in spite of also being on placement. He indicated that this new job was more difficult to gain proficiency on. "Like the job I’m on now, I have been on it for about six months and ah, I can just barely make rate going as fast as I can." Sean indicated that most jobs in the plant were going that way. "Before it used to be they give you three days on a job and you could make rate within three days and everything but now they’ve got everything, and it’s timed to the second. I mean even once you are real good at it you just barely make rate and the lights on the AGV come on.” It seemed as though work stress was taking a toll on his health and well-being.

At the follow-up contact, Sean reflected on his situation from the time of our first encounter in terms of the relationship of his heart problems to work. "I don’t know if its coincidence or not, you can draw your own conclusions, both incidents that I had were in September when we just settled the contract a week before. We have been out on strike." Sean was unique in drawing a connection between work stress and his cardiac events.

Sean indicated that he also had also thought about his situation and discussed it with other workers who had heart problems. He indicated the benefit of having others to share his
experience with. “It helps to know that there are other people who are experiencing the same thing I am.” Sean suggested that a support or information group might be helpful for workers with cardiac illness.

The third shift at the plant had recently been discontinued and company had announced another layoff owing to the downturn in truck sales and over capacity for production in the company. Sean felt as if they would be on layoff for a while. Sean tried to not take this situation personally, maintaining an "its business" attitude with respect to the company.

At follow-up, Sean discussed the health care system and its limited ability to meet his present needs. For example, to get medication refills he had to attend his family doctor. To have an appointment, he had to book a month in advance. However, there were times when he needed a prescription refill before his next appointment. When this occurred, he had to attend the walk-in clinic, which he finds "crazy" as he saw his own doctor at the walk-in (but could not access him in a timely fashion at the office). Sean thinks that its a “money thing” and a scam on the part of health providers.

8.5.1 Summary - Sean

Sean's case provided a longer-term perspective on return to work and the struggle to sustain work with ongoing cardiac impairments and functional limitations. At a personal level, he relied on changing his mindset in relation to his work, becoming proficient on jobs, and managing his environment to reduce stress as key factors in his sustainability. His placement status allowed him to keep relatively good jobs. Work relationships were not a big part of his ongoing efforts to cope beyond feeling “not alone” in his plight. His ability to "slug it out" was becoming more difficult as jobs were tightened up and activities were added. His ability to retain a reasonable job was also less certain with the layoffs at the plant.

8.6 Summary and Synthesis

The cases presented permitted the reconstitution of participant experience through the lens of the concepts developed in the initial thematic analysis. The cases also permitted a description of the trajectory of worker experience over the contact time of the study.
In examining the participant’s trajectories, several elements become apparent. In making the decision to return to work, participants weighed the role that work played in their lives and their need for work in terms of its tangible benefits in making the decision to return to work. For Pat and Derek, work had intrinsic value and they valued the social opportunities it provided as well as being a part of recovery. For Phil and Sean, return to work was a necessary evil to attain a pension. In persisting at efforts to sustain work, the need to remain long enough to extract a pension was important for participants experiencing ongoing problems.

Disease severity and the participant’s representation of their illness played a role in the initial decision to return to work as well as sustainability at work. Medical reassurance was important initially as well as when increases in symptoms were encountered. Particularly in the early phase of return to work, symptom exacerbations were troubling and undermined the participant’s confidence. Once an illness identity was established, such as Sean’s case, the participant was more confident in continuing even though their symptoms continued to present difficulties.

Participants’ views of control influenced the effort they would put forward into self-management efforts. Where the participant viewed actions such as exercise as improving their function or modifying the course of the illness, exercise would be enacted. Spiritual beliefs also interacted with health beliefs to alter behaviours. Strong belief in the afterlife made worldly efforts to ward off further problems less relevant.

Changing mindset towards work was important in the initial process of adjustment to the workplace and continued to be an important factor for longer-term adjustment. In the early phase of return to work, Derek struggled with the desire to perform as well at work as he had prior to his illness. His distress began to decrease as he began to let go of his need to maintain this standard and please his supervisors. Phil also realized the need to change his mindset over the course of his return to work on the assembly line. The change in mindset was not evident during his initial time on modified duty work that did not entail making rate but became apparent when he returned to the assembly line. For Sean, changing mindset had permitted him to sustain work for a number of years and he actively coached changing mindset as a strategy for fellow workers coming back to work with heart disease in his group.

Accommodation was important in the process of return to work. Early in the process, accommodation was limited in its effectiveness, if not directed at the demands of the job that the
participant might be expected to do. Phil spent in excess of five months on “light duty” work that had no relation to the assembly line demands that he eventually had to return to.

Consequently, return to assembly line work was “rough”. Derek described a gradual process of tolerance building through his return to work, which eventually leads to completing a full day on the assembly line. While this was difficult for Derek, it was gradual and progressive, permitting psychological as well as physiological adaptation over time. Sean’s placement status provided a “back door” means of accommodating his heart problem over the long-term. In terms of long-term sustainability, seniority was also critical as it allowed Pat to bid into a preferred job. Phil on the other hand was limited in his ability to bid into an easier job and opted to retire early rather than go on long-term placement.

Positive work relationships were important both for “felt” support and tangible assistance during the return to work process. Derek experienced positive, supportive relationships during his return to work, which were important both for his morale as well as supporting his need for a graduated return to work program. Phil did not perceive the same level of support and his description of return to work indicated a greater deal of friction with his supervisor – a condition that would make return to work more difficult. Derek valued and had cultivated good work relationships prior to his problem while Phil had not. His strong work relationships had been built well before the emergence of his health problems or involvement in the study but became a “tank of support” that he was able to draw on over the course of his return to work.

The participant’s tenure and eligibility for retirement played a role in the decision to sustain return to work. Pat, Sean, and Derek were all a number of years away from retirement with full pension. These workers were all committed to remain at work until retirement became an option. Phil had the option of selecting out of work at the plant and did so.
Chapter 9

9 Discussion

The purpose of this study was to improve the understanding of the experience and process of return to work following disabling cardiac illness from the perspective of the workers and the workplace. Specifically, this study focused on characterizing return to work, explaining the return to work experience and process through the agency of the workers and the social and structural influences in the workplace, and drawing inferences relating to practice. The study used a primarily qualitative methodology, informed by applied ethnography and grounded theory research.

The main findings of this study are:

1. Workers disabled by cardiac illness suffered a range of symptoms and impairments to function, which resulted in different experiences in their role quality and work life balance. Some workers experienced little in the way of residual problems, whereas others had significant problems, reflecting the heterogeneity that exists among workers following return to work. This important finding emphasizes the importance of qualifying return to work in terms of role quality and work life balance and not considering return to work as a proxy for recovery.

2. Workers who suffered disabling cardiac illness held a variety of beliefs about illness and work, both of which influenced efforts to adapt and remain on the job. Return to work involved a process of reintegration to the work environment from a functional, psychological, and social standpoint through the use of cognitive, behavioural, and social strategies.

3. Workers adapted through changes in mindset, optimizing function through physical capacity building and work efficiency, managing their work environment through the selection of jobs and negotiating reduced work rates with supervisors, and the use of supports.

4. Most importantly, worker efforts to adapt to the job were heavily influenced by characteristics of work, work relationships, organizational policies and practices, and the availability of supports. Participants in the study were at varying career stages, which influenced their ability to select work and their choice of strategies to
compensate for residual impairments. These social, structural, and lifespan influences are important considerations have been largely ignored and need to be focused on in the process of rehabilitation and return to work. Unilateral efforts to improve physical capacity and build psychological resilience are not sufficient to enable the actions of workers to return to the job and improve their experience in doing so.

This chapter will bring together the findings of this project, framing worker efforts to adapt to the workplace as a self-regulatory process, involving by personal representations of work and illness, cognitive, behavioural, and social efforts to cope, and selection of work-related goals in a lifespan context. Self-regulation is the dynamic process through which we adapt to changing health and life circumstances through the establishment of goals, taking action to attain goals, monitoring and interpreting feedback from the internal and external environment, and altering our behaviour according to this information and our situation in relation to our desired state (Scheier & Carver, 2003). Surrounding and influencing the self-regulatory process are aspects of work design, work relationships, organizational provision for support, and external influences including medical and rehabilitation support and support of the family. This self-regulatory process and the influences around it shaped the trajectories of return to work in this group of workers.

Results will be related to the return to work literature as well as to extant theory, where it informs or is informed by the results. Consistent with the primary focus of the dissertation on rehabilitation and disability management practice, I will highlight findings and conceptual understandings believed to have particular relevance to applied research and clinical practice, identifying implications for practice as the discussion proceeds. I will conclude by tying this framework together through the cases developed in the last results chapter.

9.1 Self-regulation in the Return to Work Process

9.1.1 Illness Representations

All participants in the study were afflicted with cardiac illness that left them disabled from work. Disease severity varied from minor arterial blockage to significant heart pathology and cardiac arrest. Work demands varied among trade, production and support workers. While disease and
work demands imposed a range of possibilities in terms of adaptive response, participants’ efforts to cope were also influenced by their particular views about their illness, their work and the limitations illness imposed on their work ability. Variations in representations of illness have been looked upon as the source of individual variability in adaptive response (Leventhal, Brissette, & Leventhal, 2003).

Within degrees of disease severity, thoughts around the significance of cardiac illness and likely timeline for illness varied with some participants (e.g., Pat) seeing the problem as a minor “bump in the road”, not considering the emergence of heart disease as a long-term threat, while others (e.g., Les) viewed the problem as more grave, and potentially having longer-term consequences. Participant’s views of illness as acute or chronic influenced the strategies employed to adapt to the workplace. Participants with transient disease, which left little or no residual signs or symptoms, largely carried on as usual. Those who viewed their condition as longer term identified the importance of ongoing management. This is significant owing to the elevated risk of reinfarction in patients with established coronary disease (CACR, 2004). At one time, heart attacks were considered as “heart warnings” to be heeded in terms of correcting behaviours. In this sample of workers, the advent of medical technology such as stenting has reduced or eliminated this aspect of risk perception and perhaps a motivating influence for secondary prevention such as exercise or smoking cessation.

Representations of personal control played a role in decisions to enact behaviours such as exercise during the return to work process. Participants expressing higher degrees of belief in the effectiveness of self-management behaviours to exert some form of control over their illness demonstrated greater resilience in persisting with return to work efforts and enacting change in health behaviours. In this case, positive expectancies related to the effectiveness of exercise to improve capacity and maintain cardiovascular health promoted the adoption of these behaviours.

Personal control was influenced through comparison of present difficulties with past experience of health problems, where exercise and rehabilitation enabled a return to function. Derek discussed his past experience with orthopaedic injuries in overcoming what he considered as medically-insurmountable obstacles. In these cases, he attributed his perseverance, along with guidance from professionals as enabling him to overcome injuries. He anticipated the same outcome, should he persevere in return to work and exercise with his cardiac problems. The
effect of comparison with one’s own past injury or rehabilitation experience on orientations to self-management has not been previously investigated to my knowledge and would be worthy of further study.

Social influences were also present on representations of personal control and expectancies. Through informal networking, participants described interactions with other workers that helped to “norm” their experience and provide tangible advice for managing ongoing symptoms. This finding has potential relevance to return to work for cardiac patients. Informal networks or support groups in the workplace might be used to distribute information concerning cardiac illness.

Understandings of heart problems and associated symptoms were important in the return to work process. Although physical pain was not as prevalent or problematic as reductions in stamina for these participants; recurrent chest pain, particularly of uncertain origin influenced return to work experience. Chest pain has particular significance, as it is the initial signal of pathology that provokes seeking medical attention. Over the course of medical treatment, the source of insufficient myocardial blood flow is identified and corrected through revascularization procedures. In spite of the initial relief and reassurance provided by treatment success, recurrent episodes of chest pain become problematic. The worker’s representation of these symptoms was a critical factor in behavioural and emotional response.

Uncertainty about the source of chest pain caused distress among participants. Four participants delayed their return to work or took additional time off while diagnostic testing was being performed. Recurrent, unexplained chest pain left participants questioning their viability for return to work. In the end, additional investigations were negative and the participants continued at work. In Phil’s case, pain was ascribed to soft tissue and bony sources in the chest wall. Bill, Derek and Jim indicated no particular understanding of ongoing chest pain, other than it was not indicative of problems with their heart.

Medical reassurance and personal experience influenced the certainty aspect of representations. While further investigations and medical reassurance did not provide these participants with a “textbook” understanding of their symptoms, discounting myocardial ischemia as a factor seemed to provide them with an idea that they were not at further risk of heart attack. This operated to quell their anxiety around unexplained chest pain. In a related sense, personal
experience with symptoms also influenced certainty. After repeated visits to the emergency
department, which provided him with little benefit, Jim became resigned to the conclusion that
his symptoms were something he would just have to “live with”.

Results of this study indicate that workers do not dismiss unexplained chest pain as insignificant
but, are more likely to develop uncertainty as to whether it relates to further compromise in
cardiac circulation. In adapting to the workplace, this can fatally undermine a worker’s
confidence. Significantly, a large proportion of bypass patients experience non-cardiac chest pain
related to neural, musculoligamentous, or articular origin (Eisenberg et al., 2001). Researchers
have reported that 10 to 30 percent of chest pain is non-cardiac in origin, and up to 60 percent of
chest pain of non-ischemic origin may be attributable to the physical symptoms of panic and/or
anxiety (Schwartz, Trask, & Ketterer, 1999). Further, research has demonstrated that uncertainty
can play an important role in coping efforts and coping efficacy in other conditions such as
fibromyalgia (L. M. Johnson, Zautra, & Davis, 2006).

Non-invasive diagnostic testing has demonstrated effectiveness in decreasing anxiety and
uncertainty and increasing perceptions of life expectancy up to one week following testing
(Mushlin, Kern, Paris, Lambert, & Williams, 2005). Testing may have short-term value in
reducing fears, however in this sample there were cases of repeat visits for testing owing to
recurrence of symptoms, each winding up negative. This suggests that the effectiveness of the
fear-reducing properties of diagnostic testing and reassurance may be transient. It would be
interesting to examine the factors relating to the sustainability of anxiety reduction with
diagnostic testing, how it relates to representations of illness and perhaps more general anxiety
problems, and whether intervention might be effective in increasing the durability of this benefit.

Previous research on illness representations has indicated shorter disability duration in workers
who view of their illness as acute and transient (Petrie et al., 1996). No relationship was found
between perceptions of personal or treatment control or illness identity. Early intervention
designed to enhance feelings of personal control has demonstrated reductions in perceived
consequences and the likely timeline of illness and accelerations in return to work (Petrie et al.,
2002). The present study supports these findings insofar as those participants with the shortest
duration of disability also indicated lower consequences and expressed that heart disease was a
passing event. Previous research has not identified the influence of uncertainty on return to work
and the sustainability of work outcome and further research may be warranted in this area. Thus, in adapting to the workplace following the onset of cardiac illness, it is critical that the workers’ representations of illness be broad enough to incorporate non-cardiac chest pain or myocardial pain of questionable significance. Workers need to be equipped to self-monitor and recognize the significance of symptoms. Workers in this study indicated little in the way of guidance from medical and rehabilitative personnel – “Play it by ear” was a common refrain. Participants were left to their own ability to interpret symptoms through their understanding of their problem and input from others such as coworkers.

The challenge for rehabilitation practice is to not only build physiological capacity and understanding of pathology but also how the illness (including psychological reactions) and treatment effects might manifest in somatic symptoms. Heightened somatic preoccupation has been related to non-ischemic chest pain (Schwartz et al., 1999). Programs that help individuals interpret and differentiate their symptoms and act on them appropriately may be effective in reducing anxiety, withdrawal from activity and health care utilization among these individuals (Schwartz et al., 1999). Psychoeducational approaches, such as the Angina Plan (R. J. P. Lewin et al., 2002), have proven effective in reducing the worry, fear and avoidance of activity that occurs with recurrent chest pain. Cardiac rehabilitation programs have specific education around cardiac symptoms but to what extent programs are aware of, or focus on individual representations may vary.

Interventions focused on improving body awareness may be of value to help workers manage the anxiety relating to recurrent symptoms of chest pain. Programs such as mindfulness training have demonstrated promise in improving self-regulation among individuals suffering from anxiety disorders and pain (Bishop, 2002). Mindfulness encourages an approach orientation to physical pain and psychological problems, teaching the client to be non-judgmentally mindful of the present and reside with discomfort rather than struggling to change it (Ludwig & Kabat-Zinn, 2008). Mindfulness has demonstrated effects on improving autonomic profile (Takahashi et al., 2005), which is of concern in the cardiac population. The incorporation of mindfulness-based approaches into programs may also be beneficial in improving emotional regulation and the ability to respond to non-cardiac chest pain.
9.1.2 Psychophysical Aspects of Work

As the primary impairments experienced by participants were reduced energy and vitality, work limitations were primarily conceived by participants’ in terms of their ability to keep up with rates and sustain work hours with less interference in cognitive and social domains of work function. More specifically, workers with involvement in the production process and having residual impairments described difficulty with the demand of “making rate” on the assembly line.

Thus, work intensity and duration were critical variables in shaping the experience of these workers. Accommodation of these workers requires somewhat different consideration to workers experiencing limitations due to, for instance, low back pain. For example, a worker with low back pain may be limited in lifting loads greater than a certain prescribed amount or bending past a certain degree of spinal flexion, necessitating requiring specific biomechanical accommodations. In the case of cardiac illness, impairments and functional limitations are more diffuse, requiring accommodation in volume and intensity of work.

However, the interaction between impairments in stamina and the demands of production work extend beyond the physiological dimensions of intensity and duration. Participants identified that return to work was “more than just the physical” aspects of the work. The imperative to maintain a particular rate of work on the assembly line caused an “insidious stress” for production workers and was a major factor in their adaptation to the workplace, intensifying the physical aspect of labour. The psychophysiological dimension of work included individual construal of work demands such as the commitment to rate-making and the social pressure from coworkers and supervisors, making it more difficult to quantify than physiological capacity alone.

Based on these findings, a model of work capacity based on physiological output is insufficient to deal with the complex psychophysical demand/capacity interaction for work activities in this type of environment. This has implications for practice in terms of evaluation and rehabilitation. In evaluating individual potential for return to work, practitioners need to recognize the tentative relationship between objective measures of physical work capacity and the demands of the work environment. Assessment approaches that focus exclusively on functional capacity may be
limited without consideration for psychophysiological aspects of worker/work interaction. A combination of objective work capacity evaluation, self-report measures of work ability and work demand, and interview questions to gauge worker perception may provide a greater understanding of a worker’s ability to sustain work demands. However, the specificity of production work limits the ability to relate clinical findings to work ability.

The challenge for rehabilitation is to provide workers with the opportunity to restore their work capacity for the job in as specific a fashion as possible, considering the psychophysiological demand of work. Owing to the particularity of work tasks and the worker’s construal of them, the potential for clinically-based rehabilitation to accomplish this may be limited. For example, clinically-based work simulation activities are constrained in their capacity to provide a production-paced environment with the same demands and contingencies of “ratemaking”. Even though the inclusion of work simulation activities in programs may be better than exercise alone, their utility erodes in preparing workers for the particular psychophysiological, contextualized challenge of maintaining pace with the assembly line. In this study, Derek’s case provided a good example of the value of work-based rehabilitation whereby he was provided the support required, over a considerable period of time, to restore his physical capacities. During return to work intervention, and wherever possible, rehabilitation programs should consider using the workplace as a therapeutic milieu. Only workplace exposure can ensure the multiple physical, psychological, and social demands necessary for adaptation.

While this sample consisted only of individuals with cardiac illness, rehabilitation research in other forms of impairment can perhaps inform interventions in this domain. For example, research in musculoskeletal disability has demonstrated support for workplace-based components to rehabilitation. In comparing clinical occupational rehabilitation with workplace-based intervention and a combination of the two, Loisel and coworkers (Loisel et al., 1997) demonstrated that workplace-based intervention in the form of health practitioner consultation, and accommodation in the form of graduated return to work and ergonomics in the workplace was superior to clinical intervention alone in reducing disability among workers disabled by low back pain.

The challenge for work design and accommodation is being able to deal with work capacity decreases that result in marginal stamina (particularly when initiating return to work) and may
diminish throughout the day or over the course of a week. For example, work systems that create a linear dependency (i.e., one worker’s rate is directly dependent upon another) are problematic for efforts to accommodate unless some degree of independence in rate can be established. In assembly line situations, this could involve differing time rates for stations with workers returning to the job. Alternatively, as in Derek’s example, the worker can be provided with a helper to provide rest breaks and allow for tolerance building. The worker with impairments could also be brought in as an “extra”, providing relief to other workers while building up tolerances as in Bill’s self-imposed work hardening system.

9.1.3 Emotional Aspects of Return to Work

Participant representations of emotional impacts were present in a continuum of intensity and focus. During interviews, participants described varying levels of emotional involvement in terms of worry about recurrence of their heart problem and being able to resume or sustain their normal work activities. Emotional involvement was more apparent in quantitative measures of health status than interview data. Most participants endorsed average mental health scores with no emotional interference with role function. One participant reported problems on both the mental health and role emotional subscales of the SF 36 questionnaire. One described problems with mental health but no impact on role function. A third participant endorsed problems with emotional impacts on role function with average mental health scores. Others endorsed “normal” scores on the SF 36 but indicated in interviews that they were more “sensitive” than would otherwise be the case.

Mood disturbance is common in cardiac illness. Thirty percent of patients may experience clinical depression in the year following MI, placing them at greater risk of recurrence of illness (Lesperance et al., 1996). Research has suggested the value of return to work in reducing emotional distress (Crilley & Farrer, 2001; Plach & Heidrich, 2002; Rost & Smith, 1992; Simchen et al., 2001). Return to work may have been promoting mental health among some of the participants; however this may vary according to the stage of process that the worker is in. Participants whom were back to work (even those not keen on work at the plant such as Sean) made specific mention of the value of return to work in terms of providing purpose through occupation. At the same time, the return to work process was not universally beneficial for participants’ mental health. During his return to work, Derek, was emotionally preoccupied with
uncertainty relating to his occupational future and his inability to fulfill what he perceived to be expectations around production output as well as his future at the plant. Les was distressed owing to conflictual dealings with management during his return to work. Interestingly Stan, who decided to leave work on medical disability, reported a mental health score 1.37 standard deviations above the mean. Quality of work life has been identified as a potential factor mediating the influence between physical health and emotional well-being (Plach & Heidrich, 2002) but the quality of the return to work process itself may exert influences independent of quality of work life.

Rehabilitation and disability management practice should consider these factors in preparing workers to return to the workplace. Derek may have benefited from something as simple as a preparatory discussion relating to productivity expectations on return to work. In Les’ case, coordination of return to work efforts may have been beneficial in smoothing out differences in the return to work plan although a recent systematic review has indicated insufficient evidence for the effect of return to work coordination on worker quality of life (Franche et al., 2005).

When evaluating the possibilities for return to work, practice should also consider the effect that poor quality of work life may have on the individual. Return to work may be of benefit to some workers, whereas others returning to an unsupportive, high strain work environment in which they do not feel competent with keeping up with the demands of the work may be at risk of developing depressed mood and increasing their risk for recurrent events. Plach and Heidrich (Plach & Heidrich, 2002) found that role discrepancy (perceived ability to meet the demands of the role) mediated the relationship between physical health and psychological adjustment and well being in a group of older female workers following heart surgery. These findings suggest that in the presence of physical illness, role quality is an important factor influencing worker representations of emotional well-being. Work can be therapeutic but depends upon the quality of work experience.

Another aspect of emotional adjustment was the process of social reintegration to the workplace. For some participants, such as Pat and Jeff, the workplace formed a significant part of their social network and it was evident that returning to work enabled them to reconnect with their primary source of social contact. Both indicated the emotional benefit of return to work. In contrast, other workers did not have the same attachment to work as a social milieu. These
workers expressed greater ambivalence regarding return to work and, in addition, encountered a
greater degree of friction from supervisors and coworkers during the return to work process.
Thus social function in the workplace appears to be another means through which return to work
can exercise an influence on emotional function.

It should be noted that this sample was all individuals who had returned to work. This may have
created selection bias as depression negatively affects return to work rates (Prior & Cupper,
2004) potentially limiting the number of distressed participants in this study.

9.1.4 Adapting to the Workplace

Reintegrating to the workplace following disabling cardiac illness was a process where both
worker agency and social and structural influences played a role. Workers attempted to return to
a level of “homeostasis” or equilibrium in balancing work demands with their physical capacities
and health status by enacting self-regulatory strategies. Cognitive, behavioural, and social
strategies were used to varying degrees to compensate for functional losses and/or optimize
health. The use of strategies was influenced by personal representations of illness and work and,
from a broader perspective, work design, work relationships, organizational processes and
supports, medical and rehabilitative intervention, and industry influences. The selection of
coping strategies was, in part, influenced by personal representations of illness as discussed in
the previous section. This section will focus on the particular coping strategies deployed by
participants.

9.1.5 Cognitive Adaptation

Participants working on production jobs and particularly those with ongoing impairments
indicated the use of cognitive and behavioural strategies to attain and sustain return to work. The
majority of production workers indicated that they had changed their attitude towards the stress-
inducing aspects of rate making on the job. This cognitive shift allowed them to look upon their
own work more favourably as “doing the best I can”. Changing mindset also served to reduce
the stress of comparing rates with other workers and the production standard demanded by
supervisors.
In a sense, these workers were reducing the perceived discrepancy between their work capacity and personal and external performance expectations by modifying their view of making rate. Using cognitive techniques to reducing the discrepancy between perceived ability and demands served to provide the worker with a sense of confidence and reduce negative affect associated with persistent physical limitations in relation to job demands (Scheier & Carver, 2003). I have not encounter this specific mode of cognitive coping in the return to work literature. This aspect of work adaptation may extend into coping with many disabling conditions and begs further investigation.

In addition to the specific mindset change relating to work, some participants indicated that their experience of cardiac illness altered their view of life, the relative importance that work had in their life, and the degree to which daily hassles in work relationships affected their well-being. Self-examination in the face of chronic illness is not uncommon and is viewed as adaptive (Taylor, Kemeny, Reed, Bower, & Gruenewald, 2000). Serious illness can lead to a search for meaning (Mechanic, 1977) and restoration of a sense of coherence or comprehensibility that the challenge of illness has some larger purpose life.

Finding meaning has demonstrated health-enhancing effects following the onset of cardiac illness. Affleck and coworkers (Affleck, Tennen, Croog, & Levine, 1987) studied the predictive relationship of benefit appraisal (finding meaning) in illness in 287 heart attack survivors. Results indicated that those men, who perceived benefit in their illness, demonstrated lower levels of morbidity at the 8-year follow-up period and were less likely to suffer re-infarction. These researchers speculated that the decrease in mortality might relate to improvements in outlook and health behaviours, although these factors were not measured in the study.

Downward social comparison was another cognitive strategy described in the data. Social comparison with individuals “better off” has been shown to increase hope and motivation to improve health in cardiac rehabilitation patients (V. Helgeson & Taylor, 1993). In this study, Derek, engaged in downward social comparison, relating his situation to those he believed to be “worse off”. In doing so, he was able to regain and maintain a sense of optimism - things could be worse – and persist in his efforts to return to work and manage his condition.

Minimization of the threat posed by cardiovascular disease was another cognitive strategy present in the data. Participants such as Steve and Pat engaged in a degree of denial or
minimization of the threat posed by their heart problem, both expressing relatively positive adjustment to their illness. Denial or minimizing may serve to decrease the sense of threat that may come with return to work after the onset of cardiac illness. In contrast, participants such as Phil and Stan held more “realistic” beliefs about cardiac illness and its likely outcome. Neither of these workers were inclined to “push it” with physical activities and neither persisted with work at the plant. Interestingly, both high and low levels of denial have been linked to higher return to work rates (Maeland & Havik, 1987b).

In relation to health, realistic acceptance of illness and one’s ultimate demise may be a detriment to well being in promoting the relinquishment of hope and the diminishment of control and resulting in loss of morale and “giving up” on the part of the sufferer (Taylor et al., 2000). On the other hand, unrealistic optimism may counter representations of danger that might prompt adaptive changes in health behaviours. However, research on illusory positive expectancies has suggested its salutary effect on psychological adjustment and health behaviours in populations of HIV-AIDS patients (Taylor et al., 1992) and heart-transplant patients (Leedham, Meyerowitz, Muirhead, & Frist, 1995) as such a degree of minimization may be adaptive.

Social comparison, denial of threat, and meaning making have been identified as part of the adaptive process following a heart attack in qualitative research (J. L. Johnson & Morse, 1990) and have been theorized to restore a sense of coherence, self-worth and personal competency and reduced feelings of vulnerability caused by the illness (Taylor, 1983). Together, these aspects of cognitive adaptation have been researched in terms of their health protective properties. In a prospective cohort of 199 men and 99 women recovering from angioplasty over a 6 month period, Helgeson (V. S. Helgeson & Fritz, 1999; V. S. Helgeson, 1999) found lower levels of emotional distress and decreased event recurrence in individuals expressing higher levels of personal control, self-esteem and optimism. Helgeson (V. S. Helgeson, 2003) extended these findings in a 4-year follow-up of the same patients finding a persistent relationship in the predictive value of these constructs on quality of life and recurrence of cardiac disease controlling for baseline variables. This triumvirate of beliefs warrants further attention in relation to return to work and other functional outcomes.

Optimistic beliefs also varied with some participants expressing optimistic expectations relating to their health and work, while others expressed more negative beliefs regarding the future
consequences of illness and its impact on work ability. A more optimistic perspective tinged with
denial may be healthy in fending off realizations of the gravity of the health condition, thus
helping to manage the fear and uncertainty associated with heart disease and return to the
workplace. Optimistic beliefs related to return to work have been linked to higher return to work
rates in workers disabled by cardiac illness (Maeland & Havik, 1987b) and better health
outcomes following the onset of cardiac illness (Scheier & Carver, 1985).

Phil and Stan, who were lower in denial and optimistic beliefs, held negative views on the
possibilities about the future course of their illness or their work ability. Considering the above,
this fatal resignation appears maladaptive; however, it may also serve an adaptive function in
regulating emotional response. Resigned acceptance may remove the sense of struggle and
provide a sense of peace, thereby minimizing depression and anxiety relating to disease. Both
Phil and Stan expressed the belief that whatever was to come was meant to be. Interestingly,
both had normal to positive mental health scores on the SF 36 in contrast to Derek and Jim who
were more optimistic but reported greater distress.

Prolonged exposure to stressful work environments has been associated with increased risk of
cardiovascular disease recurrence (Aboa-Eboule et al., 2007). In workers returning to stressful
work environments, cognitive adaptation may be an important component of adaptation. Where
not already present, clinical programs may benefit by including a simple cognitive adaptation
components in the psychoeducational aspect of the program. Sessions could focus on the
importance of cognitive shifts following the onset of heart disease, discuss a range of strategies,
and provide guidance for implementing strategies among clients. Undue focus on threat as a
means of shifting attitudes and improving health behaviours may be detrimental in undermining
optimistic beliefs and causing more health problems.

9.1.6 Behavioural Adaptation

Some participants in the study described efforts to optimize and compensate for functional
deficits during the return to work process, by increasing physical activity and improving
efficiency on the job. Participant views on the value of exercise for building physical capacity
were mixed.

There is good evidence that exercise is helpful in reducing morbidity and mortality in secondary
prevention (Jolliffe et al., 2003). The role of exercise as a means of reducing work disability following cardiac disease is less certain. Exercise capacity has been identified in a number of studies as relating positively to return to work in univariate analysis (Engblom et al., 1994; Fioretti et al., 1988; Gehring et al., 1988; Perski et al., 1999; Varaillac et al., 1996). However, other studies have shown no association in multivariate modeling (Mark et al., 1992; Soderman et al., 2003). The relative influence of exercise capacity may be mediated by psychological factors such as self-efficacy for activity. In studying elderly female cardiac patients involved in resistance training during cardiac rehabilitation, Ades and coworkers (2003) found significant improvements in exercise capacity and objectively measured functional ability using simulated tests. However, these improvements did not translate into increases in perceived abilities and increases in individual engagement in daily activities (Ades et al., 2003).

Other research has demonstrated that improvements in self-efficacy are specific to the training activity. For instance, improvements in physical capacity as a result of cardiovascular exercise does not necessarily translate into improved efficacy in strength-related tasks (Beniamini, Rubenstein, Zaichkowsky, & Crim, 1997). In addition, the psychomotor demands of production work that these workers performed are very specific. This suggests a gap between improvements in physiological capacity and activity involvement following the onset of heart disease.

The challenge for rehabilitative practice is to facilitate translation of physical gains of exercise into involvement in functional activities and roles. Rehabilitation programs including work simulation components to improve psychomotor performance have been tested but are still very formative (Mital et al., 2000) and production work of this nature is difficult to simulate. Mastery experiences are the most effective way to increase efficacy for activities (Bandura, 1997). Owing to the specificity of work and the work environment, in situ exposure through work-based rehabilitation has the potential for enhancing translation of physical capacity into self-efficacy for work activities. Research in musculoskeletal disability has demonstrated the effectiveness of work-based approaches to improving worker adaptation to the workplace (Loisel et al., 2003). This model may provide a foundation for work-based approaches to rehabilitation in this population and warrants further investigation.
9.1.7 Social Adaptation

Participants also compensated for functional losses and engineered return to work efforts by negotiating reductions in work output. Negotiation was not, at times, a reciprocal exchange based on mutual respect and courtesy. Rather, it took the form of “This is as good as you get today” and/or “Send me down to medical if you don’t like it”. Supervisors would perhaps grudgingly accept the worker’s position “and we get through the day”.

Negotiation depended upon individuals’ perspective on work relationships. For some workers, this stance was based on a view that they were entitled to support, owing to responsibilities on the part of the company for accommodation, and irrespective of their relationships in the workplace. For others, the acquisition of support through management of relationships was based on meeting mutual interests. The former position depends upon a sense of individual entitlement. The latter perspective depends on a sense of community of mutual interest in the workplace.

This finding has potential significance in managing return to work programs. Feelings of entitlement may engender unreasonable expectations on the part of workers and alienate workers from support in the return to work process. A mutual interest perspective may result in more flexibility in negotiating the give and take of the return to work process. This aspect of individual perspective warrants further investigation.

An interesting feature present in return to work was the use of medical support for disability. Medical sanction is the support provided for disability by physicians or other health professionals. A lay perspective might suggest that medical sanction is based primarily on a risk of further heart problems or objectively determined functional capacity. Contrasting this “common-sense” view, data from this study suggests that medical sanction was socially constructed between workers and their physicians.

For example, in spite of diagnostic testing that indicated he was fit for work, Bill stated that he “could have pushed it” with his physician and remained on disability to his retirement. Stan was financially independent, near to retirement and enjoyed his period of convalescence. In spite of evidence that he possessed the functional capacity for returning to his job, he was able to obtain medical sanction for disability benefits allowed him to remain on disability benefits until he was eligible for his pension, despite indications that he possessed adequate work capacity to return to
his job. Health problems may be a necessary condition for disability benefit support but one’s “work disabling” qualities appear to be a matter of construction between a worker and his or her physician.

This constructed nature of work disability is incongruent with the “management” of disability in compensation systems and rehabilitation programs in a number of ways. Legal and contractual definitions of disability rely on a direct causal relationship between “medical” impairments and work disability (Altman, 2001). Social and psychological factors are not supposed to be considered in the adjudication of claims. Their influence may manifest itself in a lack of understanding and tension between claimants and adjudicators. Likewise rehabilitation personnel, who rely on a biomedical model of disability, may question the worker’s motives. Workers may be viewed as “legitimate” or not, depending upon the label they receive for their problem and how it is viewed by those around them.

9.1.8 Evaluation of Efforts to Adapt

Quality of work life and work/life balance were two “outcomes” that emerged out of participant efforts to adapt to the workplace. The emphasis on return to work rates and/or disability duration as a quantifier of successful outcome downplays the importance of successful reintegration into the workplace in terms of sustainability, and worker role quality. This study provided a particular perspective on the outcome of participant efforts to reintegrate to the workplace in relation to quality of work life and work/life balance.

9.1.9 Quality of Work Life

In evaluating the results of worker efforts to adapt, what was apparent in this study was the variability in the quality of work life. All of these workers returned to the job but the quality of their work life varied significantly. Some such as Tony carried on as if nothing had happened while others such as Sean struggled day in and day out to remain on the job. One of the limitations identified in the present literature is that of the limited scope of understanding provided through the measurement of dichotomous work outcomes following the onset of disabling cardiac illness. Return to work, as an indicator of recovery, does not portray the essential aspects of worker experience or the process through which they passed while returning to work. Not captured are the personal uncertainties and adjustments and social reintegration that
are part of the process of adapting to the workplace.

This study demonstrated that return to work is not a proxy for recovery of health or work ability. In fact, participants in the study described impairments and limitations that might warrant disability from the workplace, were it not for a strong motivation to remain on the job. The efforts of these workers, to remain on the job in the face of significant structural constraints, highlights not only the possibility of return to work for workers with significant impairment but also the risk they may be taking to their health in returning to high strain jobs (Aboa-Eboule et al., 2007). Clinicians should be mindful of these possibilities when interacting with workers, particularly where return to work is a financial necessity. Rehabilitation and disability management practitioners should also be mindful of the ongoing need for support following return to work in some workers, keeping in mind that workers with minimal impairment may not require any assistance and support in the process of return to work.

A few studies have examined more subtle aspects of return to work following disabling cardiac illness, finding decreases in reports of effort and involvement on the job (Abbott & Berry, 1991), and reduced hours (Soderman et al., 2003). This study supports these findings, insofar as identifying return to work as an incomplete indicator of recovery and restoration of work ability. This study differs from previous research, though, in a number of ways. For some participants, the perception of effort at work had increased rather than decreased. In order to meet assembly line demands with diminished capacities, their work was more effortful. All participants returned to work full-time and, while managing the environment through use of sick time and holidays with unpaid leave an alternative option, none had the option of reducing their hours to part time employment.

9.1.10 Work/Life Balance

Work/life imbalance is another piece of adjustment to cardiac illness and return to work that has received minimal attention. A limited pool of energy to draw on also resulted in activity limitation outside of the work environment, with some participants reporting reduction in activities around the home as well as active leisure pursuits. Work/life conflict is often cited as a problem for workers with excess demands in terms of role overload and role conflict (C. Higgins & Duxbury, 2001). This study demonstrated the potential for conflict between work, home and
leisure activities in participants with ongoing impairments and functional limitations such that the latter two may suffer owing to the economic benefits provided by work. These workers have reduced opportunity for participation in active leisure activities outside of work owing to the degree of effort required in the workplace. This limits the potential of leisure pursuits enhancing health and well-being.

Participants may also have a reduced ability to participate in activities around the home and require an enhanced degree of support from family members. This also reduces the possibility for the health-enhancing effects of these activities as well as creating social strain as well as financial outlay for home maintenance that would have otherwise been done by the worker. This imbalance may be a transient feature of the initial phase of the return to work process, although for workers like Sean, these imbalances were persistent over time and could continually “shrink” the workers activity involvement. This aspect of return to work experience warrants further investigation to determine the extent of work/life imbalance caused when cardiac problems limit energies for activities outside of work.

9.1.11 Deciding to Return to Work and Stay – or Not

The goal to return to work was both a product and part of the process of reintegration to the workplace. Participants evaluated their efforts to adapt to cardiac illness and reevaluated work as part of life as part of an effort to self-regulate in response to the heart problem and in the context of the participants’ lifespan. In some cases this meant “staying the course” and in others it meant adjusting retirement plans in response to losses in function.

Participants in the study were at various points in the “second half” of their work life and all were experiencing the natural and inevitable decline in health associated with biological ageing. At the same time, they were at various stages of career, with varying goals relating to life and work. Younger participants were still building and consolidating their work life, supporting young families or wedged between supporting children through higher education as well as older parents. For these reasons, work was highly valued for its financial reward and the stability it provided. Return to work at the plant was a vehicle to a good pension and provided ongoing access to health benefits.

For some participants in the later stage of their career, whose work did not hold significant value
as a life affirming activity and without the same obligations, return to work at the plant no longer held the same value. However, other older participants elected to return to work, seeing value in work itself as an important social activity or a means to normalize life after a disabling illness.

Thus in deciding to return to work, participants sought to balance considerations of declines in health with life goals and objectives. For some workers like Jeff, return to work was elective and sought to maximize life experience. Participants with no residual impairments chose work activities based on their aspirations to move into better work conditions. Pat “selected” into a job that offered lower demands and greater control. For participants with ongoing impairments and limitations, loss-based selection was used to minimize the impact of ill health on their work. Selection involved making moves in the plant to obtain less demanding work conditions or moving into another line of work that was viewed to be more congruent with work capacity. For others, the prospect of retirement and mounting health concerns led to selection out of the workforce altogether.

Research with older arthritic patients has found the use of loss-based selection to be associated with lower levels of functioning and related to lower levels of perceived support and greater feelings of incapacity (Gignac, Cott, & Badley, 2002). These researchers found that in older arthritic patients, selecting “out” of life activities was associated with lower levels of function. As the study was cross-sectional, it is impossible to determine the direction of influence but one might posit that a reciprocal relationship exists between activity involvement and perceived functional capacity, although low levels of social support may undermine confidence in being able to cope with job demands. Participants engaging in loss-based selection such as Phil indicated both lower support on the job and a greater degree of incapacity.

Participant goals around the complex behaviour of return to work might be best understood in hierarchical terms (Scheier & Carver, 2003). The primary goal of most of these participants was to sustain work until full retirement, where they could receive full pension and benefits. This framed sub goals such as job selection, which, in turn, framed goals around managing the day-to-day demands of the job. In this way, behavioural goals formed a framework for workers to enact coping efforts to manage ongoing limitations. For some, the commitment to “sluggin it out” on the line until retirement and the constraints imposed on coping efforts by the nature of line work, required making the goal to change mindset in relation to work demands and become as
proficient as possible on the job. Goals and sub goals also form referents by which individuals judge their efforts to cope. In turn, coping efforts were adjusted or return to work goals abandoned should the expectancy of sustaining return to work not be realistic.

9.2 Work and Workplace Influences

Perhaps the major contribution of this study was to demonstrate the important role of the work context in determining worker adaptation. The nature of work, work relationships, and organizational practices and supports all influenced worker experience to greater or lesser degrees.

9.2.1 Nature of Work

The nature of work played a significant role in worker reintegration in this study. Control was a critical aspect in how work structure influenced worker experience. The production imperative necessitated that production workers maintain prescribed rates of output without any control over work pace or schedule and in tasks that were primarily rote in nature. All production workers cited this aspect of work as important in their return to work experience. Trade workers, on the other hand, had greater control over their work and recognized the benefit it provided them. Job strain as a function of demand-control is one of the primary conceptualizations of work and cardiovascular health interaction (Schnall, Landsbergis, & Baker, 1994). High psychological demands and low levels of control over work and work conditions and low deployment of skill characterize high strain jobs.

High psychological demand and low control was a constraining factor in production workers’ efforts to cope. The high strain nature of their work may also be placing them at higher morbidity and mortality risk. Aboule and coworkers (Aboa-Eboule et al., 2007) found higher morbidity and mortality in workers with cardiovascular disease chronically exposed to high strain working conditions over a five-year follow-up.

High strain jobs might be thought of as lacking “wiggle room”. Durand and coworkers (2007) describe this “marge de manoeuvre” as the maneuverability or discretion a worker has in using different ways of maintaining production while respecting symptoms and/or physical capacities (Durand et al., 2007) In return to work programs, the concept of wiggle room changes over time
from the discretion available to workers prior to disability to that necessary for involvement in clinical programs and back to the degree of discretion necessary for return to work and sustainability in the workplace. In this study, workers had all returned to work, some requiring greater “wiggle room” than others, into jobs that provided varying degrees of discretion. Trade workers had considerable discretion as to how their work might be accomplished, being able to pace their activity while performing maintenance work but having less discretion during breakdowns. Breakdowns and repairs were less common so the absolute degree of discretion was much greater than that of production workers. Workers on the line could improve their efficiency and pace each of the “jobs” out over the time interval provided but the ability to self-pace activity was absent.

As suggested by Durand and coworkers (2007) finding other ways and means to maintain production was more limited as well owing to the linear structure of the assembly line, the specificity of tooling for work tasks, the fixed and unrelenting pace of the line, and the shift schedule employed. In addition, workers on the assembly line described a progressive erosion of discretion over time through the application of lean production measures. They indicated that work on the line had “tightened up” to the point that all jobs could barely be accomplished within the time provided and offered little opportunity for the use of discretion in their completion. While the use of ergonomic assists such as hoists were an asset on some jobs, on others they slowed production rates and resulted in a visit from the supervisor.

As Durand and coworkers indicate, the absence of wiggle room creates a precarious situation in return to work that may result in a retreat from the workplace on the part of the worker. On the positive side, some of these workers were able to overcome the constraints of limited control afforded by assembly work. Perseverance and support were important factors in this regard. However, rate-making and surveillance had a pervasive negative impact on return to work experience and was a major constraint on the range of adaptive strategies available to workers; in some cases, creating an impossible barrier for workers to overcome.

This has obvious implications for work design and ergonomics. In human beings, and particularly those afflicted by the capacity-limiting effects of age and health impairments, is difficult to ignore the variations in performance capability that occur day to day, week to week and month to month. Linear work arrangements are limiting in terms of their flexibility in
increasing “wiggle room” for workers. Group work or cellular work systems (Hunter, 2001) provide an interesting alternative to linear assembly line arrangements. These systems structure workers in functional groups, focusing on a particular aspect of vehicle assembly; for example interior assembly. A group of workers might be responsible for the six tasks involved in the assembly of a vehicle. Over the course of a shift, or a workweek, the workers rotate through the tasks, building up the interior together before the vehicle goes on to the next workgroup, who has responsibility for another aspect of vehicle assembly. Modeling studies have suggested that physiological demand is reduced for workers in this type of system (Hunter, 2001). This type of arrangement removes the linear dependence of assembly work, but creates interdependence among the workers in a group.

This type of system presents interesting possibilities in terms of accommodating workers with limitations. To a certain extent, cellular arrangements reduce the “Big Brother” (i.e., surveillance of work pace) aspect of production work by removing the constant stress of “the lights” and creating self-regulating workgroups. However, it may create a “Little Brother” effect where questions arise in relation to how accommodation is handled within the group. Workgroup norms in accommodating limitations may play a significant role in the process of adaptation. Cohesive workgroups may function well in bringing disabled workers back into the fold. Workgroups that are divisive may be less accommodating. Factors that encourage group cohesion may be critical as supervisory chain oversight and hard company policies may play less of a role. How cellular arrangements influence return to work would be an interesting focus for further research.

9.2.2 Work Relationships

Work relationships with supervisors and coworkers were also an important aspect of return to work experience for these workers. Decisions by supervisors to support accommodation and graduated return to work were important. Derek had the support of his supervisors for long-term accommodation until he was able to return to regular work on the line. In other cases, supervisors placed workers returning to the job in demanding positions, resulting in relapse to disability in one case. Research has indicated that supervisors of blue collar workers may hold more negative attitudes towards workers returning to the job following MI (Kushnir & Luria, 2002). “Blue Collar” supervisors indicated a more negative attitude towards re-employing workers with heart
problems and also reported a greater degree of work limitation in these individuals in relation to their white-collar counterparts. Blue-collar supervisors also reported greater degree of absenteeism and more worry with respect to recurrence of heart problems. The data from this study would concur with these findings insofar as participants indicated tension in their relationships with supervisors when work rates were limited. Baril et. al. (Baril, Clarke, Friesen, Stock, & Cole, 2003) also found conflict between supervisors’ roles in maintaining production and facilitating return to work. Participants in this study also indicated that supervisors could be supportive of return to work through structuring graduated return to work programs and providing emotional support and assurance to workers about their job security.

Supervisors are the representative of the company and front line of contact for workers returning to the job. Thus supervisor attitudes, communication, style of supervision, and practical support offered by supervisors may be critical in the return to work process. A systematic review of quantitative studies related to return to work practices and interventions has indicated moderate evidence for the effect of educational interventions directed at supervisors on disability duration following musculoskeletal injury (Franche et al., 2005). A qualitative systematic review by MacEachen and coworkers (MacEachen, Clarke, Franche, & Irvin, 2006) found that the roles of supervisors need to be considered in return to work planning owing to the potential conflict between meeting production levels and accommodating workers with reduced production capacity. Qualitative findings also supported the important role of supervisors in the process leading these researchers to recommend education for supervisors relating to accommodation as well as support in balancing production demands with accommodation.

In a survey of workers with disabling conditions, Gates (L. B. Gates, 1993) found that in the eyes of workers, supervisors play a pivotal role in their efforts to adjust to the workplace through fair treatment, allowing them to participate in decisions and use their skills in the workplace. In a subsequent intervention study Gates (L. B. Gates, 2000) reported qualitative findings relating to an intervention focused on improving accommodation and work outcomes of workers experiencing disabling mental health conditions. The intervention involved a psychoeducational program for workgroups (including supervisors) consisting of awareness and skill training. Gates (L. B. Gates, 2000) reported that it was effective in improving workplace relationships, competencies in accommodation, and the degree of support from supervisors in enacting accommodation. There was no indication of outcome efficacy and the small sample (12) of
workers and workgroups precludes generalization. It does suggest a promising form of socially-based intervention for supervisors and workgroups accommodating workers with disabilities. In the case of cardiac illness, supervisors may benefit from education relating to cardiac illness and potential interactions with work. Where accessible, the support of an occupational health physician may be of benefit.

In this study, relationships with coworkers also influenced the return to work experience. While not having the same degree of influence as supervisors, coworkers could be supportive or antagonistic to return to work efforts. In some cases, coworkers provided tangible, emotional, and informational support. Coworkers might reassure the worker that help was available and aid in heavier work tasks. Informal networking was a source of advice on how to cope with job demands and a vehicle for exchanging advice on heart disease, treatment and recovery. On the other hand, coworkers made disparaging remarks about the worker’s inability to keep up with production rates, creating tension and undermining the workers perception of support.

This supports qualitative research findings that indicate the detrimental effect of an negative social environment on work accommodation (MacEachen et al., 2006). Katz and coworkers (2005) also identified coworker support as a factor in return to work outcome in a cohort of workers following carpal tunnel surgery, although this factor did not retain its significance in multivariate modeling (Katz et al., 2005). The present study demonstrates the possibility for both negative and positive interaction in the return to work process. It identifies coworkers as an important part of the social milieu during reintegration as potentially influencing worker confidence and emotional well-being. Additionally the quality of coworker relationships appeared to influence participants’ decisions to remain at work. For instance, the two participants leaving work during the study did not indicate positive relationships with coworkers. Other workers, apart from Sean, all indicated the value of getting back to the workplace to get back in touch with their workmates.

Support provided as a resource by coworkers and supervisors was dependent upon the quality of relationships developed between the worker and supervisor or coworkers. Reciprocity, familiarity, and continuity in work relationships, both with supervisors and coworkers, facilitated adaptation to the workplace. Reciprocity or the degree of “give and take” in work relationships was important in developing trust and a sense of cohesion. Participants who recognized the
importance of taking care of one another on the job felt more supported in their return to work.

Duration of relationships was also a factor as workers involved in longer-term, reciprocal relationships with coworkers and supervisors indicating stronger ties and more trust. Participants indicated that supervisors in this situation would not question the worker’s motives for accommodation and may be more accepting of negotiating reduced work rates. In this sense, workers built themselves a “tank” of social support over time, which could then be called upon in this time of need. For workers in demanding production positions, positive work relationships could moderate the influence of the lack of “wiggle room” to a certain degree. This has been noted in other qualitative research examining the process of return to work in nurses with musculoskeletal problems (Ballon, 2000). Provided that a strong relationship was in place, continuity of supervision over the return to work period was also beneficial. Continuity in supervision promoted a sense of confidence and security on the part of the worker in terms of support during return to work.

9.2.3 Organizational Practices

Franche and coworkers (Franche et al., 2005) conducted a systematic review of quantitative research on workplace-based return to work practices. These researchers examined the influence of early contact by employers, an offer of work accommodation, healthcare provider contact with the employer, ergonomic visits, return to work coordination, and supernumerary replacement (worker as an extra) on work disability duration, disability costs and quality of life. The review indicated strong evidence for reductions in disability duration through offers of accommodation and healthcare provider contact with the workplace with moderate evidence for early contact by the employer, ergonomic consultations, and return to work coordination on duration of disability. Moderate evidence was present relating these factors to quality of life. Insufficient evidence was present to support supernumerary replacement on any of the outcomes. Evidence of sustainability was limited for all of the practices on the outcomes.

Two workers in this study were involved in formal accommodation programs related to their heart disease. Phil received an offer of accommodation some six months following his event. He spent five months working in vehicle inspection and call centre work, which was followed by a direct return to the assembly line. He experienced significant difficulty following his return to
assembly line work. In this case, accommodation did little to prepare him for work back on the line. He expressed uncertainty and limited confidence about line work and wound up leaving the plant prematurely. While the offer of accommodation retained his attachment to work, its value was limited as part of the process of return to work.

Derek, on the other hand, received formal accommodation on the assembly line the form of alternate tasks and supernumerary replacement. He obtained this arrangement for return to work on his initiative and experienced a false start owing to a lack of organization at the plant. Once accommodation was in place, he was able to work his way back to work on the line in a gradual fashion. This form of accommodation was functional in allowing a return to work on his previous job and highlights the importance of return to work activities with some resemblance to previous activities and possessing the possibility of progressive return to previous work.

It is interesting to note that two other workers had permanent accommodation relating to other health problems that provided them with less demanding work. One, in particular, acknowledged that this facilitated his return to work with cardiac illness. This worker had significant impairments in stamina. Permanent accommodation may be necessary and valuable for workers in this position.

Another interesting aspect was that of the preference workers had for the use of seniority provisions to bid into more favourable jobs rather than accept accommodation based on medical restrictions. Tarasuk and Eakin (Tarasuk & Eakin, 1995) have identified the “discourse of abuse” that exists with compensable musculoskeletal injury, whereby workers feel that they have to continually justify their injury and “perform” their disability in relation to other “cheats” in the system to maintain their legitimacy.

Participants in this study described the stigmatizing effect of formal accommodation (described as placement) in branding the worker as a “slacker”, interested in using his or her health condition as an easy route to a less demanding job. Participants also believed that being on placement placed them in a precarious position. Accommodation was not a support that these workers preferred even though it could be of benefit to them.

In some ways the stigma attached to placement also acted as a “social norming” instrument that ensures that workers consider the consequence of negative relationships with coworkers in their
decision to request formal accommodation. Participants also identified that some of their fellow workers have a “tougher” skin and are able to deal with the negative reactions of coworkers to their placement situation.

In the present study, there was no evidence of formal employer contact during convalescence. Some workers reported contact from their supervisors and coworkers, but as they reported, this was not part of any formal system of communication. This lack of contact from the company was a point of contention for workers during their time off. Lack of communication created feelings of depersonalization and alienation from the company. Workers felt that the least the company could do was find out how they were doing. Based on these findings, it appears as if the company is missing an opportunity to express interest in disabled workers and possibly enable their earlier return to the workplace. The extent to which this lack of contact may dissuade workers from returning at all to the job is unclear from these data.

Similar to employer communication patterns, there was no evidence in the data of communication from external health care providers involved in the workers’ care. One worker returned with note for “light duties”, which had to be interpreted and modified by the occupational health physician in plant in order to make it feasible. However, once workers initiated the process of return to work, the Occupational Health Department was a major source of support for workers. This is consistent with both quantitative (Franche et al., 2005) and qualitative (MacEachen et al., 2006) systematic review findings indicating the value of health care provider occupational health involvement in the return to work process.

In the case of this study, occupational health provided workers with tangible support through physiological monitoring, responding to exacerbations of symptoms, and assistance in developing return to work programs. For instance, one participant with arrhythmia problems was cleared for return to work by his cardiologist but was sent back for further testing by the occupational health physician at the plant. Workers also reported support from occupational health professionals through reassurance regarding their course of recovery and through the provision of information on cardiac illness. Underlying these more tangible aspects of support was the reassuring presence of occupational health at the plant, providing the “real-time” possibility of dealing with any problems encountered. Another factor relating to the situated aspect of occupational health was its situated nature. Workers saw the occupational health
physician checking jobs on the line. It was also evident that workers in the study related well to
the nurses and felt that there was a reassuring empathy present in their interactions.

Thus, occupational health services acted as an important “buffer” with external medical services
and the workplace and the worker and work. Workers in the plant were fortunate to be able to
access such a resource. Workers that are unaware of this sort of support or don’t have
occupational health services in house may be disadvantaged. Particularly, workers in small and
medium workplaces without knowledgeable medical guidance and support might experience
greater difficulty in reintegrating to the workplace. Both would be interesting avenues for
further research in this area.

MacEachen and coworkers (2006) conducted a systematic review of the qualitative literature on
workplace-based return to work practices focusing on the “how to” aspects of the process
(MacEachen et al., 2006). The systematic review indicated the importance of practices that
promote that mutual trust and goodwill including: open, honest, considerate and consented
communication; good management-labour relations; and the recognition of the important social
aspects of modified work programs. The review identified the importance of considering of the
needs of supervisors and coworkers and identified the important role played by supervisors in the
return to work process. The review also indicated that the involvement of rehabilitation and
health care professionals could be valuable in the process.

In the present study, the importance of mutual trust and goodwill were apparent. Workers
acknowledged the importance of communication in the return to work process and bemoaned its
absence. Communication helped to decrease the uncertainty and precariousness of the process
and allay some of the fears of workers had about return to work. This dependence on
communication and relationship building underlines the perspective of return to work was a
“socially fragile” process, contingent upon the good will of participants. Important in this study
were aspects of reciprocity and familiarity in relationships. The practice of contracting out
supervision undermines these aspects of relationship and reduces the strength of the process. The
lack of coordination of return to work at the plant also reduced communication, created the
possibility for false starts, and left workers returning to jobs that were less than suitable for the
initial period back on the job. Workers were left largely to their own devices in getting back to
the workplace and negotiating conditions for return to work. For workers like Bill, Sean, Derek,
Phil, and Jim, their lonely struggle through the process was evident by the lack of any structured support.

Disability management needs to be keenly aware not only of formal structures in workplaces for accommodation but also the “soft side” of accommodation. Practitioners need to account for the quality and duration of work relationships in determining the degree of support that might be expected in the workplace. Whether return to work coordination support is available is also important to consider and practitioners may need to “beef up” communication efforts and aftercare activities in providing guidance to return to work programs. Again, education directed at supervisors about return to work and the tempering of production expectations as they return to work may be of value in this regard.

9.2.4 Benefits

While not elaborately discussed by participants, an important part of the work situation at the plant was the benefits workers enjoyed for disability as well as health care. Heart medications can be costly and may run approximately $250/month\(^6\) depending upon the number of medications. These workers had the benefit of a drug plan that covered these costs. Other sorts of treatment were also covered by extended benefits but ironically, unless provided by a physiotherapist; cardiac rehabilitation was not one of them. (Cardiac rehabilitation is funded by the Ontario Hospitals Insurance Plan in some communities)

Short and long-term disability benefits were also provided in the plant. At 60 percent of net earnings, these benefits were adequate for short-term sickness absence for participants without significant financial obligations. However, workers with families and mortgages experienced difficulty making ends meet. Financials stress was part of their convalescence from a life-threatening illness that has potential to be aggravated by stress.

A dimension that is not well addressed in the literature is whether how the nature of disabling illness or injury as it relates to sickness benefits influences return to work. In theory, all disabled workers should have the benefit of accommodation and assistance in return to work. Heart

\(^6\) Personal communication with M. Scanlon, Pharmacist
disease is a “non-compensable” disabling condition meaning that it is not covered by workers’ compensation benefits. As such the duty to accommodate and associated penalties included in Ontario workers’ compensation legislation do not apply to these workers.

The author’s clinical experience is that occupational rehabilitation and disability management practice for work-related injuries is better organized and focused than for other disabling illness. The “compensable” nature of musculoskeletal conditions creates a higher degree of accountability and financial responsibility on the part of employers that motivates the development of such programs. For example, the duty to accommodate is built into workers’ compensation policy in Ontario and legislation stresses the responsibility of employer-employee relations in the return to work process. As well, Workers’ Compensation Boards provide a focal structure for rehabilitation and return to work programs. The Workplace Safety and Insurance Board in Ontario has a division that concerns itself solely with return to work. Disability related to sickness absence is covered by a number of insurers rather than a single large carrier, diffusing the capacity for the industry to focus on return to work. Long-term disability carriers respond reactively to disability, waiting to respond until a worker has reached a state of chronicity, at which point disability may be too entrenched to reverse.

These factors create a structured disadvantage for workers disabled by cardiovascular illness and other non-compensable conditions. Phil, who felt disadvantaged owing to the non-compensability of his disabling illness, identified this. He indicated that workers with work-related injuries were preferentially accommodated to the point of being taxied to work from some distance, only to sit and read the paper at work. This study suggests that further research may be valuable and informative to this aspect of disability management in the Canadian context.

9.3 Medical and Cardiac Rehabilitation Influence

Previous reviews have stressed the importance of physician involvement and communication between physicians and employers (Dafoe et al., 1999; Gutmann et al., 1995) in the return to work process. In its guidelines for timely return to work, the Ontario Medical Association encourages physician/employer interaction and physician involvement during the return to work process (Reynolds et al., 2006).
However, there are pragmatic issues to consider as well. Physician understanding of the demands of the work in the plant and policies and practices relating to return to work may limit their capacity for involvement. For example, a participant in a light, high control job was provided with recommendations for “light duties” in spite of minimal disease impact. Likewise a worker with significant impairments and functional limitations was provided with a recommendation for light duties that was not workable in the plant setting. Physicians simply may not have the skill set to evaluate job demands in relation to functional limitations to determine appropriate work activities. In addition, a number of the participants in this study did not have a general practitioner or were relying on care by a number of different physicians at walk-in clinics, thus limiting the possibility of involvement. Further, direct physician involvement simply may not be realistic given the constraints on physician time and the lack of reimbursement for involvement in the return to work process. Having said this, systems should be structured so that these impediments do not become a constraint in the return to work process.

In uncomplicated cases of MI return to work can be accelerated through early exercise testing, consultation and advice, without evidence of increased risk (Dennis et al., 1988). Ironically, two workers in this study with uncomplicated MI were prevented (by their cardiologist) in early attempts to return to work owing to wait times for graded exercise testing. It would be interesting and valuable to determine the extent to which wait times influence return to work and examine costs to the individual as well as benefit systems.

The influence of cardiac rehabilitation programs played a minor and more peripheral role in the experience of these workers. Cardiac rehabilitation was identified by only one worker in accelerating return to work and was not credited as a determining factor by that worker. One can begin to understand this lesser role through the influences on return to work described in this study. Exercise and lifestyle change were not strong determinants of return to work endorsed by these workers. Rather, the critical factors relating to return to work experience were situated in the workplace both from a personal perspective in adopting changes in mindset and from a social and structural perspective through the importance of work structure, relationships and provisions for accommodation. None of the workers reported involvement of the cardiac rehabilitation programs in their return to work either by communicating with the plant physician or making recommendations around return to work.
For cardiac rehabilitation programs to have relevance in return to work, as Mital and Shrey (Mital et al., 2000)suggest there needs to be engagement with work and the workplace. In order to accomplish this, programs need to gain an understanding of the perspective of workers and the contextual influences shaping possibilities for return to work among workers.

It may be that traditional cardiac rehabilitation programs are not the vehicles to advance return to work among workers disabled by cardiac illness. Rehabilitation programs may be better to maintain their focus on promoting exercise and health behaviour change. Occupational rehabilitation programs specialize in connecting rehabilitation to work and have expertise related to the workplace. These programs have proven value in decreasing disability in relation to traditional, clinically focused physiotherapy programs. The use of such programs in the cardiac population has not been well-researched and warrant further attention.

9.4 Family Support

Higher levels of perceived social support from family and friends have been related to return to work in cohort studies (Boudrez et al., 1994; Soejima et al., 1999). The present study indicated little direct involvement for the most part in return to work. Spouses and families provided support; however, it was more peripheral to the return to work process and focused on assistance with activities around the home. This supports my preliminary work, which found that reports of supportive employers was more strongly related to return to work and reported readiness to return to work than either support from physicians or families (O'Hagan, Thomas, & Franche, 2004a). The findings of this study shed some light on why this is the case.

Participants enacted return to work, sometimes out of necessity and sometimes out of a desire to return to the workplace. Apart from the case of Bill, whose wife suggested that return to work would be a positive thing, none of the other workers reported such involvement in the decision-making process. Once the decision was made to return to work, it was the participants who were faced with the task of reintegrating into the workplace. Once inside the plant gates, the critical relationships and sources of support were with supervisors and coworkers. As indicated above, supervisors played a major role in supporting return to work programs and coworkers could make things easier or more difficult. The involvement of others, while perhaps lending moral support was really more peripheral to the process - return to work was really about the
workplace. This may differ in workers deciding not to return to work insofar as a spouse may have more influence in leaning the worker in that direction.

9.5 Return to Work Trajectories

How did these influences on the process of return to work shape the experience of participants? This portion of the discussion will draw the influences described above together in shaping the various return to work trajectories observed in the study.

Return to work trajectories are instructive to examine as prototypes of the paths and outcomes possible in return to work. Trajectories present in the sample varied but might be categorized in three fashions. Trajectories were characterized by: direct return to regular duties with no stated limitations such as that of Pat, Jeff, Tony and Steve; return to regular work duties with mild impairment that resolved over time (Bill, Frank, Les); return to work with persisting impairments resulting in graduated return (Derek) or time on and off (Jim). This last trajectory had two possible outcomes. In the long term, workers may “tough it out” returning to the assembly line with fatigue, chest pain, and reduced work capacity (Sean) or, if the opportunity were present, withdraw from work (Stan) or seek alternate employment (Phil).

These trajectories were shaped in different ways through the influences identified in the study. In the first instance, participants represented cardiac illness as a temporary, transient event requiring little further attention and as little time away from work as possible. In this trajectory, medical practitioners may impose disability as a matter of “due diligence” and workers may actually resist to medical advice to remain off work. Work modifications and interventions are not regarded as important and may be regarded as superfluous. Emotional support from supervisors and coworkers is appreciated, but not critical in the return to work process.

In the second instance, participants saw cardiac illness as perhaps more significant in terms of a threat to well-being. Return to work may be more tentative with diagnostic reassurance or rehabilitative support valuable prior to return to work. For workers with gradually diminishing impairments and functional limitations, “front end” support in the form of temporary assistance was valuable in the return to work process. These workers appreciated the relief of a temporary “run in” period to acclimatize to the workplace, but did not require the significant extended support of workers with more severe illness experience. It is possible for cardiac rehabilitation to
accelerate return to work in these workers; however, it is not a necessary condition for return to work. These workers may benefit more from workplace-based initiatives focused on cardiovascular health and self-regulatory strategies, including strategies to maintain health behaviours following return to work. Workers in the study suggested workplace support in terms of information and sharing of experience as a means to enable adaptation. These workers and any others suffering from disability beyond immediate convalescence would benefit from contact from the employer to demonstrate concern about their health and reaffirm their value as an employee (provided this is the case). Results of this study indicate that in this type of environment, contact and concern is an essential part of the reciprocal nature of worker/employer interaction that binds this relationship.

For workers in the third group, cardiac illness was viewed as having greater consequence in terms of its impact and potential for future problems. Rehabilitative intervention can be a first step in restoring function capacity; however, graduated return to work and longer-term accommodation could be an important part of the return to work process. Whether these workers elect to remain on the job depends upon their options for longer-term accommodation, proximity to retirement, and alternate employment options available. The nature of work and influence of work relationships are critical factors for these workers. Work arrangements that do not provide “wiggle room” are not favourable for sustainable return to work, quality of work life, and work/life balance. Positive work relationships enhance the return to work experience and are also important for ongoing quality of work life.

Rehabilitation has the potential for greatest impact on this group of workers. In particular, workers facing the need to stay at work in the long term could benefit from rehabilitation programs that: 1) focus on return to work as a primary outcome; 2) promote physical capacity and efficacy building through activation with direct application to the workplace; 3) encourage the development of adaptive cognitive and behavioural strategies for return to work; 4) negotiate return to work conditions and encourage ergonomic changes to increase the potential for successful work reintegration; and 5) utilize the workplace as a therapeutic milieu.

These programs should include psychoeducation and counseling with components of cognitive adaptation and behavioural compensation related to the work environment. Programs should consider a staged approach initially focused on behavioural activation and psychoeducational
intervention. Return to work coordination should be integrated into the program, with workplace contact and negotiation around accommodation and graduated return to work.

### 9.6 Relationship to Theory

As suggested by the person-environment fit models, the return to work experience of workers in this study was a function of the dynamic interaction between the personal characteristics of the individual (capacities, goals, beliefs) and the characteristics of the environment (demands, opportunities, resources) (Altman, 2001). Specifically, capacities and beliefs as individual representations of illness and work and goals relating to work and retirement interacted with demand characteristics of work, opportunities for accommodation or selection and resources such as relationships and occupational health support to determine the quality of reintegration the worker experienced as a function of work role quality and work/life balance.

As suggested by the Disability Prevention Model, factors in the workplace were layered out from work to immediate work relationships to larger organization practices (Loisel et al., 2001). Compensation and health care systems were less evident influences, although the emphasis in this study on individual worker experience perhaps made these levels less accessible. However, the lack of coordinated health care, rehabilitation and compensation structures for these workers makes the absence in the data more understandable.

Consistent with the Disability Creation Process Model, reintegration involved the dynamic interaction between the person and the environment. For example, personal capacities interacted with the unyielding demand of the assembly line to produce job performance. In this sense, work reintegration was “created” out of the interaction between these factors as opposed to being a function of either individual or environmental factors (Fougeyrollas & Beauregard, 2001). This study adds perspective on work role quality, which is considered to a lesser extent in disability models.

In addition to relationships with larger frameworks, the results of the study were congruent with a number of extant theories of individual adaptation as well as models characterizing work. At the level of the individual, this study demonstrated the influence of cognitive adaptation through changes in mindset, finding meaning, social comparison and minimization. Taylor (Taylor, 1983) has described a theory of cognitive adaptation to illness, positing that illness or injury
results in a disruption of the individual’s sense of coherence; self esteem and control resulting in a state of vulnerability. In order to adapt, the individual engages in cognitive processing, which includes attempts to find meaning of what happened, social comparison with those less well-off (downward social comparison) and minimization of the threat posed by the illness/injury to self (denial of threat or positive unrealistic thinking). This study extends the application of this theory into situations where health problems impact on functional abilities in particular contexts. In this case, context influenced cognitive adaptation by restricting the scope of behavioural response available, this demanding cognitive efforts to adapt. It would be interesting to determine the extent to which cognitive adaptation might be protective for workers returning to high strain jobs.

This study also demonstrated how participants self-regulated in the face of health problems in a more general sense. Leventhal, Cameron and Leventhal (Leventhal et al., 2003) describe the Commonsense Model of Self-regulation. In this model, individuals respond to illness experience based on their representations of illness. Representations of illness are the individual’s perception and interpretation of injury or disease in the context of their world experience and worldview (Coutu et al., 2007). Leventhal’s model describes two aspects of representations; representations of danger, which are cognitive and shape efforts to cope with the problem; and representations of fear, which shape emotional coping responses. Both danger and fear representations are processed in a parallel fashion balancing actions focused on the illness and actions focused on the emotional fallout from the illness. Cognitive representations may include identity, which links somatic symptoms to the abstract diagnosis or label; perceptions of control (personal action or treatment); consequences (personal, financial, and social); causal attributions, and the likely timeline of illness (acute, chronic, recurrent). Through their actions on coping cognitions, these representations then influence whether coping efforts will be enacted, which strategies will be used, at what level of effort and how long they will persist (Leventhal et al., 2003).

This study supports the Common Sense Model in terms of the functional significance of certain representations such as identity, timeline, and control on efforts to cope. However, while recognizing the importance of culture and context in shaping how representations “play out” in a situated fashion, the model is limited in its characterization of the interactive component between person and situation. For example, personal control has particular limitations in a context where
the nature of work prevents the exercise of any degree of control over work. Further theorizing would be interesting and valuable to develop the explanatory framework of the model in relation to work and other contexts in which illness and function interact.

Illness representations may be influenced by somatically mediated internal stimuli and external stimuli such as diagnostic labelling, information from health practitioners, laypersons, and other socially mediated information sources. In this study, medical input had a significant influence on identity and unexplained chest pain. However, the interaction between danger and fear representations and how they combine to influence coping response warrants further development.

This study described behavioural coping efforts in terms of selection of work activities in relation to functional loss as well as efforts to compensate for loss and optimize function. Baltes (Baltes, 1997) has described a developmental model of ageing by which individuals aspire to maximize life experience through maximizing gains and minimizing losses in function. Individuals establish goals and select life activities both as a function of life aspirations (elective goals) and declines in function (loss-based goals). When faced with the declines of ageing and health, selection determines activities that will act to maximize life experience as a function of where the individual is situated in terms of the lifespan. Optimizing and compensatory strategies enable the attainment of selected activities.

I would contend that the developmental aspect of return to work highlighted in this dissertation warrants more attention in occupational rehabilitation and disability management. This study provides some understanding of how workers respond to health problems in the context of career stage. Workers pass through stages of work life from early career stages focused on establishing a career path, to building and consolidating a career to maintenance and eventual withdrawal (Shanfield, 1990). In self-regulating their path through work and health problems, career stage played a role in the mix of strategies deployed, whether it be loss-based selection into an alternate job, optimization of function, or compensation for functional declines through attempts to improve efficiency on the job. An interesting focus for future research would be to examine the relative role of selection, optimization, and compensation in the efforts of these workers to adapt to the challenges. As with the Common Sense Model, Selection, Optimization and Compensation does not account for the interaction of these factors with context. Further
development of this model in relation to context would also be interesting and valuable.

The Job Strain model developed by Karasek (Karasek, 1979) and further elaborated to include aspects of social support (Kristensen, 1995) has been researched extensively in relation to cardiovascular disease outcomes. Work that is characterized by high psychological demands and low possibilities for control by the worker in terms of the application of skill and decisions around the way work is performed have been related to higher rates of initial heart disease (Kristensen, 1996) and recurrence of heart disease (Aboa-Eboule et al., 2007). An extended model including the influence of social support (Demand-Control-Support or Isostrain Model) as a moderating factor on disease outcome has received less support (Kristensen, 1995). In terms of return to work experience and reintegration to the workplace, features of demand, control, and support were present in this study.

This model might best relate to the “Can I or can’t I?” aspect of return to work and remaining on the job. On top of the high demand environment created by rate making, surveillance and monitoring, a lack of “wiggle room” or discretion on production jobs made return to work more difficult. Work relationships and supports in the workplace such as occupational health held the possibilities of buffer, but not negating this influence. It would be interesting to see if these relationships proved to be significant from a quantitative standpoint. It would also be interesting to extend research into other high strain environments where support may play a role such as management positions.

Effort/reward balance is an alternate conceptualization of strain that has demonstrated relationship to the development of cardiovascular disease (Seigrist, 2000). Effort/reward balance conceptualizes job strain as occurring when the worker’s perception of effort put into is not reciprocated in terms of monetary, personal or social reward. The imbalance is compounded by a sense of over commitment on the part of the worker. Thus strain resides both in the job as well as the worker (Seigrist, 2000). Effort/reward balance has demonstrated similar relationships to the development of cardiovascular disease as the Job Strain model (Bosma et al., 1998).

In the case of this study, Effort/reward balance might be conceptualized in terms of the “should I or should not I” aspect of return to work. In other words, are the rewards provided by work, worth the efforts anticipated by workers to remain on the job in the face of ongoing impairment or potential risk to their health? Again, this characterization of work warrants further attention.
from a research standpoint. It would be interesting and valuable to research the interaction between these two models in the process of return to work.

The Stage Model of Disability as described by Frank (Frank et al., 1996) posits that as disability progresses from a more acute to a more chronic state, the influence of biomedical factors diminish and psychosocial factors come to predominate. In this study, this model of staging was evident; however, interacted with lifespan influences to affect return to work. For instance, participants such as Derek, who had a number of years to retirement and ongoing commitments to support his family, persisted with return to work efforts even after months of disability. While experiencing uncertainties, Derek maintained his attachment to his role as a worker and remained motivated to get back on the job. Stan and Bill all experienced longer term disability but were also nearing retirement and without the obligations of younger workers for supporting families. Both indicated that their periods of disability had provided an opportunity to “practice retirement” and both identified less with their role as a worker. Hence, lifespan influences may interact with time away from work to influence the decision to return or remain on the job.

9.7 Framework for Workplace Reintegration

As suggested in the review of the literature, uni-disciplinary perspectives on work disability are both limited and limiting. Looking at phenomena such as work disability and reintegration simply from a biomedical, psychological or social perspective not only limits understandings to that perspective but also limits the understanding of the places of intersection between paradigms. For example, how do individual perspectives of cardiovascular illness interact with the opportunities offered by context to influence work reintegration and the adaptive process? The present study supports this contention in identifying the multiple influences on work reintegration and the interactions between the two. Both personal and social factors were important perspectives to understand, although they played varying roles in certain situations. As expressed in this study, work characteristics played a strong role in reintegration, whereas exercise played a weaker role. Both were present, however the extent of their influence would require quantitative approach, using a representative sample and standardized measures.

Considering the aspects of individual agency and structural influences, a transdisciplinary perceptive is required, recognizing the role of psychological and social influences on the
biological “reality” of disease. The model below identifies a framework for study and practice in work reintegration that can inform research and practice.

Figure 4. Framework for workplace reintegration

These data demonstrate the dynamic nature of reintegration to the workplace. The process of includes aspects of self-regulation. However, efforts to self-regulate are nested in and heavily influenced by the structures of work and the organization. This framework provides an understanding of how workers “get by” in the work context described. It is not formulaic or prescriptive, but provides a schema, relating concepts that were important in readjustment of study participants. Although directionality is indicated, recursive influences may exist between factors.
The onset of heart disease causes a range of disruption for the individual, which are represented in various dimensions such as severity and personal control. For workers in this setting, the primary goal or referent was to be able to work to retirement. Work role quality and work/life balance were indicators against which the impacts of cardiac illness were gauged. In response to this, workers judged the balance between the effort they perceived necessary to remain in the workplace and the possible gains from remaining at work. Their place in the lifespan, financial considerations, as well as their representations of work influence this decision point.

If the balance was negative, workers moved out of the workplace for alternate employment, disability or early retirement dependent upon the alternatives available. If the balance was positive, workers decided to remain in the workplace. Those workers who remain in the workplace deploy coping strategies in an attempt to compensate for functional limitations and reestablishing a sense of control over their circumstance. These efforts are shaped by the structure of work, work relationships, and the availability of supports in the workplace. The possibilities for control and compensation depend upon the degree of “wiggle room” available in the job and the potential for accommodation. These conditions are governed in the workplace by the collective agreement. The ability to “get by” is constantly re-evaluated in terms of work role quality and work/life balance in relation to effort and reward.

These processes fall into two broad spheres of influence; personal and workplace. The personal sphere is dominated by agency and individual decision making, although this does not operate independently of workplace influences. The workplace sphere is dominated by contextual influences. The entire process falls into the larger realm of the social, economic, and political sphere. This sphere includes “extralocal” influences such as the family, medical practitioners and the medical system, the larger influences such as the state of the industry and market influences, and trade agreements and regulations.

This framework suggests a number of implications for disability management, rehabilitation, and organizational practice:

1. Reintegration to the workplace is very much a function of contextual factors in the workplace. For workers with ongoing impairments and/or workers attempting to reacclimatize to work, linear work arrangements with regimented time constraints are not conducive to work role quality and sustainable return to work. Further, considering the
elevated risk of chronic exposure to high strain work (Aboa-Eboule et al., 2007), these workers may be placing themselves in jeopardy in terms of their health. Older workers may have options for retirement that will mitigate this problem, but for younger workers with financial obligation the prospect of “getting along” long term is a daunting and risky proposition. Engineering should consider the range of human function, including workers with disabling impairments. Extending from this, accommodation practices need to address not only the biomechanical risk factors but psychophysical ones as well. Alternative arrangements such as group work designs and other measures to restore an aspect of the “craft” element to work would operate in these workers best interest.

Accommodation practices should also consider the social aspect and potential stigmatizing effects of practices such as placement. Accommodation practices that put the disabled worker “on display” during the process increase the view of disabled workers as different. Modified work assignments that are viewed as non-productive by coworkers increase the perception that disabled workers are “playing the system’ and the discourse of abuse, as described by Tarasuk and Eakin (Tarasuk & Eakin, 1995), continues, perpetuating stigma. Accommodation practices need to be cognizant of stigma as a factor that can reduce the benefit provided by these practices.

2. Work relationships are an important aspect of the immediate social environment for workers coming back on the job. High quality, cohesive and continuous work relationships favour worker reintegration. Organizational practices that foster positive work relationships will be positive for workers coming back to the job. For example, contracting supervision erodes the familiarity and continuity for workers during the return to work process. Likewise, coercive methods of rate monitoring can be a source of dissention between workers returning to the job and their coworkers.

It seems that there is also a need for ergonomics intervention focused on examining the ramifications of work design from a social perspective. For example, moving to work organization based on small groups changes accountability structure among workers and potentially the cohesion among workers. This has particular implications for workers returning following disabling illness who may require additional support and accommodation. Small group monitoring of work output might create greater
understanding between and cohesion among workers; however balances may need to be introduced to offset the losses in productivity caused by the reintegrating worker, because pay for performance arrangements would not work in favour of the reintegrating worker.

3. Relating to the point above, and as previous research has indicated (MacEachen et al., 2006), supervisors are an important part of this process. Supervisors should be equipped with the understanding and supports necessary to competently fulfill their role in the reintegration process. This may involve education relating to ergonomics, accommodation, transitional work for particular impairments, but may also include strategies for managing worker relations and the provision of support for maintaining production during transitional return to work programs.

4. Medical support in the workplace was valuable for workers coming back on the job. Occupational health provided a buffer between the worker’s involvement in the health care system, which was regarded as not particularly interested or informed about return to work and the contingencies of the workplace. In spite of best intentions, physicians have limited time and capability in this regard. Consistent with previous research (Franche et al., 2005), the involvement of a professional versed in the complexities of return to work (resident or contract) would be beneficial through the process. This has specific implications for rehabilitation practice:

   a. Because of the strong contextual influence on RTW experience, and the complexities of the system, the opportunity exists for rehabilitative personnel to assist in this process. Developing and negotiating graduated RTW programs based on the worker’s capacities and job characteristics are a valuable and natural extension of information gained in rehabilitation programs. Having a professional coordinating stakeholder involvement and ensuring that everyone is on the same page could prevent false starts and inappropriate work assignments. Lastly, support is a very important aspect of RTW. Particularly in workplaces lacking coordination or occupational health, rehabilitation involvement could provide workers with tangible support as well as the sense that someone was “in their corner” during the process.
b. In the case of large workplaces, occupational health or human resource personnel might readily perform this role internally. Small workplaces present a greater challenge. Present OHIP funding for cardiac rehabilitation does not extend to out of clinic involvement such as this. Larger programs may have the capacity to develop specialization within the practice relating to return to work; however this may be difficult for smaller programs. A module developed to support clinician efforts may be of value when dealing with return to work issues.

5. Because of the later onset of cardiovascular illness as a disabling condition, decision-making around return to work and the possibilities for “getting by” is weighed in the temporal context of the lifespan. The “should I or should not I” influence of effort and reward is particularly relevant for these workers. The interest in enacting and persevering may vary substantially depending upon where the worker is situated in the lifespan. This may create tensions for stakeholders in disability benefit systems, who typically do not consider functional perspectives in the process and may regard lifespan influences on coping as irrelevant. Again, a coordination and communication function may play an important role in developing understanding around a particular worker’s circumstance and the barriers and facilitators to return to work.

6. Previous research and this study support the conclusion that resumption of role function is not just about “air exchange”. While workers may benefit from specific physical preparation in the clinic setting, work rehabilitation needs to be tied to factors other than physical work demands. Efforts to adapt depend upon the representations workers have of their illness and work, the coping methods available in their workplace and the degree of formal and informal support provided. A number of implications stem from this finding:

a. It is important for professionals to understand how the worker construes his or her illness. Illness representations need to be adequately self-protective, at the same time avoiding excessive vigilance to symptoms. For instance, it is important for patients to be able to distinguish forms of chest pain including angina and chest wall pain that may be anxiety driven from that of myocardial infarction.
b. Education about signs and symptoms is important but patients need also to be able to develop a functional representation that links their bodily sensations to the abstract “diagnosis” that has been provided. This is important for developing functional ways of responding to symptoms.

c. Owing to the iterative nature of body states and emotions, it is also important for programs to consider approaches focusing on improving body and emotional awareness. Mindfulness and biofeedback training are modalities that have been used successfully in other conditions and could be beneficial in tying emotional and somatic states together. Anxiety, in particular, can be problematic in manifesting chest symptoms that might be construed as coming from a cardiac origin. Diagnostic identification of somatic symptoms of psychogenic origin would be helpful in clarifying chest symptoms for patients and directing them towards appropriate intervention. On the other hand, mind/body intervention themselves can provide patients with the tools to become more aware of the connection between their body and emotional state and the relation between the two. In this sense, intervention without diagnostic labeling may provide more functional representations of ongoing symptoms for patients and provide them with the tools to manage these symptoms at the same time.

d. Beyond building physical capacity, programs should also help workers develop practical coping strategies to compensate for ongoing functional limitations, particularly in the face of production demands. The study identified mindset as particularly important in this regard and perhaps one not as often advocated in existing interventions.

e. Professionals and programs need to gain a deep understanding of the context in which efforts to cope occurs, including that of the lifespan, work relationships, and how return to work is handled in the work setting. Extending from this, it is important to be able to provide solutions in situations where organizational support has been identified as lacking.

7. The framework for workplace reintegration supports the importance of an interdisciplinary perspective on work disability in this group and the need for
interdisciplinary intervention in improving return to work experience for these workers. For workers with persistent disability, intervention needs to include specific modalities to engage support at the workplace and transition the worker back to the job in a safe and sustainable fashion. This requires a very different perspective and skill set than the biomedical focus on cardiac function and risk management. Workers need to be provided with a combination of medical reassurance in relation to their disease with clinical focused on restoration of physical and psychological work function and, most importantly, workplace intervention focused on negotiating transitional return to work, identifying necessary ergonomic changes, and supporting and trouble shooting through the return to work process. For these workers, a collaborative team including medicine, psychology, kinesiology, ergonomics, and occupational therapy would provide the skills and support necessary for work reintegration. Similar approaches have been successful in musculoskeletal conditions with similar complexity in terms of psychosocial influence (Loisel et al., 1997).

8. This framework also suggests the need, previously identified by other authors (Loisel et al., 2001; Shrey & Mital, 2000), for a paradigm shift in how work disability is conceptualized. As this framework elaborates, cardiac illness (while the disabling agent) plays only a part in the process of adaptation. Disability is a product of the interaction between the worker and his or her environment.

9. The most significant contribution of this theory is the integration of existing concepts such as effort and reward and job strain into a unifying framework. Specific mediating and moderating relationships could be examined through quantitative analysis. For example, control may mediate the relationship between coping and role quality. Intervention directed at supervisors may help to moderate coping responses on the part of workers. Integrating new and existing theory suggests possibilities for research and theoretically-based interventions aimed at more fully understanding and assisting with worker reintegration following disabling cardiac illness and potentially other disabling illness.

10. The findings of this study and the framework proposed highlights the need to examine adjustment to the workplace in a refined fashion that allows for the differentiation of
outcomes within workers who are on either side of the return to work thresholds. One of the major findings of this study was the range of adjustment that existed among workers who had all returned to work. Franche and coworkers have developed such a measure for musculoskeletal injury (Franche, Corbiere, Lee, Breslin, & Hepburn, 2007). My preliminary research examining factors relating to work adjustment includes the development of a similar scale for cardiac patients (O'Hagan, Thomas, & Franche, 2004b). This scale will permit the identification of work readiness and adjustment as well as tapping into perceptions of control and balance between the cost and gain (or effort and reward) in the return to work process; two constructs that are central to the framework described.

9.8 Strengths and Limitations

Morrow (Morrow, 2005) identifies four dimensions of “transparadigmatic” criteria for quality in qualitative research. Using her framework, I will discuss aspects of data adequacy, adequacy of interpretation, and social validity in relation to this study. In addition to these broad perspectives on quality, Morrow (Morrow, 2005) identifies aspects of rigour associated with particular paradigms. As this study’s is grounded in critical realism, which recognizes the constructed nature of social reality yet asserts that some explanations are “better” than others, I will refer to relevant dimensions of rigour that straddle constructivist and post-positivist thought.

9.8.1 Data Adequacy

Adequacy of data refers to the adequacy of sampling in relation to the object of inquiry, adequate building of data during interviews, and adequacy of data forms as evidence (Morrow, 2005). Adequacy of data should also include discrepant case analysis and the search for negative cases (Morrow, 2005).

In relation to the object of inquiry, the nature of sampling provided access to a range of worker experience within the specific context of the plant. Participants varied in terms of their illness and disability experience, work demands, work relationships, job tenure, and intervention exposure among other factors. Variability enhanced comparison; however analysis was challenging in accounting for the broad range of experience in the sample. In the end, I believe
that the sample provided a nuanced picture of return to work experience in autoworkers disabled by cardiac illness.

The sample was also limited in a number of respects. All workers in the study had returned to work with some degree of success. Thus, the study provided a story of the return to work side of the disability boundary and the experience of workers not returning to work was not included. This perspective warrants similar attention, however was not possible to include in this study. Within the study, sampling focused on hourly wage workers and did not include salaried personnel (although I was contacted by two supervisory personnel interested in participating). The experience of these workers may differ significantly as the data from this study suggests that supervisors are caught between meeting the production demands of the company and managing the workforce. This may be an interesting avenue for further study.

While context was considered in the study, I did not include the views of multiple stakeholders including supervisory personnel, the union, and the company. I had initially intended on including this perspective; however as the study design progressed, it became apparent that the inclusion of additional data would detract from the particular attention required by the worker data. Providing a rich account of their experience was my initial focus. Not including the perspectives from other stakeholders perhaps limits the explanatory capacity of this study; however, future research can use the present findings as a reference for the perspectives of other stakeholders.

Interviews provided depth in worker experience during the return to work process that would have been difficult to obtain otherwise. During the interviews, it was sometimes difficult to get through the consent as workers were anxious to tell their story. A semi-structured format was developed to guide the interviews and provide prompts for topic coverage. However, interviews often began with a spontaneous account by the participant of the particular aspect of his situation that was most salient to him. For some, it was his heart problems and how they emerged. For others, interviews began with difficulties relating directly to their work situation. In these cases, the interview form was basically a check to review the topic areas covered. Not all workers engaged spontaneously and the structure of the interview was valuable in providing direction for those who did not open up immediately. Many workers also offered their medical file information and two of them showed me large files of information kept to ensure a paper trail,
having experienced difficulty with compensation and/or insurance claims previously. The temptation was to study these files in detail, as they were no doubt rich in information; however this was set aside as the study focus and ethical approval did not extend into file review. I was able however to gain some understanding of the onerous process of forms and approvals necessary to claim sick benefits through seeing the volume of material in these files.

Longitudinal follow-up was a valuable aspect of data building in this study, enhancing data quality. Polkinghorne (Polkinghorne, 2007) indicates the value of longitudinal interviews in building data adequacy through enhancing reflection on the part of participants, enhancing rapport building (therefore disclosure), and permitting the development of the case over time. During follow-up, participants in the study would reflect on their experience and past response when responding to follow-up questions. Les, for example, reflected on the conflictual aspects of his return to work as potentially harmful to his health. Steve indicated in hindsight that his emotional response was more significant than he initially described. The strategy of feeding back their case to the participant also allowed them to reflect on the understanding I gained from the previous encounters and respond to it, thereby enhancing the richness of the data.

The sampling strategy also allowed for longitudinal sampling of experience with workers in various stages of the process. This enabled me to gather perspectives of workers prior to return to work, through the return to work process, right up to longer-term adaptation to the workplace. The disadvantage of this strategy was its ability to saturate data along the extent of the timeframe of experience.

The uncertainty around the plant’s future was also a challenge for data building and analysis. It is difficult to determine how the uncertainty may have been reflected in the interview data. Certainly, there were early mentions of difficulties by September 2007 but the workers tended to put off concerns about the plant’s future. Workers indicated that there had been hard times before and because of the plant’s record as a top producer, would continue to operate. With concerns mounting in November 2007, workers expressed the likelihood of layoff. However, most felt they had sufficient seniority to make it through unscathed. In April 2008, the company announced the closure of the plant. One of the participants was involved in the protests, indicating that the stress of job loss had thrown him off his walking program and diet, and he had been smoking more.
While the uncertainty in the plant may have influenced the form of the data, I am not sure that it would influence its adequacy. Instability is a common state in workplaces and, while limiting transferability of findings, may add to the credibility of findings. However, the layoffs in the Spring of 2008 constricted the timeframe that follow-up could be undertaken and limited a longer range perspective on return to work.

Throughout the analysis, discrepant and negative cases were sought to ensure that all dimensions of concepts and themes were developed. In developing the theme of selection for example, Phil and Stan did not fit into the seniority-based selection strategy of other workers in the plant; however, their cases exemplified how selection could be extended to selecting out of work at the plant.

Interviews yielded saturation of themes related to return to work by approximately the 10th case. This included some follow-up interviews with participants, which, as indicated above, increased the richness of data and provided depth to the themes. The major themes relating to “mindset”, “making rate” and “selection” emerged early and were apparent throughout the interviews. Aspects of work relationships took longer to saturate with workers sharing different views on that theme. As discussed above, talk about the state of the industry grew over the course of the study as the uncertainty progressed. Guest and coworkers (Guest, Bunce, & Johnson, 2006) studied thematic development and deployment over the course of qualitative case sampling to attempt to determine at what point saturation of data was reached. These researchers observed that 92% of “codes” were developed in the initial 12 (of 60 total interviews) and the deployment of these codes to the data remained consistent in terms of distribution across remaining interviews. While largely consistent with these findings, saturation would be influenced by the homogeneity of the sample and context as well as the object of inquiry. Were the study to have included workers who had not return to the job or workers at a broad range of employment settings, the point of saturation may have been different. Likewise, if other foci such as health behaviours and return to work would have been of interest, saturation may not have been achieved.

I decided to include results from quantitative descriptive measures for several reasons. I believe these measures enhanced data adequacy by eliciting participant response to a broad range of health-related quality of life and work limitation dimensions. These dimensions may not be
attended to or not necessarily be apparent in the interview but may provide important descriptive information as I believe they did in the case of emotional impact. I believe these measures enabled the constant comparison of the qualitative analysis through the examination of cases along health and work limitation dimensions. Lastly, I believe that the quantitative measures provided a source of triangulation in the data, adding a reference point for interview data for comparison.

9.8.2 Adequacy of Interpretation

Adequacy of interpretation refers to the systematic rigour through which thematic development was achieved, the interpretation of findings and the representation of those findings (Morrow, 2005). Analysis, interpretation, and representation of data were not distinct stages in the research process. Rather, analysis was initiated from the initial interviews onward and interpretation and representation followed concurrently. I will address these aspects separately to maintain coherence.

As indicated in the methods section, the analysis of data began immediately following the interview, where I dictated field notes with initial impressions and ideas. I would continue to dictate these notes as thoughts emerged. Field notes began to taper when I started to hear redundancy in the stories, which gave me an indication that saturation was occurring. The analysis itself involved four reads of each interview. Case summaries aided in analysis and interpretation by maintaining the coherence of the case. The case summaries were initially more of an historical account of the participant’s experience but came to be shaped through the lens of the themes. I believe this added to rigour by “testing” the themes within the cases and maintaining coherence in representation. Coding was initially open. Relational aspects were added partly through examination of links between the themes and partly through developing the representation of the themes and coming to see their relational aspects.

Interpretation likewise began to emerge through the analysis and representation of the data. Examining themes relating to individual efforts to adapt triggered my previous study of the Selection, Compensation, and Optimization model of adaptive aging. Presentations were a good source of input and insight as representing the data visually and verbally involved actively working with the data, responding to questions, and receiving input from other researchers.
Early presentations of the data to student research groups, a writing class that I was involved in and two conference presentations of the data shaped the interpretation and the form that the representation of the data would take.

Representation of the vast and varied nature of the data was a challenge. I tried to adhere to the tenets of “thick, rich description” to enhance the trustworthiness of my interpretation. The product of the analysis was separated from discussion of the data as much as possible as I wished to provide the reader with an opportunity to examine the data him or herself as there are no doubt messages that I have missed in the analysis. I also attempted to go beyond a “listing of themes” to the development of a model of adaptation and the inclusion of case-based analysis to maintain coherence for the reader.

I analysed each case with similar rigour and considered all perspectives in developing the thematic framework in the study. I attempted to represent the findings in a way that reflected this balanced analysis across cases. However, participants who encountered difficulties may have been more apparent in the data presented. Representing the themes clearly and concisely was challenging without looking at cases that were at the “boundary conditions”; that is where the participant’s illness experience was most greatly at odds with aspects of return to work. With the extent of data present, it is impossible to provide a total representation of all of the cases. The case study section of the results is valuable in providing a representation of the range of cases possible in terms of experience.

It would have been possible to take other analytic perspectives with the data. Aspects of gender and class were not focused on in my analysis, but were no doubt present as influences. The plant was a predominantly masculine, blue collar place. Participants’ response to illness and their approach to reintegration in the workplace, as well as the quality of how they related to each other and to me as a researcher were “streaked” with aspects of gender and class. For example, overt emotional response to illness and the stresses of return to work in participants seemed limited; although my referent for this assertion is my own personal and professional experience as there were no females involved in the study.

On the other hand, it was evident that cardiac illness had the effect of “opening” up these blue collar “guys” to reflecting on their lives in a manner that perhaps might not be stereotypically associated with this group. It also left them vulnerable and more dependent upon relationships,
undermining the strength and independence associated as more masculine traits. In this way, illness experience might have been an “equalizer” in balancing masculine and feminine traits among participants, although this would require further analysis.

Gender differences may have played out in the decision to return to work. In “traditional” family units, the role of the man as breadwinner may swing the balance towards a decision to return to work in lieu of relinquishing the breadwinner role and assuming a shared or secondary responsibility for the economic well-being of the family. Sean and Derek were both expressed the importance of their role as breadwinner in providing for the family. Men engage less in “prosocial” coping by involving others in coping efforts (Martin & Suls, 2003), and, in this sense, may be more likely to “tough it out” rather than seek support that would be available to them. There was evidence that these study participants “bonded” around aspects of heart disease, adopting a less masculine “tend and befriend” approach. This would be consistent with the reversal of some of the gender stereotypical responses identified above.

In a review of research into gender stereotypes and heart disease, Martin and Suls (Martin & Suls, 2003) identify a number of gender influences on treatment seeking behaviours and symptom attribution both by individuals and health care providers in relation to cardiac symptoms. For example, contrary to other medical problems, men seek treatment for cardiac symptoms more quickly than women. When stress is a presenting factor, common cardiac symptoms are more likely to be attributed to heart disease by men and their lay and professional contacts than women. Men are more likely to take a self-protective approach by resting and recuperating and to receive greater degrees of tangible support around the home during recovery. Interestingly, and contrary to help-seeking behaviour in other forms of illness, men also participate more in cardiac rehabilitation programs (CACR, 2004).

As with gender, class could have also been elaborated from an analytic perspective. Bourdieu theorizes about how the “situatedness” of a person creates dispositions of thought, feelings, behaviour, tastes, and preferences and an sense for the social “game”(Bourdieu, 1990). He refers to this as the habitus or way of being derived from culture. Contrary to ideas of social learning, whereby the individual is a blank slate that is written upon through modeling and operant conditioning, habitus would contend that we have innate dispositions, based on a social qualities such as class, that are transformed through experience.
In my participants, views on health behaviours provided a potential example of the influence of habitus. All participants had experienced cardiac illness, were aware of “risk factors” of cardiovascular disease, had received advice on modifying their behaviours, had access to an onsite gym and corporate benefits that would cover smoking cessation, and had adequate financial resources to seek alternative approaches. But some not only paid little heed to this advice but also actively scorned it. “I get enough exercise at work” or ‘Giving up smoking will be too stressful for me’ were refrains in the data. In contrast, Les, the only university educated participant, was a fervent adherent to exercise and Derek, while coming from a blue collar background, had learned through previous illness experience the benefit of exercise for self-management.

Albrecht and coworkers (Albrecht, Freeman, & Higginbotham, 1998) described a situation that bears relationship to this study, during the development of a public health program, focusing on cardiac risk behaviours in Australian coal miners, in the Hunter Valley. Initial attempts to modify health beliefs and behaviours, using traditional health belief models and “white coated” professionals were dismal failures. It was only after these researchers uncovered the cultured dispositions of these workers towards health behaviours could an effective program be developed. Fear appeal messages were dropped in favour of weight loss, smoking cessation, and exercise programs based on the macho, competitive culture of the workers. Programs based on contests that used the natural competitive dispositions of the workers and their “mateship” rituals effectively reduced risk factors in the group.

Even though gender and class were not made explicit in the analysis, the rich, textual description of results would point the reader to other examples of these influences. The reader is encouraged to consider the arguments advanced in the dissertation with the potential influence of these factors. Gender and class perspectives require further reflection on the present data. However, it may be hard to access these issues without the prolonged exposure and observation characteristic of more classic forms of ethnography.

Bourdieu’s concept of habitus is also significant from a methodological standpoint in terms of the distinction between objectivity and subjectivity. Prior to initiating this project, a colleague with considerable experience in research and practice with this group, indicated to me that, while auto workers might let me into their world for the purpose of the project, I would always be
regarded as an outsider. She identified that these workers have a particular blue collar, industrial, union culture that sets them apart in terms of their thinking and behaviour. In Bourdieu’s terms, and as my colleague pointed out, it is impossible for an observer (researcher) to get the same “feel for the game” as the participants. I have attempted to account for this in the reflexivity section in the methods and explain how my previous experience may have provided an advantage in conducting the study.

9.8.3 Social Validity

Social validity refers to the extent to which the research is relevant and might meet its consequential aims (Morrow, 2005). My view of the social value of this research increased throughout the project. Owing to the lack of emphasis on non-compensable illness and injury in the work disability research, I initially felt that this study was peripheral to these larger and, perhaps, more important questions. My views on the relevancy and importance of this study have grown over the course of the work. I have come to see the stories of these workers as important in a number of important ways. This study demonstrates two important aspects of human functioning that are inextricably tied; that of the capacity and persistence of human agency in overcoming life challenges and the powerful influence of social factors on these efforts.

Participants in the study, and particularly production workers, were operating in an environment filled with the possibility of stress. Even with significant limitations on their physical functioning, imposed by a life threatening illness, workers managed to adapt. However, the social and structural influence in work and work relationships was also powerful. I was impressed by how positive relationships could enable agency. Less impressive was how assembly work imposes potentially lethal strain on workers, some of whom feel compelled to return to the job. This aspect of the study has particular relevance to the way we construct work and how our design of work and workplaces can be healthful or potentially destructive.

The present environment is discouraging in terms of these results having impact where they are most needed – at the plant. With the present focus on restructuring, there is less interest in examining ways to enhance the receptivity of the workplace to disabled workers and/or examine ways to foster self-care and mutual responsibility for worker welfare.
9.8.4 Other Dimensions of Quality

9.8.4.1 Authenticity

In qualitative research, an aspect of trustworthiness is the authenticity of the research (Morrow, 2005). Part of authenticity is fairness in terms of consideration of perspectives, the depth of understanding gained, and how context and culture were considered in the research (Morrow, 2005). I undertook this study as the lone investigator and analyst in the field. As such, the interpretation lent to the data was largely my own. Post-positivist strategies such as consensus-based methods for analytic rigour were not enacted. However, there were aspects of process that lent rigour to the more constructivist approach taken, which have been described in depth in the methods section, but I will highlight for the reader.

The approach to analysis was systematic and applied consistently to all cases – multiple reads, progressive coding, field notes, memos. As indicated above, balance in analysis and interpretation was sought among cases and depth of analysis was sought within cases to deepen the understanding of experience. Longitudinal follow up enhanced reflection and rapport and the depth of understanding gained. These aspects of the study enhanced its authenticity.

Morrow (Morrow, 2005) suggests that understanding context and culture are critical to qualitative analysis. Understanding of the context of the plant and industry was sought during formal interviews as well as secondary data gathering during the plant tour and meetings. While not used as a lens of analysis, cultural awareness was also present as an aspect of the study. I was aware of the male-dominated, “blue collar”, labour-oriented world inhabited by the participants and, which they contribute to. Analysis from this perspective would be possible but this was not the direction chosen for the dissertation.

9.8.4.2 Transferability

The question of transferability of findings is commonly raised in relation to qualitative inquiry. Small, “non-representative” samples such as in the present study make it difficult to make global statements as to the distribution of phenomena observed. However, I believe that tentative generalizations can and should be made about these results from a number of epistemological standpoints.
First, the strength of qualitative research is its ability to generate knowledge about particularities, whose information may otherwise be lost in statistical analysis. In clinical work much information is gained from the study of individual cases or a set of cases (Flyvbjerg, 2004). When discussing clinical rehabilitation with clinicians, they will more often cite particular cases as enlightening in terms of knowledge building than particular randomized controlled trials. In this study, I believe that the cases presented describe patterns of adaptation that, at the same time, inform us of critical contextual influences on adaptation.

Further to this, qualitative research produces qualitatively different knowledge. It tells us about the nature of return to work as opposed to the distribution of return to work outcomes. Looking at differential rates of return to work in different settings or among different patient groups lacks meaning and clinical applicability without understanding how these differential rates come about and are they likely to come about in other situations. This study promotes the generalization of knowledge through facilitating its use by developing an “expert” understanding of return to work experience.

In qualitative research, we are not only concerned about sampling based on individual inclusion and exclusion criteria but also on a range of characteristics associated with context such as place and time permitting a naturalistic study of the phenomena. Naturalistic generalization is predicated upon the researchers’ “thick description” of cases studied in context to thoroughly characterize the “sending context” to the extent a reader can extend concept or theory to a “receiving context” judged to be sufficiently similar (Seale, 1999a). Paradoxically, qualitative research may allow for more rigour in transferring findings from one study to another by providing the reader with an account of the study context that is more understandable. Generalizing from experimental or observational quantitative research undertaken in a particular context to another context that will not permit production of the phenomena may create problems in the world of practice.

At the theoretical level, qualitative research provides possibilities of developing and linking concepts that might otherwise receive more limited development at a quantitative level. Transfactual/retroductive argumentation is based on abstract and conceptual relationships and attempts to draw conclusions about the properties and conditions necessary for a particular social phenomenon to exist in a general form (Danermark, 2002; Seale, 1999a). These researchers
argue that is the goal of an explanatory social science to develop theoretical generalizations that
do not represent “totalizations” of social phenomena but broadly transportable concepts that hold
true in similar contexts. In this study, the concept of “wiggle room” as a feature characterizing
job design may find different forms but would be broadly transportable across contexts.

Naturalistic and theoretical generalization are both possible in qualitative research; however
certain limitations must be identified. Williams (Williams, 2002) suggests the use of *moderatum*
generalizations where aspects of a phenomena are seen as “…instances of a broader recognizable
set of features.” (M. Williams, 2002) but not in a totalizing sense. Owing to the intensive,
interpretive nature of qualitative research, the sampling of cases is limited. While examined
cases may lead us to the necessary conditions for a particular state of affairs, they do not
exhaustively define the “sufficient” conditions unless all cases are examined (M. Williams,
2002). For example, while the presence of accommodation may be a necessary condition for
return to work, it may not be sufficient if the worker is not so motivated or if other influences not
identified in the cases examined may play an influence.

Categorization is also a limitation of generalization in interpretive research. Categories based on
the physical world will be more reliable and transportable than categories of human meaning (M.
Williams, 2002). Our abilities to perceive and make sense of text-based data, dependent upon our
cognitive apparatus and experience will also confound the nature of categorization in social
science research. Moderatum generalizations rest on the assumption that there is sufficient
sharing of social and cultural views between the researched and researcher to allow for a
“reciprocity of perspective” and transfer of findings between settings.

In a sense, the quantitative/qualitative comparison relating to generalization does not address the
fundamentally different nature of the two modes of enquiry. Qualitative research leads to
understanding the nature of the phenomenon rather than its distribution. As such, generalization
becomes a matter of determining the potential for that “nature” to be present in other situations
and contexts. This depends upon the experience and competence of the analyst in producing and
relating the findings. It also depends upon the reader’s capacity to transport the findings to his or
her particular situation based on knowledge of that situation. I believe that the rich, thick
description in my account will permit naturalistic generalization. I have attempted to describe the
possibility of theoretical generalization through relating these findings to extant literature and
theory as well as putting forth my arguments in a manner that permits any claims to be substantiated by warrants developed from the data. I have also attempted to present and interpret the findings in a manner that has “practical adequacy” for the reader in terms of its explanatory and practical value. I recognize that the conceptual framework provided may not hold true in other contexts and the relative strength of these factors cannot be determined; however that was not the intent of the study.

Specific influences on transferability are exemplified by the aspects of class and gender discussed above. Women in the plant with disabling cardiac illness may have had a different experience as might individuals from a different class background or women from a different class background. There are findings in this study that I would contend are “transfactual” (Danermark, 2002) in that they transcend class and gender. Social and organizational influences such as work structure, seniority, and accommodation are aspects that would impact on individuals with chronic illness regardless of class or gender. Elements of continuity and familiarity of relationship would likewise cut across gender and class; however other aspects of relationships may differ. As suggested above, representations of illness and their influence may be a particular feature to these male participants. In other words, there would be particular concepts that would be transferable, but to varying degrees.

9.9 Conclusions

Considering the results of this study, I believe the following conclusions are warranted:

1. Adaptation to the workplace following disabling cardiovascular disease takes place through a process of self-regulation. This process is dependent upon illness impact and severity, worker goal structures within the context of career and lifespan. The process involves the enactment of coping strategies involving both cognitive, behavioural, and relational features.

2. Adaptation through self-regulation is nested in and shaped by the larger features of work and the work environment. The structure of work and available “wiggle room”, quality of work relationships, provisions for seniority and accommodation, and provision of support in the workplace are all critical factors in determining workers’ ability to self-regulate to attain work-related goals. The nature of work can pose a significant barrier to return to work, although positive work relationships can moderate this influence.
3. For workers with likely difficulties in return to work, clinical rehabilitation and disability management practice needs to consider the process through which workers self-regulate and the primacy of situational factors in determining the possibilities for successful reintegration into the workplace.

4. For clinical rehabilitation practice, this should involve gaining an understanding of both the worker’s perspective as well as the workplace and what it offers in terms of an accommodating environment. Factors such as job structures and relationships cannot be modified or manipulated from the clinic. Efforts can be directed both at building individual coping capacity as well as reducing environmental barriers to worker efforts to return to work.

5. This study confirms the complex relationship between the illness experience of workers, personal efforts to adapt, and the influence of social and structural factors in adaptation to the workplace. The use and application of the theories discussed would be helpful in future research and practice in the area. Specifically, Cognitive Adaptation Theory (Taylor, 1983), the Common Sense Model of Self-regulation (Leventhal et al., 2003) Selection, Optimization, and Compensation (Baltes, 1997), Job Strain (Karasek, 1979), and Effort/Reward Balance (Bosma et al., 1998) provide relevant frameworks that can be used to inform program development and further research in this area.

9.10 Future Directions for Knowledge Exchange and Research

Knowledge transfer and exchange is an important part of practice research. Immediate activities will include presentations to General Motors and the Canadian Auto Workers. I was invited to write an article in the disability management practice magazine “Back to Work” to provide disability management professionals with information and guidance on cardiac disability and return to work. This article was published in the February 2009 edition of the magazine.

I have been invited to provide a seminar to therapists at the Toronto Rehabilitation Institute to update them on return to work research. In addition to traditional seminar presentations, workshops providing more hands on exposure to return to work issues may provide greater impetus to improve practice efforts. In addition, I would like to construct a “Back to Work” module for cardiac rehab professionals that could be used in existing programs or workplace health settings.
While health behaviours were not a focus of this project, they were a topic of discussion among all of the workers. With the assistance of a thesis student at Trent University, I have undertaken an analysis of the health behaviour trajectories and influences among these workers. Along with preparing a qualitative manuscript on these data, we have developed a questionnaire measure to examine the relationship between process and contextual influences in return to work and maintenance of health behaviours following return to work. Researchers at the Toronto Rehabilitation Institute will be collaborating on this project.

In terms of future research, the following areas would be interesting and valuable to further understanding and practice in this area:

1. A systematic review of the effect of interventions on return to work has not been completed to date in this population and would be valuable to more rigorously examine the effects of cardiac rehabilitation on return to work. Following completion of the dissertation, it is my intention to complete such a review. Chapter 3 of the literature review section will provide an excellent foundation for this work.

2. Further quantitative study would be valuable in order to determine the relative importance of the factors identified in the larger population of workers. I believe a study of workplace intervention would be of particular interest and value. For example, a workplace intervention directed at increasing awareness and knowledge among supervisors relating to return to work following disabling cardiac illness would provide information relating to the effectiveness of the intervention on return to work outcomes, its capacity for modifying influence such as supervisor attitudes and behaviours, and the feasibility for undertaking such an intervention.

3. Intervention study would also be valuable in applying the occupational rehabilitation model to this group of disabled workers. An intervention model integrating clinical and workplace modalities could examine the portability of models previously developed for musculoskeletal conditions to cardiovascular disease with consideration of the particular factors important to cardiovascular disease.

4. Further qualitative study would be valuable in understanding unexplained chest pain and the response of the individual in terms of representations. This might inform practice in terms of its ability to help clients develop enduring functional representations that will reduce emotional distress and enhance quality of life.
5. Further qualitative study would be important in developing a better understanding of how other stakeholders and the various insurance systems present in workplaces influence the return to work process. This was part of my original proposal for the dissertation and could be carried forward (although present circumstances may not permit this at General Motors at this time).
Chapter 10

10 Epilogue

Research builds knowledge and understanding but can also result in transformation both for the researcher and participants. I would like to close with a note on transformation; both with respect to my participants and me as a researcher.

Participants expressed that certain aspects of involvement in the study were beneficial. Involvement in the study provided a point of connection for participants. Over the course of the study, participants revealed that they had, by chance, connected with other participants. Sean indicated that in discussing the project with another worker determining that a support group may be beneficial to provide information for workers with heart disease. Derek and Jim both indicated receiving good advice about the need to change their mindset in relation to work from another worker in the study. Thus, the study was a connection point for sharing of advice and information; whether this would have occurred anyway is difficult to know.

Derek reflected directly on the benefits of being involved in the study. He had a particularly difficult time with return to work. At the last follow up he thanked me for my help and understanding. “But I was going to tell you something else too. I think that another thing that has helped me a lot is like yourself and everybody I’ve had anything to do with ….they treated me really good.” Derek found the study an additional source of support during his return to work. In the same vein, Les indicated that he felt he had someone outside of his family to share his experience with and he did not feel secure in discussing his views at the workplace. “Absolutely, actually it helps me to talk about it because I’m actually scared to talk about with anybody else except my family because you know you are in fear of some type of repercussion here [at the plant].”

These workers discussed the value of the study with fellow participants, determining whether participation was worthwhile. Workers hoped that the research findings would be put to good use in the company. In discussing where the research might lead with Sean, I indicated that “I do owe a report back to GM on it and the union and ah basically it will be describing you know what I’m hearing [Yup] from people. Sean responded, “That’s good, maybe it will accomplish
something.” Les likewise expressed the hope that the study would improve the understanding of upper management with the workers’ situation, lamenting what he saw as the changes that had occurred in the company over time.

I hope you ah, can you know distribute your views to upper management, to plant manager or somebody you know with a little bit of influence, I don’t know it might even have to go to somebody else…. but yeah, it’s not the same company. It’s not the company that I would choose to work for again.

The hopes expressed by participants for the possibility of research making a difference brought me face to face with the practical aspect of research and the importance of knowledge transfer and exchange. I came to a higher appreciation of my role in “getting the word out” and using knowledge to improve the lives of workers in this situation.

The study was also transformative for me as a researcher in a number of ways. Workers in the study discussed among themselves whether I was “a good lad” and should be trusted with their stories. I came to a better understand the trust that participants hold in sharing their experiences with researchers and the important role we play those stories play in elevating the level of understanding of the experience of these workers.

The research process transformed my perspective on work disability from that of a clinician to that of a researcher. I had the opportunity to see work disability from another perspective, without all of the constraints and trappings that come with clinical involvement with clients. The study also provided me with deeper appreciation of struggles of disabled workers. I felt the frustration that the workers felt in dealing with the assembly line, unsupportive colleagues, an uncaring company, the crumbling auto industry, and their self-recrimination for having selected a career that, while paying well, left them with limited possibilities in the face of job loss. I believe that as researchers we have a social role in advocating for better practice through illuminating these issues for others involved in the process.

Through the PhD process, I also experienced the transformation to a social science research focus. This transformation has been a challenge in terms of developing skills relating to the methods involved. Perhaps more significant, this transformation has caused me to reflect on my assumptions and clarify my thinking on how I view the personal and social world of my
research. This path has opened up new directions for future research, aligned with my practice interests and sensibilities in terms of the transformative potential of research on the world of work and health. The extent to which my study will enable improvements in rehabilitation and disability management practice remains to be seen. I look forward to sharing these findings with the company to aid their understanding of experience of these workers as well as suggesting ways and means of improving return to work and work experience for these workers. I also look forward to moving forward in the world of work and health research, hopeful contributing to the betterment of the situation for disabled workers and the creation of healthier workplaces for all of us.


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Appendices

Appendix A

Cardiovascular Disease (CVD)

Aetiology of CVD

CVD is now regarded as a chronic inflammatory illness beginning its pathogenesis early in life, with evidence of the genesis of CVD found in utero and evidence of significant atherosclerotic lesions in individuals in their late teens (Stone et al., 2001). Cholesterol infiltrates the artery wall and is reinforced by macrophages and granular material. Smooth muscle cells also proliferate with a resultant thickening of the artery.

Initially, the diameter of the lumen remains intact. However, with progressive disease, plaques begin to form on the interior walls of the arteries resulting in a decrease in lumen diameter. Blockage becomes significant and symptomatic when it exceeds 50 to 70% of the vessel’s lumen. Sites of narrowing provide opportunity for blockage as a result of thrombus formation and/or vessel spasm.

Atherosclerosis negatively affects endothelial function, which is critical for normal vasomotor function, protective anti-thrombotic and platelet leukocyte adhesion, vascular permeability and the control of vascular smooth muscle growth (Cooke, 2000). The result is paradoxical vasoconstriction in the face of increased flow, thrombus formation, and smooth muscle hypertrophy all of which negatively impact on flow and cardiac workload.

The site and degree of narrowing has important implications for the development of CVD. The heart is vascularized by four major epicardial arteries including the right, left main coronary artery, which gives rise to the left circumflex and left anterior descending artery. The degree of vessel narrowing corresponds to the severity of ischemic heart disease (IHD) and myocardial infarction (MI) (Roberts, 1995). At autopsy, patients with healed MI’s and angina have a greater average percentage of narrowing in arteries (70 vs. 64%) and a greater average number of arteries narrowed than asymptomatic patients (3.2 vs. 2.2) (Roberts, 1995).
Ischemic Heart Disease

Ischemic heart disease (IHD) is the clinical manifestation of CVD and is the result of an imbalance in myocardial oxygen supply and demand. Myocardial oxygen demand is dependent upon ventricular wall tension, heart rate and contractile state of the heart muscle.

Chronotropic response refers to the heart’s ability to respond to increase metabolic demands by increasing heart rate. It is regulated by preload (stretch of the myocardium), sympathetic stimulation (through higher brain centres) and catecholomine response. Wall tension is proportional to the radius of the chamber and pressure (preload and afterload) and inversely proportional to wall thickness. Factors that increase chamber size or pressure will increase myocardial oxygen demand. Increase in wall thickness has the opposite effect. Contractile state is dependent upon sympathetic activation and circulating catecholoamines.

An increase in oxygen demand is satisfied primarily by an increase in blood flow rather than oxygen extraction at the tissue level, which tends to be maximal at all times (Wenger, 1999). Optimization of heart rate response, contractility and wall tension are critical in minimizing myocardial O2 demand for a given level of work.

Myocardial flow (supply) is dependent upon the pressure differential between the aorta (downstream) and left ventricle (upstream), vascular resistance as well as diastolic filling period. Coronary flow may increase by 5 fold (60 to 300ml/100g) during heavy work or exercise (Wenger, 1999). Myocardial flow is regulated by factors including metabolic rate, changes in driving pressure, extravascular compressive forces, length of diastolic phase, humeral factors and neural control (Ardehali & Ports, 1990).

Myocardial flow will be negatively impacted by the decreased filling period because of tachycardia, decreased relaxation period due to decreased contractility and slowed systole, any increase in left ventricular pressure disproportionate to aortic pressure and an increase in vascular resistance across the vascular bed (obstruction and/or increased vascular tone and spasm) (Ardehali & Ports, 1990). Perfusion pressure is most greatly impacted by obstruction. Pressure drops exponentially across an area of stenosis (radius to the 4th power) and this drop becomes critical below 60mmHg, which is the pressure necessary to maintain flow in the vascular bed. The subendocardium will be most greatly affected by a drop in pressure because of
its higher oxygen demand as well as the increased effect of compressive forces in this region of
the myocardium (Ardehali & Ports, 1990).

The clinical manifestations of IHD are a reflection of a negative imbalance between myocardial
O2 supply and demand. Physiologically, IHD results in a decrease in cardiac output due to a
decrease in heart rate response and decreased stroke volume. Symptoms include angina, fatigue
and dyspnea. Clinical signs include ST segment depression (slowed repolarization) and
ventricular dysfunction (decreased contractility and relaxation) as a result of insufficient oxygen
supply and clearance of metabolic by-products. IHD increases the risk of arrhythmia due to
interference with conduction and increases the risk of sudden cardiac death.

**Myocardial Infarction**

Myocardial infarction (MI) is damage of heart tissue as a result of blockage of flow; in the
majority of cases, owing to thrombus formation and occlusion of an already narrowed vessel.
While atherosclerosis is recognized as not causing MI, thrombus occlusion can not occur in the
absence of significant narrowing of an artery (Roberts, 1995). An occlusion affects both delivery
of oxygen and nutrients to the myocardium but also the uptake and removal of metabolic waste.
Damage to the myocardium occurs not only as a result of the blockage and the resulting hypoxia
but also the acidification of tissue owing to lack of flow and removal of metabolic waste.
Significant damage occurs during reperfusion due to an increase in superoxide free radicals,
which break down cell membranes.

Damaged myocardial tissue becomes fibrotic and loses contractile capacity as well as
distensibility. This can result in systolic dysfunction, which diminishes ejection fraction and
pump capacity as well as diastolic dysfunction, which limits filling and end diastolic volume,
which will result in reduced ejection fraction. The damaged myocardium results in a decrease in
contractility including the rate and extent of fibre shortening. This in turn results in a decreased
ejection fraction and a decrease in ejection rate of blood from the heart. The heart’s response to
sympathetic activation is blunted resulting in lower maximal heart rate response.

The patient with myocardial infarction experiences a reduction in maximal work capacity and
increased heart rate for a given submaximal workload reflecting cardiovascular inefficiency.
Typical exercise capacity following MI ranges from 21 to 28 ml/kg/min (6 to 8 METS) resulting
in a sustained work capacity of 2.4 to 3.2 METS or what might be considered “light” industrial work although this will be influenced by the extent of the infarct, gender and baseline aerobic capacity.

**Chronic Heart Failure**

Chronic heart failure typically occurs secondary to insult to the myocardium such as MI (85% of cases), in particular left ventricular damage or other manifestations of coronary artery disease but can also be idiopathic in nature or due to viral conditions. Heart failure is initiated by an imbalance between the pumping capacity of the heart and the oxygen demand of the body tissues and is defined as an inability of the heart to match the metabolic demands of the body (J. Goodman, 1992). Chronic heart failure is defined by an ejection fraction less than 45% of normal.

Subsequent to this, a cascade of adaptation occurs which results in alterations in sympathetic activity and catecholamine release as well as increased activation of the renin-angiotensin system, which increases peripheral vascular resistance and sodium retention resulting in increased blood volume. End diastolic volume increases to take advantage of the Frank-Starling relationship. Over the long term the heart becomes large and “baggy” with a reduced capacity to respond to increases in demand during periods of physical activity. Functional adaptations also include decreased muscle blood flow, decreased muscle bioenergetic capacity, and muscle atrophy. The net result is significant limitation exercise capacity.

These adaptations result in a number of functional consequences for the individual in CHF. Decreased work capacity and increased fatigue and exertion are noted during normal daily activities. Dyspnea and local muscle fatigue are common symptoms with sustained work activity. Ten to 20% of patients immediately experience reduced exercise tolerance with 100% of CHF sufferers experiencing this over time (Drexler & Coats, 1996).

CHF sufferers experience higher heart rates at submaximal workloads, lower oxygen consumption, ischemic ECG changes, and a flattened blood pressure response to exercise. Increase in heart rate variability has been linked to sudden death in these individuals. Exercise capacity ranges from 14 to 21 ml/kg/min (4 to 6 METS) with a sustained work capacity of 1.6 to
2.4 METS or largely sedentary activities. Exercise capacity can be as low as 8 ml/kg/min, which effectively renders the individual bed ridden.
Appendix B

Medications

Nitrates

Nitrates have been used in the symptomatic treatment of IHD for over 100 years. Central effects of nitrate use include an increase in coronary blood flow through coronary vasodilation. Reflex tachycardia may also result from hypotension caused by decreased total peripheral resistance resulting from peripheral vasodilation. The primary treatment effect however is through relaxation of the venous side with an increase in venous capacitance and decreased filling pressure. This results in a decrease in wall tension and myocardial O2 demand (Mycek et al., 2000). The effect of coronary vasodilation may not be significant owing to the powerful effect of hypoxia on causing vasodilation. Thus, during exertion, maximal vasodilation may already be present with minimal influence from agents such as nitrates (Wenger, 1999). However, this may not be the case in the presence of endothelial dysfunction and nitrates may exert a negative influence. Adverse effects include headache (30 to 60% of patients), postural hypotension, facial flushing, reflex tachycardia and loss of consciousness (Mycek et al., 2000).

Beta Blockers

Beta Blockers (BBs) are routinely used for individuals with IHD (CACR, 2004). BBs act antagonistically by blocking beta receptor sites for norepinephrine and epinephrine, thereby reducing the effect of these circulating catecholamines. BBs can act in a selective (B1 blockade) or non-selective manner depending upon the formulation. Non-selective Propanolol is recommended for use in angina treatment (Mycek et al., 2000).

BBs have the immediate effect of decreasing heart rate and contractility (sympathetic influence) during periods of exertion, thereby reducing myocardial O2 demand. They are effective in decreasing the frequency and severity of angina (Mycek et al., 2000) and reducing the risk of reinfarction and coronary death by 40% in low-risk populations (Wenger, 1999). Diastolic filling period is increased and cardiac output is maintained through the Frank Starling mechanism (Wenger, 1999). Contractility can be excessively reduced and the use of BBs is cautioned with concurrent ventricular dysfunction (CACR, 2004). Non-selective BBs can
produce peripheral vasoconstriction through blockade of B2 receptors and an increase in total peripheral resistance associated with decreased cardiac output. Non-selective agents can also cause pulmonary vasoconstriction.

The administration of BBs can increase exercise capacity by 1 MET (Wenger, 1999). Half-life for Propanolol is 6 hours and therefore regular dosing is required through sustained release methods.

Adverse effects of non-selective blockade include bradycardia, pulmonary and peripheral vasoconstriction, impaired glucose metabolism, fatigue, sexual dysfunction, drowsiness and limited tolerance for strenuous activity. Sodium retention can increase blood volume (Mycek et al., 2000). These effects can be reduced through the use of selective BBs and these may be used with diabetics, concurrent peripheral vascular disease or chronic obstructive pulmonary disease (Mycek et al., 2000). The use of Sildenafil (Viagra) should be avoided while on BBs.

**Calcium Channel Blockers**

Calcium Channel Blockers (CCBs) are endorsed the the CACR as effective, safe and well tolerated for exertional and variant angina (CACR, 2004). CCBs act by blocking the influx of calcium into cardiac and smooth muscle cells through slow calcium channels. This causes a decrease in calcium release from the sarcoplasmic reticulum and mitochondria resulting in a decrease in free calcium and a reduction in excitation-contraction coupling. This results in vasodilation of coronary (increased flow) and peripheral arteries (decreased peripheral resistance and filling pressure) and decreased cardiac contractility. Verapamil causes a decrease in conductance and decreased heart rate response.

These effects cause a decrease in myocardial O2 demand through decreasing contractility, preload and afterload (decreased wall tension) and decreasing heart rate. Verapmil has the effect of reducing arrhythmia and has a stronger inotropic effect and weaker vasodilatory effect (Mycek et al., 2000).

The use of these 3 anti-anginal medications for IHD, with and without concomitant disease, is summarised in the table below (Mycek et al., 2000). More effective medications are denoted by a double checkmark and less effective medications by a single checkmark.
<table>
<thead>
<tr>
<th>Disease</th>
<th>Nitrates</th>
<th>Blockers</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>✓ ✓</td>
<td>✓ ✓</td>
</tr>
<tr>
<td>Acute Myocardial Infarction</td>
<td>✓ ✓</td>
<td>✓ ✓</td>
</tr>
<tr>
<td>Asthma, COPD</td>
<td>✓ ✓</td>
<td></td>
</tr>
<tr>
<td>Hypertension</td>
<td>✓ ✓</td>
<td>✓ ✓ - selective</td>
</tr>
<tr>
<td>Diabetes</td>
<td>✓ ✓</td>
<td></td>
</tr>
<tr>
<td><em>Chronic Renal Disease</em></td>
<td>✓ ✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

**Anticoagulant Therapy**

ASA inhibits platelet aggregation via inhibition of cyclo-oxygenase and the production of Thromboxane A2. Other anti-platelet agents such as Ticlopedine irreversibly inhibit platelet aggregation by binding ADP receptors (Mycek et al., 2000). Low dose ASA has been shown to decrease the risk of secondary MI and stroke by 30% and decrease the incidence of initial cardiovascular incidents in hypertensive individuals by 15% (CACR, 2004).

Adverse effects of low dose ASA include prolonged bleeding time and increased incidence of hemorrhagic stroke (Mycek et al., 2000).

**Statins**

Statins are a more recent class of drugs used routinely in IHD. Statins act as an antagonist to the enzyme (HMG CoA reductase) responsible for cholesterol synthesis, blocking its metabolic pathway. Statins may also affect LDL receptors and decrease its uptake into tissue (Mycek et al., 2000).

Statins have been shown to decrease total cholesterol and LDL cholesterol in IDH patients with (25% total, 30% LDL) and without (20% total, 28% LDL) elevated cholesterol levels. Randomised control trials have also demonstrated decreases in secondary coronary events (death or non-fatal MI) by 24% and reduce risk for major secondary events (RR=.66), coronary mortality (RR=.58) and all cause mortality (RR=.77) in high risk patients (Ong, 2002). However,
twenty-five percent of patients on statin medications have recurrent coronary events (Mycek et al., 2000).

Statins have shown few adverse effects. A small percentage of patients have shown liver enzyme dysfunction and myopathy (Mycek et al., 2000).
Appendix C

Physiological Adaptation

Patients with IHD go through a period of inactivity following an MI or bypass. Further to this, most are sedentary and deconditioned prior to the onset of heart problems. From a functional perspective, exercise training at a moderate intensity, 30 to 60 minutes, 3 times per week has been shown to increase maximum oxygen consumption (VO2max) by 10 to 60% with response dependent upon the age and initial training status of the individuals (Hamm & Leon, 1992). The average 20 to 30% increase results in an increase in function and decrease in the effort required to accomplish daily tasks. For example, a task such as digging in the garden, requiring an oxygen consumption of 5 to 6 METS (Pashkow & Dafoe, 1999) becomes manageable for moderate durations for an individual who increases his or her work capacity from 7 to 9 METS (relative workload reduced from 85 to 67% VO2 max).

Cardiovascular efficiency increases, primarily due to a lower requirement for cardiac output by enhanced peripheral O2 utilization capacity. Flow through active skeletal muscle is increased and distribution of flow improves (J. M. Goodman et al., 1999). Oxygen extraction is also enhanced by an increase in myoglobin, increased oxidative enzymes and a right shift in the O2 hemoglobin dissociation curve (Wenger, 1999). Total peripheral resistance decreases causing a decrease in myocardial workload. Blood pressure for a given submaximal load decreases resulting in a decrease in the rate-pressure product; a reflection of myocardial O2 demand (Hamm & Leon, 1992). Ischemic threshold is a marker for an imbalance between O2 supply and demand. A decrease in oxygen demand for a given workload will permit the individual to attain a higher workload prior to the onset of ischemia and angina and work in comfort at a level not previously attainable.

There has been less evidence for improvement in central cardiac function with training although some studies have demonstrated improvements in left ventricular ejection fraction (J. M. Goodman et al., 1999). There is evidence that high intensity training in select individuals may also increase left ventricular function as reflected by an increase in pulse pressure (Hagberg, 1991) but, it is unlikely that the this type of training would be suitable for the majority of patients (see below).
On the supply side, increased myocardial flow is accomplished through an increase in the diastolic period and decrease in left ventricular pressure for any given workload (Hamm & Leon, 1992). Improvements in endothelial-dependent coronary vasodilation have been shown with exercise in animal models following ischemic insult (Symons, Hayashi, & Ensunsa, 2003). Blood volume increases and with a normalization of hematocrit, there is an increase in O2 carrying capacity. There is little evidence for increased myocardial oxygen supply through increased vascularity with moderate intensity training. Increased collateralization has been shown in animal models with high intensity training (Hamm & Leon, 1992). Evidence of improved supply has been demonstrated with high intensity training in select patients with an increase in the RPP at ischemic threshold and decrease in ST segment depression for given workloads (Hagberg, 1991). It is doubtful that the average cardiac patient could sustain the level of training undertaken in these studies; however they do highlight the potential for adaptation inherent in patients with CAD.

Resistance training utilising loads of 40 to 60% one repetition maximum, 1 to 3 sets, 2 to 3 times per week results in increased muscular strength, and absolute and relative endurance (Marzolini, Oh, Thomas, & Goodman, 2008). This results in an increase in functional ability for daily activities (Beniamini et al., 1997). The mechanism of improvement in strength is, in part, due to improved neuromuscular function as strength in CAD patients has been shown to improve without significant muscular hypertrophy (Verrill & Ribisl, 1996). Studies have also shown increases in muscle mass as a result of strength training (Pu et al., 2001). In addition, blood pressure and heart rate response are attenuated for a given absolute load while lifting (McCartney, McKelvie, Martin, Sale, & MacDougall, 1993) owing to the decrease in relative muscle mass recruitment and force production. Materials handling activities are safer and place a lower demand on the myocardium. There is no evidence of improvement in myocardial function as a result of chronic exposure to resistance exercise. Myocardial perfusion is increased during resistance exercise owing to the increase that occurs in systemic diastolic pressure (Verrill & Ribisl, 1996). This results in a reduction in ischemic burden for a given RPP.
Appendix D
Interview Guide for Workers

1. Name: 12  Date: Nov 5/07  Place: home  Time in:

2. Introduction and consent

☐ Thank you for agreeing to participate in the study.

☐ Review study information and consent letter.

☐ Discuss any questions or concerns.

☐ Consent signed by worker and researcher.

☐ Copy provided to worker

3. Introduction to interview

3.1. Return to work with a cardiac problem can be a challenge. In order to understand this process more fully, I am interested in listening to your experiences as a worker. There are no right or wrong answers to the questions. The questions relate to your individual experiences, views and feelings about going back to work.

3.2. I will first ask you some questions about your heart problem and what kind of health care you received and continue to receive.

3.3. I will then ask you some questions about:

3.3.1. your occupational history

3.3.2. Your experience of return to work.

3.3.3. your sleep and lifestyle.

3.3.4. your relationships

3.3.5. What you expect for the future
4. Tell me about your heart problem. (Background)

4.1. Prompts

4.1.1. When did you start having problems?

4.1.2. How did you know something was wrong?

4.1.3. What happened then?

4.1.4. What symptoms have you been having more recently? (sensory)

4.1.5. What do you know about the cause of your heart problem? (knowledge)

4.1.6. What do you know about preventing it from coming back? (knowledge)

4.1.7. What do you know about your heart condition and return to work? (knowledge)

4.1.8. How is your health otherwise – any other health conditions? Any other conditions affecting work ability? (Background)

5. What treatment have you received?

5.1. Prompts

5.1.1. Medication?

5.1.2. Surgery?

5.1.3. Cardiac rehabilitation?

5.1.3.1. Description of program – duration, modalities, length, intensity

5.1.4. Other modalities or alternative therapies?

5.1.5. Has it been helpful? (belief)

5.1.6. What were you told about return to work by your health care practitioners?

5.1.6.1. Were you advised to return to work? Not to return?

5.1.6.2. Did they offer any advice? Precautions?

5.1.6.3. What did you think about that?
6. Tell me about your work history. (Background)

6.1. Prompts

6.1.1. How long have you worked at the plant?
6.1.2. What jobs have you had apart from that?
6.1.3. Have you had any other disabling injuries or sickness absence?
6.1.4. Did your work contribute to heart problems?

7. Life change in response to cardiac illness.

7.1. Tell me about your return to work.

7.1.1. Prompts

7.1.1.1. When did you return to work?
7.1.1.2. How long were you off?
7.1.1.3. Who was involved in your return to work?
7.1.1.4. Did you have a graduated return to work or did you go straight back?
7.1.1.5. Did you go back to the same job?

7.2. Tell me about your present work situation. (Background)

7.2.1. Prompts

7.2.1.1. Tell me about the demands of your work. (fact)
7.2.1.2. How has your heart problem affected your function on the job? (opinion or belief)
7.2.1.3. What were your concerns in going back to work?
7.2.1.4. How has your heart problem changed the way you view work? (opinion or belief)
7.2.1.5. Why did you decide to return to work?
7.2.1.6. How do your coworkers workers view you now? Your supervisor? (opinion or belief)

7.2.1.7. How do you feel about work now? (Feelings)

7.3. How has your heart problem affected your life outside of work?

7.3.1. Prompts

7.3.1.1. Function with ADL’s?

7.3.1.2. How has it affected your leisure activities?

7.3.1.3. How has returning to work affected your life outside of work?

7.3.1.4. Would your life outside of work be different had you decided not to go back to work?

7.4. How has RTW affected your lifestyle? Any changes in health behaviours?

7.4.1. Prompts

7.4.1.1. How has your lifestyle changed as a result of your heart problem?

7.4.1.1.1. Health behaviours, sleep?

7.4.1.2. Has RTW affected your self-care behaviours? If so how?

7.5. How has your heart problem affected your income and job security?

7.6. How has your heart problem affected your retirement plans?

7.7. Relationships

7.7.1. How has your heart problem affected your relationships?

7.7.1.1. Prompts

7.7.1.1.1. Marital

7.7.1.1.1.1. sex life?

7.7.1.1.2. Children

7.7.1.1.3. Parents

7.7.1.1.4. Friends

8. Formal and informal resources.
8.1. What are you doing to cope with your heart problem? (behaviour)

8.2. What has been helpful in allowing you to return to work?

8.2.1. Prompts

8.2.1.1. What have you done to cope with your job demands?

8.2.1.2. What has been helpful in getting back to work? Not so helpful?

8.2.1.3. Has getting back to work been helpful to your recovery? Unhelpful?

8.2.1.4. How has your family been helpful in dealing with your heart problem? Unhelpful?

8.2.1.5. How have your friends been helpful? Unhelpful?

8.2.1.6. How has your employer been helpful? Unhelpful?

8.2.1.6.1. Supervisor?

8.2.1.6.2. Occupational health?

8.2.1.6.3. Human resources?

8.2.1.6.4. Tell me about your relationships at work.

8.2.1.7. Tell me about interaction with your health care providers.

8.2.2. Has anything made it more difficult to stay at work? Explain.

9. Future expectations

9.1.1. Do you expect your heart problem to get better, worse or stay the same?

9.1.2. Do you see yourself being able to stay at work? Explain

9.1.2.1.1. If yes, what is going to be helpful or important?

9.1.2.1.2. If no, what would improve your chances of staying at work?

9.1.3. Income.

9.1.3.1.1. Are your financial resources adequate? Wages, pensions

9.1.4. Do you expect to continue to receive support from family, friends, employer? Explain
10. Is there anything you would like to add?

11. Thank you for your participation. This has been very helpful.

12. Would you like a copy of the transcript for your records?

13. Time out:
Appendix E

"Work adjustment with cardiac illness: a qualitative exploration from the workplace"

QUESTIONNAIRE

Purpose of the Study

Return to work with a heart condition can be a challenge. A heart condition can include a heart attack, angina, a coronary artery bypass or angioplasty. This study is looking at your view of return to work with your heart condition as well as the things that have been helpful to you in adjusting to your work.

Instructions to Participants

Please read the information below prior to completing the questionnaire. There are no right or wrong answers, just answer to the best of your ability. Do not spend too much time on any one item. Usually your first impression is the best. The table below gives a brief description of the questionnaires you will be asked to complete. We thank you again for your participation.

Summary of Questionnaires

<table>
<thead>
<tr>
<th>Questionnaire</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work Limitations Questionnaire</td>
<td>This questionnaire will ask you questions about specific limitations that you might be experiencing with your work activities.</td>
</tr>
<tr>
<td>SF 36</td>
<td>This questionnaire asks you about your health, ability to function and any limitations you may have owing to your physical and emotional health.</td>
</tr>
</tbody>
</table>

Should you have any further questions regarding the content and purpose of the questionnaires, please contact Fergal O’Hagan, Ph.D. Candidate at 877-449-4446 (toll free) or Dr. Scott Thomas, Supervisor.

PLEASE COMPLETE BOTH SIDES OF THE PAGE.
These questions ask you to rate the amount of time during the **past four weeks** that you had difficulty handling certain parts of your job.

Mark the “Does Not Apply to My Job” box only if the question describes something that is not part of your job.

In the past 4 weeks, how much of the time did your physical health or emotional problems make it difficult for you to do the following?

<table>
<thead>
<tr>
<th>DIFFICULT</th>
<th>All of the Time (100%)</th>
<th>Most of the Time</th>
<th>Half of the Time (50%)</th>
<th>Some of the Time</th>
<th>None of the Time (0%)</th>
<th>Does Not Apply to My Job</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Work the required number of hours</td>
<td>[ ] 1</td>
<td>[ ] 2</td>
<td>[ ] 3</td>
<td>[ ] 4</td>
<td>[ ] 5</td>
<td>[ ] 0</td>
</tr>
<tr>
<td>2. Get going easily at the beginning of the workday</td>
<td>[ ] 1</td>
<td>[ ] 2</td>
<td>[ ] 3</td>
<td>[ ] 4</td>
<td>[ ] 5</td>
<td>[ ] 0</td>
</tr>
<tr>
<td>3. Start on your job as soon as you arrive at work</td>
<td>[ ] 1</td>
<td>[ ] 2</td>
<td>[ ] 3</td>
<td>[ ] 4</td>
<td>[ ] 5</td>
<td>[ ] 0</td>
</tr>
<tr>
<td>4. Do your work without stopping to take extra breaks or rests</td>
<td>[ ] 1</td>
<td>[ ] 2</td>
<td>[ ] 3</td>
<td>[ ] 4</td>
<td>[ ] 5</td>
<td>[ ] 0</td>
</tr>
<tr>
<td>5. Stick to a routine or schedule</td>
<td>[ ] 1</td>
<td>[ ] 2</td>
<td>[ ] 3</td>
<td>[ ] 4</td>
<td>[ ] 5</td>
<td>[ ] 0</td>
</tr>
<tr>
<td>6. Handle the workload</td>
<td>[ ] 1</td>
<td>[ ] 2</td>
<td>[ ] 3</td>
<td>[ ] 4</td>
<td>[ ] 5</td>
<td>[ ] 0</td>
</tr>
<tr>
<td>7. Work fast enough</td>
<td>[ ] 1</td>
<td>[ ] 2</td>
<td>[ ] 3</td>
<td>[ ] 4</td>
<td>[ ] 5</td>
<td>[ ] 0</td>
</tr>
<tr>
<td>8. Finish work on time</td>
<td>[ ] 1</td>
<td>[ ] 2</td>
<td>[ ] 3</td>
<td>[ ] 4</td>
<td>[ ] 5</td>
<td>[ ] 0</td>
</tr>
<tr>
<td>9. Do your work without making mistakes</td>
<td>[ ] 1</td>
<td>[ ] 2</td>
<td>[ ] 3</td>
<td>[ ] 4</td>
<td>[ ] 5</td>
<td>[ ] 0</td>
</tr>
<tr>
<td>10. Satisfy the people who judge your work</td>
<td>[ ] 1</td>
<td>[ ] 2</td>
<td>[ ] 3</td>
<td>[ ] 4</td>
<td>[ ] 5</td>
<td>[ ] 0</td>
</tr>
<tr>
<td>11. Feel a sense of accomplishment in your work</td>
<td>[ ] 1</td>
<td>[ ] 2</td>
<td>[ ] 3</td>
<td>[ ] 4</td>
<td>[ ] 5</td>
<td>[ ] 0</td>
</tr>
<tr>
<td>12. Feel you have done what you are capable of doing</td>
<td>[ ] 1</td>
<td>[ ] 2</td>
<td>[ ] 3</td>
<td>[ ] 4</td>
<td>[ ] 5</td>
<td>[ ] 0</td>
</tr>
<tr>
<td>13. Walk or move around different work locations (for example, going to meetings)</td>
<td>[ ] 1</td>
<td>[ ] 2</td>
<td>[ ] 3</td>
<td>[ ] 4</td>
<td>[ ] 5</td>
<td>[ ] 0</td>
</tr>
<tr>
<td>14. Lift, carry, or move objects at work weighing <strong>more than 10 pounds</strong></td>
<td>[ ] 1</td>
<td>[ ] 2</td>
<td>[ ] 3</td>
<td>[ ] 4</td>
<td>[ ] 5</td>
<td>[ ] 0</td>
</tr>
<tr>
<td>Difficult</td>
<td>All of the Time (100%)</td>
<td>Most of the Time</td>
<td>Half of the Time (50%)</td>
<td>Some of the Time</td>
<td>None of the Time (0%)</td>
<td>Does Not Apply to My Job</td>
</tr>
<tr>
<td>---------------</td>
<td>------------------------</td>
<td>------------------</td>
<td>------------------------</td>
<td>------------------</td>
<td>-----------------------</td>
<td>-------------------------</td>
</tr>
<tr>
<td>15. Sit, stand, or stay in one position for longer than 15 minutes while working</td>
<td>□ 1</td>
<td>□ 2</td>
<td>□ 3</td>
<td>□ 4</td>
<td>□ 5</td>
<td>□ 0</td>
</tr>
<tr>
<td>16. Repeat the same motions over and over again while working</td>
<td>□ 1</td>
<td>□ 2</td>
<td>□ 3</td>
<td>□ 4</td>
<td>□ 5</td>
<td>□ 0</td>
</tr>
<tr>
<td>17. Bend, twist, or reach while working</td>
<td>□ 1</td>
<td>□ 2</td>
<td>□ 3</td>
<td>□ 4</td>
<td>□ 5</td>
<td>□ 0</td>
</tr>
<tr>
<td>18. Use hand-held tools or equipment (for example, a phone, pen, keyboard, computer mouse, drill, hairdryer or sander)</td>
<td>□ 1</td>
<td>□ 2</td>
<td>□ 3</td>
<td>□ 4</td>
<td>□ 5</td>
<td>□ 0</td>
</tr>
<tr>
<td>19. Keep your mind on your work</td>
<td>□ 1</td>
<td>□ 2</td>
<td>□ 3</td>
<td>□ 4</td>
<td>□ 5</td>
<td>□ 0</td>
</tr>
<tr>
<td>20. Think clearly when working</td>
<td>□ 1</td>
<td>□ 2</td>
<td>□ 3</td>
<td>□ 4</td>
<td>□ 5</td>
<td>□ 0</td>
</tr>
<tr>
<td>21. Do work carefully</td>
<td>□ 1</td>
<td>□ 2</td>
<td>□ 3</td>
<td>□ 4</td>
<td>□ 5</td>
<td>□ 0</td>
</tr>
<tr>
<td>22. Concentrate on your work</td>
<td>□ 1</td>
<td>□ 2</td>
<td>□ 3</td>
<td>□ 4</td>
<td>□ 5</td>
<td>□ 0</td>
</tr>
<tr>
<td>23. Work without losing your train of thought</td>
<td>□ 1</td>
<td>□ 2</td>
<td>□ 3</td>
<td>□ 4</td>
<td>□ 5</td>
<td>□ 0</td>
</tr>
<tr>
<td>24. Easily read or use your eyes when working</td>
<td>□ 1</td>
<td>□ 2</td>
<td>□ 3</td>
<td>□ 4</td>
<td>□ 5</td>
<td>□ 0</td>
</tr>
<tr>
<td>25. Speak with people in person, in meetings or on the phone</td>
<td>□ 1</td>
<td>□ 2</td>
<td>□ 3</td>
<td>□ 4</td>
<td>□ 5</td>
<td>□ 0</td>
</tr>
<tr>
<td>26. Control your temper around people when working</td>
<td>□ 1</td>
<td>□ 2</td>
<td>□ 3</td>
<td>□ 4</td>
<td>□ 5</td>
<td>□ 0</td>
</tr>
<tr>
<td>27. Help other people to get work done</td>
<td>□ 1</td>
<td>□ 2</td>
<td>□ 3</td>
<td>□ 4</td>
<td>□ 5</td>
<td>□ 0</td>
</tr>
</tbody>
</table>
MOS SF-36 Health Survey (Rand Corporation)

INSTRUCTIONS: This survey asks for your views about your health. This information will help keep track of how you feel and how well you are able to do your usual activities.

Answer every question by marking the answer on the supplied answer sheet. If you are unsure about how to answer a question, please give the best answer you can.

1. In general, would you say your health is:
   1. Excellent
   2. Very Good
   3. Good
   4. Fair
   5. Poor

2. Compared to one year ago, how would you rate your health in general now?
   1. Much better now than one year ago
   2. Somewhat better now than one year ago
   3. About the same as one year ago
   4. Somewhat worse than one year ago
   5. Much worse than one year ago

3. The following items are about activities you might do during a typical day. Does your health now limit you in these activities? If so, how much?

<table>
<thead>
<tr>
<th>Activities</th>
<th>Yes, Limited a Lot</th>
<th>Yes, Limited a Little</th>
<th>No, Not Limited At All</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Vigorous activities such as running, lifting heavy objects, participating in strenuous sports</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>b. Moderate activities, such as moving a table, pushing a vacuum cleaner, bowling, or playing golf</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>c. Lifting or carrying groceries</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>d. Climbing one flight of stairs</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>e. Climbing several flights of stairs</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>f. Bending, kneeling, or stooping</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>
4. During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of your physical health?

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Cut down on the amount of time you spent on work or other activities</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>b. Accomplished less that you would like</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>c. Were limited in the kind of work or other activities</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>d. Had difficulty performing the work or other activities (e.g., it took extra effort)</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

5. During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of any emotional problems (such as feeling depressed or anxious)?

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Cut down on the amount of time you spent on work or other activities</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>b. Accomplished less that you would like</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>c. Did not do work or other activity as carefully as usual</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

6. During the past 4 weeks, to what extent has your physical health or emotional problems interfered with your normal social activities with family, friends, neighbors, or groups?

1. Not at all
2. Slightly
3. Moderately
4. Quite a bit
5. Extremely

7. How much bodily pain have you had during the past 4 weeks?

1. None
2. Very Mild
3. Mild
4. Moderate
5. Severe
6. Very Severe

8. During the past 4 weeks, how much did pain interfere with your normal work (including both work outside the home and housework)?
   1. Not at all
   2. A little bit
   3. Moderately
   4. Quite a bit
   5. Extremely

9. For each question, please give the one answer that comes closest to the way you have been feeling.

   How much of the time during the past 4 weeks…

<table>
<thead>
<tr>
<th></th>
<th>All of the Time</th>
<th>Most of the Time</th>
<th>A Good bit of the Time</th>
<th>Some of the Time</th>
<th>A Little of the Time</th>
<th>None of the Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Did you feel pep</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>b. Have you been a very nervous person</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>c. Have you felt so down in the dumps that nothing could cheer you up</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>d. Have you felt clam and peaceful</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>e. Did you have a lot of energy</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>f. Have you felt downhearted and blue</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>g. Did you feel worn out</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>h. Have you been a happy person</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>i. Did you feel tired</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>

10. During the past 4 weeks, how much of the time has your physical health or emotional problems interfered with your social activities (like visiting with friends, relative, etc.)?

   1. All of the time
   2. Most of the time
3. Some of the time
4. A little of the time
5. None of the time

11. How TRUE or FALSE is each of the following statements for you?

<table>
<thead>
<tr>
<th>Statement</th>
<th>Definitely True</th>
<th>Mostly True</th>
<th>Don't Know</th>
<th>Mostly False</th>
<th>Definitely False</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. I seem to get sick a little easier than other people.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>b. I am as healthy as anyone I know.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>c. I expect my health to get worse.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>d. My health is excellent.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

**MEDICAL/SOCIAL HISTORY**

A1. Age (years) ___________________________ Date of Birth (day, month, year) _____

A2. Height ______ in.  

A3. Weight ______ lbs.

A4. Gender  

- Male  
- Female

A5. Marital Status  

- Single/Divorced/Separated  
- Married/Remarried/Common Law

A6. Do you have children at home?  

- No  
- Yes

A7. How many weeks or months have you had heart problems? ______ weeks or ______ months

<table>
<thead>
<tr>
<th>A8a. Have you had any of the following medical conditions or procedures? (Please circle 0 or 1 for each condition)</th>
<th>A8b. Has this condition affected your ability to work?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>YES</td>
</tr>
<tr>
<td>Condition</td>
<td>Yes</td>
</tr>
<tr>
<td>-----------------------------------------------</td>
<td>-----</td>
</tr>
<tr>
<td>i) Epilepsy</td>
<td>1</td>
</tr>
<tr>
<td>j) Lung condition</td>
<td>1</td>
</tr>
<tr>
<td>k) Rheumatoid arthritis</td>
<td>1</td>
</tr>
<tr>
<td>l) Osteoarthritis</td>
<td>1</td>
</tr>
<tr>
<td>m) Arthritis - Other types</td>
<td>1</td>
</tr>
<tr>
<td>n) Back Pain</td>
<td>1</td>
</tr>
<tr>
<td>o) Other joint pain – Specify:</td>
<td>1</td>
</tr>
<tr>
<td>p) Artificial joints – Specify:</td>
<td>1</td>
</tr>
<tr>
<td>q) Stomach, bowel problems</td>
<td>1</td>
</tr>
<tr>
<td>r) Bladder/urinary problems</td>
<td>1</td>
</tr>
<tr>
<td>s) Cancer</td>
<td>1</td>
</tr>
<tr>
<td>t) Drug addiction</td>
<td>1</td>
</tr>
<tr>
<td>u) Alcohol dependency</td>
<td>1</td>
</tr>
<tr>
<td>v) Depression</td>
<td>1</td>
</tr>
<tr>
<td>w) Other psychiatric illness</td>
<td>1</td>
</tr>
<tr>
<td>x) Other (specify):</td>
<td>1</td>
</tr>
</tbody>
</table>

A9. Prior to your heart condition, did you miss work due to illness or injury for a period of 2 weeks or more in the last 5 years?

☐ 1 Yes  ☐ 0 No

A10a. Are you presently unable to work due to any condition apart from your heart problem?

☐ 1 Yes  ☐ 0 No

A10b. If yes, please specify: ________________________________

A11. What is your level of education?

☐ 1 Elementary school

☐ 2 Some high school

☐ 3 High school diploma

☐ 4 College diploma

☐ 5 University degree
A12. What is your personal income? (Dollars per year)

- $1 Under $20,000/year
- $2 $20,000 to $40,000
- $3 $40,001 to $60,000
- $4 $60,001 to $80,000
- $5 over $80,000

A13. What is your household income? (Dollars per year)

- $1 Under $20,000/year
- $2 $20,000 to $40,000
- $3 $40,001 to $60,000
- $4 $60,001 to $80,000
- $5 over $80,000

This is the end of the questionnaire. Thank you again for your participation.
Appendix F

INFORMATION AND CONSENT FORM TO PARTICIPATE IN THE STUDY
"Work adjustment with cardiac illness: a qualitative exploration from the workplace"

Contact: Fergal O'Hagan (Ph.D. Candidate) (877-449-4446)
Dr. Scott Thomas (Supervisor) (416) 978-0565

Purpose of the Study: I understand that the purpose of this research is to study the process of returning
 to work after experiencing a heart health problem.

Description of the Study: I understand that taking part in this study will participating in an interview of 90
to 120 minutes length, the content of which will be recorded on tape. I understand that the researchers
may contact me in the future to review my work and health status. I will also complete a study
questionnaire that will ask about my health, my work, and personal information.

The interview will ask me about my views and experiences on return to work and working with cardiac
illness, how I am managing with work and things that have been helpful and not so helpful in allowing me
to manage.

Benefits: I understand that there will be no direct gain for taking part in this study; however, the results of
this study may benefit workers returning to the job with cardiac illness through the development of policies
and programs to assist them.

Potential Harm: I understand that there are no known harms associated with completing the
questionnaire or participating in the interview for this study. Health and work disability are sensitive issues
which may be upsetting to discuss. I understand that my comfort in discussing these issues will be
respected at all times.

Confidentiality: I understand that my confidentiality will be respected and no information regarding my
identity will ever appear in any publications or presentations. **Neither Sunlife Insurance, my employer
or union will be made aware of my participation.** No individual information will be provided to my
employer, union or others. The research team will maintain my confidentiality by removing names and
other identifying information from the questionnaire, transcript, and exclude my name from written reports.
Questionnaires, tapes and transcripts will be locked filing cabinets accessible only by study researchers.
Identifying information will be kept separate from any questionnaires, tapes and transcripts.

Participation: I am aware that my participation is voluntary and I have the right not to participate or to
freely withdraw from this study at any time during its course.

Consent: The research study and procedures have been explained to me and any questions have been
answered to my satisfaction. The potential harms have been explained to me and I also understand the
benefits to taking part in this study. I know that I may ask now, or in the future, any questions that I have
about the study or the research procedures. I have been assured that no information will be released or
printed that would disclose my personal identity.

I will be provided with a signed copy of this consent form for my records. If I have questions about the
study I can contact any of the two people listed at the top of this page (Fergal O'Hagan, Scott Thomas). I
may also contact University of Toronto Research Ethics Board at 416-946-3273 if I have any questions
about my involvement as a research participant.
Participant’s name  Participant’s Signature  Date

Fergal O’Hagan

Researcher’s Name  Researcher’s Signature  Date

CONTACT INFORMATION

Address

City  Province  Postal Code

Home Phone  Work Phone

Record #:
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Sent: Monday, December 29, 2008 09:26 pm
To: Serepy, Marcia
Subject: copyright

Dear Ms. Serepy;

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Is it possible to receive copyright approval?

Fergal O'Hagan
PERMISSION TO USE THE WLQ PRODUCTS PACKAGE (WLQPP)
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The Work Limitations Questionnaire Products Package (WLQPP defined below) is provided to University of Toronto for use in Return to work with cardiac illness. A qualitative exploration from the workplace. We request that users of our products contribute non-identifiable data to us in return for waiver of the user fee. The data enables us to continually improve our service to the user community. We use the data to perform psychometric analyses and, when applicable, to build normative/comparative data bases. In return for access to data, we agree not to disclose the identity of the data source, or any other characteristics that could be used to reveal the identity of the study sponsor and/or participants. Please initial here to indicate you are a research entity that will use the WLQPP for internal research purposes only: [_initials].

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- permission to publish data obtained by using the WLQPP citing the appropriate copyright;
- permission to duplicate The Work Limitations Questionnaire and other WLQPP products for dissemination to study personnel and participants;

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- Scoring Algorithms and Instructions for The Work Limitations Questionnaire;
- The WLQ Productivity Loss Index ©

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• You agree not to share the WLQ Productivity Work Index© in any form to anyone.

• When reproducing the WLQ for your use, please include an identifier as follows:

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  Questionnaire is based upon the English language version of the Work Limitations Questionnaire, © 1998, The Health Institute, Tufts Medical Center f/k/a New England Medical Center Hospitals, Inc.; Debra Lerner, Ph.D.; Benjamin Amick III, Ph.D.; and GlaxoWellcome, Inc. All Rights Reserved.

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• The study data will not be used to develop another questionnaire with the same purpose as any part of the WLQPP.

• In any publication resulting from the use of the WLQPP, you do not reproduce any part of the WLQ, or the WLQ Productivity Loss Index.

If you agree to the terms of this letter of permission to use, please return a signed copy to my attention and the completed User’s Profile, and we will fax or mail you the WLQPP.

For technical advice and consultation regarding the use of the WLQPP, please contact Debra Lerner, Ph.D. at The Health Institute, 617-636-8636 or wlp@tuftsmedicalcenter.org. We wish you good fortune in pursuing your goals.

Respectfully,

WLQPP Administrator

Agreed to by:

[Signature]

Name Fergal O'Hagan
Title Ph.D. Candidate

[Signature]

Elyan Byron
Vice President
Research Administration
Tufts Medical Center