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**A Case Study Evaluation of Department of Finance Employees
that Participated in a Health Risk Assessment:
Identification of Positive Lifestyle Changes**

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Abstract

Employers may benefit from investing in employee wellness through reductions in employee health care costs, improved productivity of healthy workers, and fewer missed days (Baicker et al., 2010). The workplace may therefore be a good environment for health initiatives (Linnan et al., 2008). A health risk assessment (HRA) is an example of a health initiative that is used to assess personal health habits and risk factors, to quantify mortality risk, and to provide education and/or recommendations to improve health (DeFries & Fielding, 1990, and Connell et al., 1995). The Department of Finance of the Nova Scotia Government has implemented a Healthy Workplace (HWP) Program, and as part of this, held 2 HRAs from 2007-2010.

This study will provide the Department of Finance with an assessment of the impact of the 2007 and 2010 HRAs, and the effectiveness of other HWP initiatives held in the Department. It will act as a needs assessment for future HWP initiatives and help fulfill the goals outlined in the Department of Finance's HWP Business Plan 2008-2014. It may also provide information to other government departments and other employers.

Problem Statement

Occurrence of lifestyle changes based on HRA results among Department of Finance employees is unknown. The role of HWP initiatives of the Department's HWP Committee in helping employees make lifestyle changes is also unknown.

Research Goal

To explore lifestyle changes in diet and/or physical activity that can have a positive impact on health, made by employees of the Department of Finance during time at and away from work, since having completed 2 HRAs. It will also determine factors within the Department that have helped facilitate lifestyle changes.

Methods

A case study of the effectiveness of HWP initiatives was conducted. Twenty (20) participants were recruited (n=12 female, n=8 male) who had participated in 2 HRAs. One-on-one interviews were held, using Appreciative Inquiry methodology to guide the interview questions that answered the specific objectives of the study. Data were analyzed for common themes based on study objectives and multiple theoretical frameworks.

Results

Employees who participated in HWP initiatives made changes to their lifestyle both at and away from work to improve their health in response to results from their HRAs. Positive aspects of the HRA process, as well as positive outcomes as a result of the HRAs were identified by employees. These positive impacts extended to include family, friends, and coworkers. Impact on the Department included the building of a team environment, and the positive changes in behaviours made by employees are predictors of improved health and productivity. These predictors have sometimes been found to result in cost savings (Baicker et al., 2010, Pronk & Kettle, 2009, and Meunier, 2008). Factors within the Department that had a positive influence on lifestyle change included the HWP Committee, HWP Initiatives, the Senior Advisor for Workplace Initiatives, and the Department as the employer. Many HWP initiatives held in the Department were a positive support for change, and many ideal situations were identified in which employees would make further lifestyle changes.

Conclusion

This study will help fill a gap in the literature, as the appreciative inquiry methodology was used to identify the positive lifestyle changes made by employees of the Department of Finance, and the factors that contributed to these healthy changes. In addition it provides information that will be critical in supporting employee lifestyle change in the future.

Recommendations

It is recommended that the Department of Finance continue its use of bi-annual HRAs, and continue to evaluate its HWP initiatives. It is also recommended they use these results to inform future HWP initiatives, and to fulfill their goal of achieving Level II in the NQI PEP® in HWP®.

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1. Literature Review

In Canada, health care spending continues to increase. While the majority of this money is spent on the treatment of disease, the proportion being spent on health promotion and the prevention of disease is also increasing (Baicker, Cutler, D., and Song, Z., 2010). The average Canadian spends more than half of his or her waking hours at work, and one half report working evenings and weekends (Raizel, 2003). This makes the workplace a great venue for investments in health (Baicker et al., 2010). In addition, due to the downsizing of many companies, employees must often work even longer hours with fewer resources, which can have a negative impact on productivity (Raizel, 2003). Employers may benefit from investing in employee wellness through reductions in employee health care costs, as well as through improved productivity by healthy workers, and fewer missed days (Baicker et al., 2010). The workplace can also be a good environment for health initiatives as co-workers can be a source of support for one another when making healthy lifestyle choices (Paton, 2008).

Employers have known of the relationship between the bottom line and healthy, happy employees for decades, and in the 1940's and 50's companies began social clubs and organized outings and picnics. In the 1970's and 80's the focus shifted to individual fitness and smoking-cessation programs. In the 1990's there was a shift to workplace spirituality, including motivational speakers and yoga. Today the focus takes a more inclusive approach, and is encompassed under the umbrella term of "workplace wellness" (Raizel, 2003).

In Canada, as of 1996, the three leading causes of death for both males and females are cancer, heart disease, and cerebrovascular disease (Leading Causes of Death, 1996). Heart disease is now the leading cause of death in women (Women and Heart Disease and Stroke, 2010), with heart disease costs for both men and women at about \$5 billion a year in lost productivity and disability (Raizel, 2003). The risk of developing any of these three disease conditions can be reduced by making healthy lifestyle choices such as quitting smoking or improving the diet.

Obesity has been linked to many chronic diseases such as hypertension, Type 2 diabetes mellitus, coronary artery disease, osteoarthritis, and certain types of cancer (Physical Activity During Leisure Time, 2008). In Canada in 2008, 58.6% of men and 43.5% of women self-reported as overweight or obese and therefore were at increased health risk (Adult Body Mass Index, 2008). To assess the health risks of obesity, the World Health Organization and Health Canada use guidelines based on Body Mass Index (BMI), which is a measure that examines weight in relation to height (Adult Body Mass Index, 2008). In 2005, the total direct cost of obesity in Canada was \$1.8 billion (Obesity in Canada: Snapshot, 2009). The World Health Organization has predicted that obesity could have as great an impact on health as smoking (Canadian Community Health Survey: A First Look, 2002).

While much of the focus of workplace health is given to physical health of the individual employee, true workplace health must be much more inclusive. The Healthy Workplace Model® developed by the National Quality Institute (NQI) has a comprehensive definition of what makes up a Healthy Workplace®, including *Health and Lifestyle Practices, Physical Environment and Occupational Health and Safety, and Workplace Culture and Supportive*

Environment (Used with permission of NQI, National Quality Institute, 2006). The NQI is a partner of Canadian HWP month, held in October, of which the Nova Scotia Government is a participant. The website for Healthy Workplace Month, lists the following as healthy workplace topics for which they provide resources: active living, healthy eating, business cases, case studies, disability management, being green at work (environmentally friendly), health information and promotion, journals/newsletters/publications, legislation, mental health, occupational health and safety, pandemic preparedness, smoking and the workplace, substance abuse, violence prevention, workplace culture, work-family-life issues, workplace health promotion programming, and workplace research (Resource Well, Healthy Workplace Month). Healthy workplace (HWP) is a broad concept that encompasses a wide variety of elements related to health and well-being. However, diet, exercise, and stress management are among the most popular elements for HWP programs. The National Health Promotion Survey reports that in the United States the most common types of programs offered were programs for employee assistance (generally offering mental health or counseling services), followed by programs for prevention of back injury, stress management, nutrition, health care consumerism, and weight management (Linnan et al., 2008). However more commonly researched are wellness programs that focus on obesity and smoking, with more than 60% of programs focused on weight loss and fitness (Baicker et al., 2010). This is likely because results are more easily obtained than from other wellness programs, such as those that promote mental health or healthy workplace culture. Seventy-five percent of programs analyzed in a meta-analysis focused on more than one risk factor, including stress management, back care, nutrition, alcohol consumption, blood pressure, and preventative care, in addition to smoking and obesity

(Baicker et al., 2010). Diet and exercise are two important lifestyle factors that can influence a person's weight, therefore it is important to eat a balanced diet. Fruit and vegetables are a part of this diet, can help reduce disease risk, and Eating Well with Canada's Food Guide recommends eating 7-10 servings per day (Eating Well with Canada's Food Guide, 2011). However, as of 2008 less than one half of Canadians (43.7%) aged 12 years and older reported consuming fruit and vegetables five times or more per day. Nova Scotian's consumed even less than the national average (Fruit and Vegetable Consumption, 2008).

Programs that assist with mental health and stress also play an important role in overall workplace health. Mental and emotional well-being can affect one's ability to go to work, ability to focus while they are there, and can also influence physical health. Mental illness costs the Canadian economy \$51 billion annually in lost productivity (Mental Health Leaves Most Costly Disability to Canadian Employers, 2010). Mental health can be especially important in terms of retention of employees, as those who experience depression or high levels of perceived stress may be more likely to leave their job (Lavoie-Tremblay et al., 2008). The most common factors at work associated with poor psychological health tend to be work demand, including long hours, workload and pressure. Other factors include lack of control over work, and lack of support from managers (Michie & Williams, 2003).

Employee walking programs have shown a significant increase participant's physical activity level, as well as a significant decrease in BMI (Chyou, Scheuer, and Linneman, 2006). Workplace interventions where healthy eating education, change to the work environment, or both, have been found to lead to positive changes in fruit, vegetable, and total fat intake (Mhurchu, Aston, and Jebb, 2010). In terms of employee's emotional health,

there is a relationship between the work environment and psychological health as experienced by new employees, which is often evaluated when developing interventions to successfully recruit and retain the new employees (Lavoie-Tremblay et al., 2008). As well, employee assistance programs are among the most common types of workplace programs (Linnan et al., 2008). They have been found to be effective tools to help employees, and also their families, confront and solve problems that affect both their work and home life (Hockley, 1992). Occupational health and safety is also important to the health of a workplace. Employee's risk perceptions, behaviours, and attitudes are adversely affected when they perceive that safety is no longer a priority of their employer. It is therefore important to maximize safety resources by adopting a multifaceted approach combining employee training and involvement, ergonomic job design, medical surveillance, competent supervision, and a corporate organization that promotes safety. Employers can reduce losses by adopting programs shown to promote a positive safety culture without sacrificing productivity or profit (Hylko, 2007).

Workplace or organizational culture is often a complex area of workplace health. It is one that can have an effect on the physical and emotional health of employees, as workplace culture with gender-related stress can have a negative impact on female employee health (Bergman, 2003). A Women Workplace Culture Questionnaire (WWC) that included four factors; perceived burdens on the individual woman, perceived burdens on women in general, sexual harassment, and organizational support found significant correlations between the WWC factors and self-reported ill health, psychosocial stress, and work satisfaction (Bergman, 2003). Not only do employees benefit from health and wellness programs, but employers may also see a financial benefit from decreases in absenteeism

and increases in productivity. For example, British Columbia Hydro reports a return on investment of its employee wellness program of three to four dollars for every dollar invested (Raizel. 2003). Other positive outcomes of such workplace initiatives include those seen as a result of the “Well@Work” program by the British Heart Foundation (BHF) across England. Employers of business that participated have seen an increase in weekly step counts as determined by pedometers, increased walking and cycling to work, increased use of stairs, and increased intake of fruit and vegetables (Paton, 2008). Recommendations that buildings are designed to encourage employees to be more active and ensure that catering contracts require that healthy food is available are other outcomes (Paton, 2008). As well, among 36 different wellness programs conducted in large business firms (of more than 1000 employees), it was found that medical costs fell by \$3.27 for every dollar spent on wellness programs, and that absenteeism costs fell by about \$2.73 for every dollar spent. While there are limitations to broader generalization of these findings, it is an example of the potential benefit that exists, from which lessons can be learned by other businesses with various types of wellness programs (Baicker et al., 2010).

The Nova Scotia Department of Finance’s HWP committee, serving a population of approximately 200 employees, coordinated the administration of two Health Risk Assessments (HRAs) since 2007. HRAs, also known as health risk appraisals, are a helpful tool as they can be used to; assess personal health and current lifestyle, create awareness of potential health risks (AHWI Factsheet), motivate people to take advantage of health promotion or education programs, help health care practitioners become involved in the prevention of clinical encounters with patients, and help employers determine the health risks facing their employees (DeFriesse & Fielding, 1990). This in turn can help determine

the types of health programs offered (DeFrieze & Fielding, 1990). HRA's can also be used to determine population health risks, leading to targeted development of health promotion programs (DeFrieze & Fielding, 1990). While HRAs offer suggestions to improve health through changes in lifestyle; it is a practical guide and not a medical diagnostic tool (AHWI Factsheet). It has been reported that HRA is the most commonly used method of delivery of health intervention, closely followed in popularity by provision of self-help education materials, individual counseling by health care professionals, or on-site group activities (Baicker et al., 2010). Due to their relatively low cost and ease of implementation, HRA's have been widely used in health promotion programs, especially in the workplace (Connell, Sherpe, and Gallant, 1995). The HWP committee of the Department of Finance used both the aggregate results from the 2007 HRA, as well as information from the survey "How's Work Going", as a needs assessment to guide their HWP initiatives. The "How's Work Going" survey is a HWP initiative that is conducted across the Nova Scotia Government. It has been conducted biannually at the Department of Finance, and from 2007 to 2009 feedback from employees increased. The 2009 survey also identified an increasing trend in employee's belief that their Department promotes a healthy and supportive workplace (Public Service Commission Evaluation and Audit, 2010).

While there is a lack of standardization in the format of HRA instruments, there are common factors that have been identified (Connell et al., 1995). As a change from the HRAs original purpose of assessing mortality risk, the new focus is on HRAs potential to be a tool for education and behaviour change (Meunier, 2008). Health risk assessments generally consist of three elements including assessment of personal health habits and risk factors, quantitative mortality risk, and education and/or recommendations to improve health

(DeFries & Fielding, 1990, and Connell et al., 1995). The assessment of personal health habits and risk factors are based on questionnaire responses provided by the individual. Biomedical measurements such as height, weight, blood pressure, urinalysis, blood chemistry, and fitness level can also be determined. Quantitative assessment of the individual's future risk of death or other adverse health outcomes from several specific causes can also be determined. Educational counseling can then be provided, to modify individual risk factors that may affect the risk of disease or death (DeFries & Fielding, 1990). Differences that exist between HRAs can make it challenging to compare results between the groups that use them, however these differences can also be used to tailor the HRA to the group or organization that wants to use to.

HRAs can be used on their own or in combination with health promotion interventions such as individual health counseling or self-help materials to help determine the effects of health behaviour such as exercise frequency and health status (Connell et al., 1995). This status is often measured by total cholesterol, systolic and diastolic blood pressure, and BMI. Employees that receive a combination of a health promotion intervention and HRA, or each component separately can significantly lower systolic blood pressure and BMI (Connell et al., 1995). However, the intervention and HRA do not always reflect a significant effect on health behaviour, perhaps because there is less opportunity or motivation for change.

HRAs have also been found to increase the intention to modify exercise behaviour and potentially other health behaviours, however the HRA should also be supplemented with additional health interventions to support the employee in turning intention into action (Boudreau, Godin, Pineau, and Bradet, 1995, and Godin, Desharnais, Jobin, and Cook, 1987), or to see changes over the longer term (Godin et al., 1987). Even when employees are

exposed to the same health behaviour intervention activity such as a Canadian Home Fitness Test (CHFT), there is only a significant intention to modify behaviour if employees are given the results of a HRA's as well (Godin et al., 1987).

HRA's in older persons (HRA-O's), ages 65 years and older, have found no significant differences in self-reported health risk behaviour after one year of completing the HRA-O, except for a small statistically significant difference in compliance to recommended physical activity (of ≥ 5 times per week). Again, suggesting the importance of supplementary reinforcement involving direct professional/patient follow-up contact in order to achieve benefit from the HRA (Harari et al., 2008), and perhaps increased opportunities that encourage change. HRA-O participants have also been found to have a higher rate of preventative care, including receiving an influenza vaccine within 1 year, measured for cholesterol within 5 years, and fasting glucose within 3 years, compared to those who did not participate in a HRA-O (Harari et al., 2008). The latter two measures were outside the study period suggesting that people who participate in HRA-O's may be slightly more conscious of their health in general.

Some behaviour changes described above were more significant than others, and common recommendations include further follow-up, or additional motivational factors in order to result in longer-term health behaviour changes. Gaps in the literature also include a lack of detail about what healthy changes were made, and most often take a very narrow definition of health behaviour by only identifying exercise behaviour. Another gap in the literature is a lack of information about healthy workplace programs that may or may not have existed at workplaces being studied, which may have influenced the degree to which subjects made lifestyle changes. Also, while there is continued research in the area of

health outcomes after completion of a HRA, there is little to no literature that outlines the specific lifestyle changes participants made in order to improve their health.

2. Description of the Case

In February 2007, The Public Service Commission of the Nova Scotia Government finalized the Corporate HWP Policy. The Government of Nova Scotia's Corporate Human Resource Plan 2005-2010 and the Department of Finance Business Plan for 2009-2010 have identified providing a safe and supportive work environment for its employees as a priority.

The Department of Finance's 2009-2010 Business Plan states that it remains strong in its support to employees and has implemented a Healthy Workplace program which follows the Corporate NQI HWP® Model. The program remains true to the model and will continue to address all three sides of NQI model equally. In doing so, the Department of Finance Healthy Workplace Program supports establishing of a culture where Occupational Health and Safety is embedded, the workplace is seen to be supportive, respect among all is the norm, and healthy lifestyle practices are encouraged and championed (Nova Scotia Department of Finance, 2009).

The Department of Finance HWP committee's role is to help provide a safe and healthy work environment for all employees. The committee organizes activities and initiatives for employees that relate to all three aspects of a HWP according to the NQI Model for a HWP®. The various types of initiatives offered by the Department of Finance since 2008 have included activities that touch on all three elements in the NQI HWP Model®. The list of initiatives can be seen in Appendix A.

In October, 2007, 70% of employees in the Department of Finance of the Nova Scotia Government participated in a biennial HRA based on feedback they received from the survey “How’s Work Going”, and in January 2010, a second HRA was conducted, with a participation rate of 50%. The intention for the first HRA was to provide valuable personal health information and education to the employee. As well, the HRA was intended to help with departmental recruitment by promoting the department as an employer of choice, as the department was taking an active interest in the health and well-being of its employees. The HRA was also introduced to act as a comprehensive needs assessment for the HWP committee, as it could give a better idea about what types of initiatives and programs employees needed and would be interested in. This could potentially help improve the health and happiness of employees, which in turn could help retain employees, potentially reduce sick-time, improve productivity, as well as the department’s budget.

A multi-pronged communication approach was used to notify employees of both HRAs, which included a group email, information sessions, posters, and social marketing by the HWP committee. While participation was voluntary, employees were encouraged to participate by members of the HWP committee. The first HRA included a questionnaire entitled The Personal Wellness Profile™, used by Creative Wellness Solutions (CWS) and its research affiliate, the Atlantic Health and Wellness Institute (AHWI) (AHWI Fact Sheet). The questionnaire took approximately 20-30 minutes to complete, and included questions about physical activity, nutrition, stress, safety, and general health. A Registered Nurse along with trained assistants collected clinical data that included height, weight, waist circumference, and blood pressure. A blood sample was also taken to measure blood sugar and cholesterol. Screening was done in a private area at the workplace, the questionnaire

was completed in paper, and the staff of CWS collected the data (AHWI Factsheet). A hard copy of the employee's HRA results were mailed to their home address in a sealed envelope stamped "Confidential". Aggregate results for the workplace were reported during health information sessions, in order to report on the HRAs while ensuring individuals were not identified.

The second HRA was conducted in 2010 using a similar protocol. The same clinical data were obtained, but this time collected entirely by the Registered Nurse. Some of the items on the questionnaire were different than the 2007 HRA, and employees completed the questionnaire online. This allowed employees to have access to their personal profile (which included their results) as well as an online resource library for one year following the HRA.

The employee's individual results for both HRAs included a wellness score, a health age and a potential health age, versus the actual age of the individual. It also included current fitness and nutrition habits, as well as heart health and cancer risk evaluation. Recommendations were also provided for preventative exams and actions based on employee's needs. If clinical results were abnormal, the nurse of CWS discussed these results with the individual, and recommended further check-up with their physician (AHWI Factsheet). The Registered Nurse was also available to discuss results one-on-one with any participant that wished to do so, and referrals to their family physician were provided where necessary. By conducting the HRAs, the Department of Finance aimed to increase employee awareness of their current health and lifestyle, which could have the potential to improve the health and well-being of employees, and create an overall healthier and more productive workplace.

3. Problem Statement

Currently, it is not known if employees that participated in the HRAs made any lifestyle changes based on the outcome of the initiative. If they did, it is not known what HWP activities, initiatives or workplace factors may have played a role in these changes, or what the conditions would have to be for employees to make further changes. This information will help to determine the impact of the HRAs on employee's lifestyle habits, as well as determine the HWP initiatives employees wanting to make changes found helpful, and act as a needs assessment and help guide for HWP initiatives in the future.

4. Significance of the Study

The intended outcome of this research was to provide the Department of Finance with an assessment of the impact of the 2007 and 2010 HRAs, and the effectiveness of the other HWP initiatives as a reference of positive outcomes. This can be used as a need assessment for future HWP initiatives by identifying what is working well. This in turn will help the department and the HWP committee decide upon initiatives to offer in the future and especially after subsequent HRA's. More specifically, it has helped fulfill the priorities outlined in the Department of Finance Healthy Workplace Strategic Plan 2010-2014 (Nova Scotia Department of Finance, 2010). These priorities include:

1. **Program Development:** Respond to the needs identified in the HRAs and work survey.
2. **Staff Involvement:** Involving staff to help them feel as though they are taking part in the decisions and programs that affect them.

3. **Senior Management Support:** Management contributing to planning, organizing, resourcing, leading or directing, and controlling for the purpose of accomplishing HWP goals.
4. **Healthy Workplace Certification and Recognition:** Level 2 (Planning) of the NQI PEP® Healthy Workplace® Certification is awarded when the organization has established and successfully implemented a set of predefined criteria (Nova Scotia Department of Finance, 2010).

This fourth priority refers to the Department of Finance and the Nova Scotia Government's commitment to improving the health of its workplaces, by following a Healthy Workplace® (HWP) Model developed by the NQI (Used with permission of NQI, National Quality Institute, 2006). The NQI, founded in 1992, is a not-for-profit organization whose mission is a commitment to advancing organizational excellence across Canada. It is comprised of a board of governors that include leaders from the private and public sector, health care, and the not-for-profit sector (About The National Quality Institute, 2010). The model includes three elements, lifestyle, physical environment and Occupational Health and Safety (OH&S), and workplace culture and supportive environment (Used with permission of NQI, National Quality Institute, 2006). In March 2007, the Nova Scotia Government was the first province in Canada to achieve NQI's Progressive Excellence Program Level I Certification. This study will help play a role in Level II certification by helping the department meet some of the action steps for NQI certification. These include helping to assess and evaluate employee needs in regard to healthy workplace programs, workplace culture, and a supportive environment. The study will also help the department set HWP goals based on current evaluation and needs assessment, and help the department provide programs that respond

to varying preferences, based on needs assessment and analysis that can come in part from this case study (Nova Scotia Department of Finance, 2010). This case study also provides information that will be useful to other departments of government, as well as a range of other employers.

5. Research Goal

The goal of this research was to explore the lifestyle behaviour changes, including changes in diet and/or physical activity made by employees of the Department of Finance of the Nova Scotia Government. It also explored the impact of employee lifestyle behaviour change on the people around them, as well as the organization. Factors within the department that helped facilitate lifestyle changes were also examined.

6. Specific Objectives

The research explored the following objectives:

Lifestyle Behaviour Changes

1. To determine if employees made positive lifestyle changes at work after participating in the HRAs.
2. To determine if employees made positive lifestyle changes outside of work after participating in the HRAs.

Workplace influence

1. To determine ways in which the workplace might have facilitated any positive lifestyle changes.
2. To determine if employees participated in any of the HWP initiatives offered by the

Department of Finance's HWP committee.

3. To determine which HWP initiatives employees participated in.

Positive Influence and Impact/Areas for Future Lifestyle Behaviour Change

1. To determine what employees thought was positive about the HWP initiatives that were offered, or that they participated in.
2. To determine which HWP initiatives employees would like to see repeated and why.
3. To determine what employees thought was positive about the HRA process.
4. To determine how HRA participation positively influenced lifestyle behaviour change.
5. To determine how participation in HRAs might have positively impacted others around them.
6. To determine how participation in HRAs might have positively impacted the organization.
7. To determine what employees considered to be an ideal work situation in order for them to make further healthy lifestyle changes.

7. Theoretical Framework

7.1. Appreciative Inquiry Methodology

Appreciative inquiry (AI) was used to guide the research questions for this case study. This was an appropriate method of evaluation for this study as it can be used as an approach for organizational change and development, and builds on past success. It is based on the philosophy that deficit-based approaches are not necessarily the most effective or efficient

(Christie, 2006). When evaluation looks for problems, it generally finds more problems, and there may be a feeling of helplessness, which can detract from the original topic being evaluated. By reflecting on what worked well in a situation and using affirmative and strength-based language, participant's enthusiasm about the future may be increased, creating a more positive atmosphere (Christie, 2006). This helped to highlight what was working within the Department of Finance that supported employees to make positive lifestyle changes during their workday and beyond.

Three sets of core questions are used in this type of inquiry. The first asks about *Peak Experiences*, such as what was happening that contributed to a successful experience. The second set asks *Values* questions, where participants describe what they value most about the topic, and what value they add to the inquiry. The third is called *The Three Wishes*, where participants are asked what they would wish for in order to have more positive experiences like the ones they previously described (Christie, 2006). This type of evaluation can include recommendations for change (Christie, 2006), or provide evidence of the importance of various initiatives.

Support of leadership is also important when using Appreciative Inquiry (Christie, 2006). This was considered at the Department of Finance, as Janet Briggs the Healthy Workplace Chair at the time of the research, was involved with the development of this case study, and was a member of the committee for this thesis. She provided support by informing potential participants of the study, and encouraged them to voluntarily participate. Other government employees in leadership positions also supported the development and growth of a HWP in this department and others. The Nova Scotia Government as a whole has identified providing a healthy, safe and supportive work environment for its employees

as a priority, and developed a policy to support this.

7.2. Organizational Culture

Organizations today must deal with changing environments and increasing diversity of organizations including cultural, generational, and educational changes within groups of employees, changes in technology, the economy, competition, social trends, and politics (Robbins, 1998 p. 626-627). One of the ways the Government of Nova Scotia is addressing some of these changes is by working towards improving the health of the workplace, for which they have built a business case for the promotion of a HWP that is supported across government. The concepts of organizational culture, and organizational behaviour as it relates to behaviour change, influenced the proposed case study as they were applied to the appreciative inquiry methods of data collection (Bryan, Klein, and Elias, 2007). These concepts were also used to help analyze the data (Schein, 1996) by aiding the understanding of how behaviours are influenced within an organization.

Culture is what a group learns over a period of time, and can be defined as a pattern of basic assumptions, invented, discovered, or developed by a given group. As the group learns to cope with its problems of external adaption and internal integration that has worked well enough to be considered valid, it is then taught to new members as the correct way to perceive, think, and feel in relation to those problems (Schein, 1990).

Organizations have the ability to be quite different, as some have no overarching culture because of a lack of common history or frequent employee turnover, while other organizations have a strong culture due to a long shared history or having shared important intense experiences (Schein, 1990). It was presumed that the Department of

Finance likely has what would be considered a stronger culture, as it has a long-standing history as a part of government, where traditions and policies created shared experiences within the organization.

An organization's shared norms, values, and assumptions help make up their culture, and are important in understanding how an organization functions (Schein, 1996). Understanding an organization's culture is important when observing behaviour, and when organizational data must be understood (Schein, 1996). Schein (1996) also suggests that norms held across large social units are more likely to change leaders, than be changed by them. He also states that culture, when viewed as a shared method of perceiving, thinking, and reacting, is one of the most powerful and stable forces in an organization. As a result, the organizational culture of Government and the Department would likely have an influence on the behaviour of the individuals in the department, and potentially on their lifestyle behaviour choices.

Culture may influence the data gathered for this study as the action of the Public Service Commission of trying to introduce the concepts of a HWP into the culture of the Nova Scotia Government may have a positive influence on their lifestyle choices of Department of Finance employees. This influence could come from support and/or modeling by leaders, and/or incentives to make healthier choices at work, such as prizes or giveaways. Coworkers may also influence each other's decisions about health negatively, as there may be group norms that exist, or positively, if they find strength in making changes with their fellow co-workers (Schein 1996). The promotion of HWP within the organizational culture could potentially have an influence employee's behaviour outside the workplace as well.

Understanding the factors that contribute to healthy lifestyle behaviour changes can be complex, as many factors influence behaviour both at the individual and organizational level. While health psychologists and other behavioural scientists have mostly paid attention to individual health behaviour models, much less attention has been given to models or theories that help researchers and others understand health behaviour change within groups or organizations (Oldenburg, Glanz, and French, 1999). While it is individuals that make up these organizations, such as the Department of Finance, the programs offered to make the workplace healthier are offered to the entire group. However, programs that work for one, might not work for all, so understanding that individuals will make changes under the conditions that work for them is also important. To thoroughly understand how individuals make changes, several theoretical frameworks were used to frame the interview questions, and help analyze the data once it was collected.

7.3. Transtheoretical Model and Stages of Change Theory

The Transtheoretical Model (TTM) was developed from the comparative analysis of many theories of psychotherapy and behaviour change (Prochaska, Redding, and Evers, 2002). The model is made up of core constructs including stages of change (SOC), decisional balance, self-efficacy, and processes of change (Prochaska et al., 2002) (Table 1). The SOC construct presents change as a process of progress through six changes, implying change happens over time. The six core constructs include *Precontemplation, Contemplation, Preparation, Action, Maintenance, and Termination* (Prochaska et al., 2002). They represent categories of readiness, or motivation to change a behaviour and can be used as part of an

assessment tool for understanding readiness for change (Prochaska, 2007). The construct provides a framework for understanding the behaviour change process and identifying the characteristics to address during tailored consultation (Faghri, Blozie, Gustavesen, and Kotejoshyer, 2008). It can also be used as a tool to assess health behaviours and can be used to help guide intervention programs (Prochaska, 2007).

Table 1 - Transtheoretical Model and Stages of Change

Core Constructs	Description
Precontemplation	Has no intention to take action within the next six months
Contemplation	Intends to take action within the next six months
Preparation	Intends to take action within the next thirty days and has taken some behavioural steps in this direction
Action	Has changed overt behaviour for less than six months
Maintenance	Has changed overt behaviour for more than six months
Termination	No longer succumb to temptation and have total self-efficacy

(Prochaska et al., 2002)

Tailored information can be used to assess employee's health behaviour following a HRA (Faghri et al., in 2008). Tailored information was also used with employees at the Department of Finance following the 2007 HRA conducted by a Registered Nurse with Creative Wellness Solutions; however it was tailored to the individual's health score with recommendations for change, not to the stage of change they might have been in.

The application of the transtheoretical model and SOC theory to this research was through data collection and analysis, as the subjects may have been at different stages of readiness to change.

7.4. Change Theory

Kurt Lewin, a researcher in the 1930's and 1940's, had a great impact on the theory and practice of social and organizational psychology (Schein, 1995). His basic change model of unfreezing, changing, and refreezing is a theoretical foundation upon which change theory could be solidly built (Schein, 1995) (Table 2). The basic concept of his theory was that human change, whether at the individual or group level, was a profound psychological dynamic process that involved a process of unlearning without loss of ego identity and difficult relearning as one attempted to restructure one's thoughts, perceptions, feelings, and attitudes (Schein, 1995). Ultimately, it required prior learning to be rejected and replaced (Wirth, 2004). Edgar Schein developed additional detail for a more comprehensive model of change theory which he called "cognitive redefinition" (Wirth, 2004).

Table 2 - Change Theory

Stages	Definition
Unfreezing	Becoming motivated to change
Changing What Needs to be Changed	Identifying what needs to change and making those changes
Refreezing	Making changes permanent

(Schein, 1995)

The first stage of this theory is becoming motivated to change, or the unfreezing stage. It is based on the theory that human behaviour is established by past observational learning and cultural influences (Schein, 1995). Changing a behaviour requires adding new factors for change, or removing some existing factors that are currently perpetuating the behaviour. Three sub-processes in this stage include: 1) Disconfirmation, whereby present conditions lead to dissatisfaction, such as not meeting personal goals. 2) Survival anxiety, which can be created when previous beliefs are now seen as invalid, however it may not be

sufficient to promote change if learning anxiety is present. 3) Overcoming learning anxiety. Learning anxiety triggers defensiveness and resistance due to the pain of having to unlearn what was previously accepted. In response to learning anxiety, people may go through denial, scapegoating, and manoeuvring/bartering (Schein, 1995 and Wirth, 2004). For change to occur, survival anxiety must be greater than learning anxiety, or learning anxiety must be reduced (Wirth, 2004).

Stage 2 involves changing what needs to be changed. Once there is sufficient dissatisfaction with the current conditions and there is a desire to make changes, there needs to be identification of what needs to be changed. Three possible impacts from processing new information are:

- 1) Redefinition, where words take on a new or expanded meaning.
- 2) Cognitive broadening, where concepts are interpreted in a broader context.
- 3) Changing the standards of judgment, where there is an adjustment in the scale used to evaluate new information (Schein, 1995, and Wirth, 2004).

Activities that aid in making a change include imitation of role models, and scanning for personalized solutions through trial and error learning (Schein, 1995).

Stage 3 involves personal and rational refreezing, or making the change permanent. A new behaviour becomes habitual, which includes developing a new self-concept and identity, and establishing new interpersonal relationships (Schein, 1995, and Wirth 2004).

This model provided a framework that helped with data analysis in understanding how employee's made lifestyle behaviour changes. It also helped to understand about what employees felt needed to change in their life or in the workplace in order for them to make the additional changes they would like to, and potentially understand what factors may

help make the behaviour last.

7.5. Health Belief Model

The Health Belief Model (HBM) was originally developed in the 1950's by social psychologists in the U.S Public Service to explain the common failure of people to participate in disease detection and prevention programs (Janz, Champion, and Strecher, 2002. p. 46). Later models included people's responses to symptoms and diagnosed illness, along with adherence to medical treatment (Janz, et al., 2002. p.46).

The constructs of the HBM (Appendix B)(Table 3), includes *perceived susceptibility*, which refers to one's perception of the risk of contracting or developing a health condition. It also includes *perceived severity*, which refers to perception of the seriousness of developing the condition or consequences of leaving it untreated, including both medical and social consequences. Both these constructs together are known as *perceived threat*. Another construct includes *perceived benefits*, which refers to one's perception of the potential health and non-health related benefits of taking a health action. Another construct of this model is *perceived barriers*, however because this study will follow the method of appreciative inquiry for data collection, the focus will be on what is working to help employees make healthy lifestyle choices, instead of what is not working. Other variables such as sociodemographic factors or level of education, may affect one's perception of susceptibility, severity, benefits and barriers. These variables are somewhat accounted for, as the subjects all have a certain level of education and age in order to be hired by the Department of Finance. However, this was a single case design, therefore while results were not representative of the entire population, it helped inform the Department of

Finance, and potentially other Departments who may conduct or want to conduct similar HWP initiatives.

Table 3 - Key Concepts and Definitions of the Health Belief Model

Core Constructs	Definition
Perceived Susceptibility	One's belief regarding the change of getting a condition
Perceived Severity	One's belief of how serious a condition and its sequelae are
Perceived Benefits	One's belief in the efficacy of the advised action to reduce risk or seriousness of impact
Perceived Barriers	One's belief about the tangible and psychological costs of the advised action
Cues to Action	Strategies to activate one's "readiness"
Self-efficacy	One's confidence in one's ability to take action

(Janz et al., 2002)

The construct of self-efficacy in the HBM is one's belief that they can successfully carry out a certain behaviour in order to obtain a health outcome. The behaviour can range from a one-time behaviour of having an immunization for example, to lifestyle behaviours which are more long-term changes (Janz. et al., 2002. p. 48-51). An additional component to the model is cues to action, which identifies cues that lead to action to influence health (Janz. et al., 2002. p. 48-51). It is now generally believed that people will take action to prevent, screen, or control their health issues; if they perceive themselves as susceptible to a condition, if they think it may have serious consequences, if they believe a certain action would successfully reduce their susceptibility or severity of a condition, or if they believe the costs of the action outweigh the benefits (Janz. et al., 2002. p. 47-48). This model provides a framework that helped guide the interview during data collection. It also helped in understanding how employee's lifestyle behaviour choices may have been affected by their belief about their own state of health (perceived susceptibility and severity) and their ability (self-efficacy) to make changes, as well as how the HRA and other factors in the

workplace might have influenced these beliefs.

7.6. Open Systems Theory

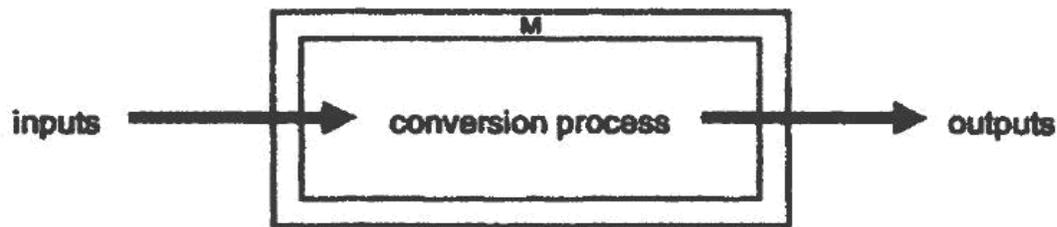


Figure 1 - Open Systems Theory Constructs (Roberts, 1994)

Open Systems Theory was developed based on the General System Theory presented by biologist, Ludwig von Bertalanffy, in 1937 (Pouvreau & Drack, 2006). Most organizations including the Department of Finance, are an example of an open system which is a system capable of self-maintenance, based on a throughput of resources obtained from the environment (Scott, 1992, p.83). The department has inputs from many different sources, and has also embraced a partnership in collaborating in the proposed thesis. The organization is a system of activities, required to convert inputs to outputs (Roberts, 1994)[Figure 1]. A boundary, that requires management, separates the inside of the organization from the outside, and across it the organization makes exchanges with the environment (Roberts, 1994). Individuals are not confined to these boundaries, but some of their activities and behaviours are (Scott, 1992, p. 83 and Pfeffer & Salancik, 1978). In saying that, even some of these actions can have an effect on more than one system simultaneously (Scott, 1992, p.83). All systems are made up of subsystems which exist within larger systems, creating linkages across systems, which can confound the attempt to maintain clear boundaries around the systems (Scott, 1992, p.83). The Department of

Finance HWP committee is a subsystem within the department, which is a subsystem within the Nova Scotia Government. They each have boundaries, yet they all have the ability to affect each other. The external environment also has the ability to influence organizations. These environmental influences include the nature of the workforce, technology, the economy, competition, social trends, governments and politics (Robbins, 1998. p. 627), and the law.

These influences can have an impact on the organization and its employees in many ways. The organization may be impacted by the nature of the workforce, as it is what makes up the organization. Employee's education, skills, work ethic, diversity, backgrounds, and decisions can all have an impact. Government and the decisions made by the political party in power, as well as the decisions of senior staff within the Department of Finance can also impact the department as an organization. Their decisions can influence the direction the department is going, as well as allocation of funds. The law can influence the department as they must uphold it, and use it to protect itself as well as employees. The economy influences this organization greatly in its role in managing the provinces finances, and also in its ability to provide resources to the organization, such as human and financial resources. Technology influences the way in which the organization does business, and how its employees work. Social trends and the public influences the organization as they democratically use their values and beliefs to control who is in power in the larger organization of the Nova Scotia Government, and can also have a voice about the decisions made by the subsystems (the departments). The impact on employees may concern job satisfaction, job security, and/or productivity. Inadvertently, these environmental factors may also have an effect on their decisions about lifestyle choices. Employees themselves

can be influenced by social trends and the public, which can then have an impact on the organization from the inside.

This model provided a framework to aid in the development of the interview guide for data collection, and during data analysis, allowed consideration about how employee's choices about lifestyle behaviour may be influenced by external factors that act on the organization they work in, and on themselves as individuals.

7.7. Lifestyle Behaviour Change

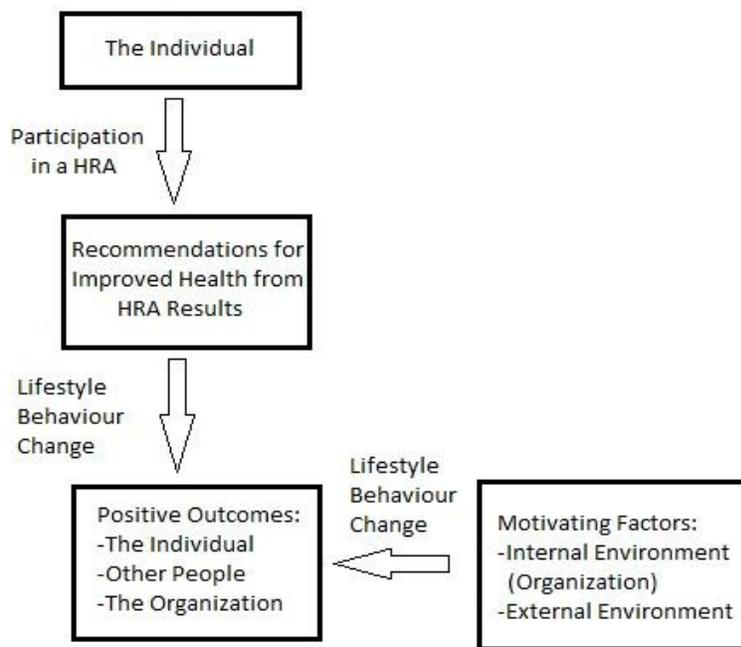


Figure 2 - Lifestyle Behaviour Change Model

The Lifestyle Behaviour Change Model has been adapted from the TTM and SOC, the HBM, Change Theory, Open System Theory, as well as concepts of AI and Organizational Culture, as a method of presenting the results of this study (Figure 2). The concept of this model is that behaviour change made by individuals begins from the recommendations for improved health from HRA results; however it is also based on the premise that other

factors exist that motivate and support behaviour change. Keeping true to the AI methodology, this model focuses only on the positive outcomes of lifestyle behaviour change.

8. Methods

8.1. Case Study Methodology

This research used a case study approach. This methodology was chosen as it allows the understanding of complex social phenomena. It allows a researcher to maintain meaningful characteristics of real-life events, such as individual life cycles and organizational processes (Yin, 2003, p. 2). Case studies can be of three types, explanatory, exploratory, and descriptive; however they can also overlap (Yin, 2003, p.5). This case study drew from all three types but mainly explored the factors that helped employees to make healthy lifestyle choices. It helped explain how and why any positive lifestyle changes were made by employees (Yin, 2003, p. 6). It also described the unique workplace circumstances that may have led to employees making positive lifestyle behaviour changes, such as past events, decision making, and lifestyles.

This case study was a single case design, which is appropriate when the case represents any of the following: a critical test of existing theory, a rare or unique circumstance, a representative or typical case, or when a case serves a revelatory or longitudinal purpose (Yin, 2003, p.46). This study represented a unique circumstance, as it highlighted the positive changes, and factors for change that existed during a specific period of time in the Department of Finance. There was also a need for embedded subunits of analysis within

the single case, as both individual and the organizational theories were considered in the analysis. This added significant opportunity for extensive analysis, and enhanced the insight into this single case (Yin, 2003, p.46).

A case study was the preferred method for research as “how” or “why” questions were posed (Yin, 2003, p.1). It was also an ideal method as the researcher had little control over events, as it investigated events that occurred in the past, and may still be occurring. It was also appropriate as the focus was on a contemporary phenomenon within some real-life context and not simply conducted in a laboratory (Yin, 2003, p. 1). This suited the study as data were collected about employee’s behaviours in the context of their actual work environment. Also, the data were collected from multiple sources, as the study analyzed multiple individual accounts of lifestyle behaviour change and identified trends in factors in the workplace that may have played a role in these changes. This study explored the unique case of the experiences of employees in a certain environment after participating in a specific event (HRA), in order to gain a better understanding of the environment and its influence on the behaviours of its employees.

8.2. Ethical Considerations

Ethics approval for this study was granted from the Mount Saint Vincent University Research Ethics Board (Appendix C). Confidential health information was gathered from participants as they shared the feedback they received from their HRAs and recommendations made by the nurse involved in the HRA process. General health information from HRAs results was reported however participant’s identities were kept confidential by using number identification on the raw data, with only the researcher

having access to the number that corresponds to the subject. This was also explained to participants, so that they could feel free to share information about their HRAs, previous lifestyle choices, any changes made, if they were maintained, and what factors contributed to this. Participants were also made aware during selection and interviewing, that they were free to withdraw from the study at any time without consequence. All information gathered during interviews was kept in a locked file and on the researcher's personal computer, which only the researcher had access to. All written transcript and recorded data will be destroyed by the researcher five years after publication of the study.

8.3. Recruitment and Selection of Participants

Forty-seven (47) employees that participated in both the 2007 and 2010 HRAs were contacted through their work email by the chair of the Senior Advisor for Workplace Initiatives, and invited to participate in the study by contacting the researcher whose contact information was provided (Appendix D). Some replies that were sent to the Senior Advisor for Workplace Initiatives were passed on to the researcher so she could contact the employee directly. Twenty (20) subjects out of the 47 employees who had participated in both HRAs agreed to take part in the interviews. One week was initially allowed for employees to express interest in participating in the study, however a second email requesting participation was be sent by the researcher after 1½ weeks to increase response rate. As well, the Senior Advisor for Workplace Initiatives personally contacted some additional candidates by phone in order to obtain the 20 participants. They were told at this time that their participation was voluntary and they could withdraw from the study at any time, without consequence. This personal notification is common practice for many

HWP initiatives held in the department, and many participants of this study identified that in addition to other initiatives held in the Department, this personal contact was a beneficial reminder.

8.4. Data Collection Interviews

Employees who expressed interest in participating were contacted by email and/or telephone by the researcher to set up a date and time for a one-on-one, in-person interview. All interviews were conducted over a one month period. At 20 interviews, no new information was obtained and thus saturation of information was reached. Interviews were conducted in a reserved office space at the Department of Finance, and interviews were held with the door closed and window covered to respect confidentiality. Each interview lasted approximately 30 minutes, and an interview guide was used (Appendix G). The guide was developed using the Appreciative Inquiry Method of questioning, while creating questions that would answer the specific objectives of the study. A 14th question was asked to the last 11 participants upon the request of the Senior Advisor to Health Workplace, in order to obtain information about what might have guided participant's decision to participate in the study. All interviews were audio recorded and supplemented with notes taken during the interview. All participants provided written informed consent at the time of the interview (Appendix E and Appendix F). Participants were also verbally informed that the interviews were going to be transcribed by a transcription service, and that their name would not be used at any time, maintaining confidentiality.

8.5. Data Analysis

Interviews were transcribed by a transcription service. At the time of the interview, participants were asked if they wished to receive a copy of their interview responses once transcribed. Participants that said yes were emailed a copy of the transcript, to conduct a member check and notify the researcher of any questions or concerns they had about the transcribed data. The information gathered was then analyzed for themes that aligned with the objectives of the study using the theoretical frameworks that guided the study.

9. Results and Discussion

This study was comprised of employees of the Nova Scotia Department of Finance that previously participated in 2 HRAs in the workplace. More women (n=12) participated than men (n=8). Information was gathered about positive lifestyle behaviour changes that employees made as a result of participating in the HRAs, as well as any additional factors that positively influenced these changes. The results of this case study align with the outlined objectives. The findings are organized into three main themes including *Positive Outcomes as a Result of HRAs*, *Motivating Factors that Positively Influenced Behaviour Change*, and *Opportunities for Additional Positive Outcomes*. The theoretical frameworks previously outlined in this study, the current literature, and the Lifestyle Behaviour Change Model [Figure 2] helped guide analysis and make meaning of the results.

9.1. Positive Individual Outcomes as a Result of HRAs

9.1.1. Changes Recommended by Participant’s HRA Results

The most common changes recommended to the participants based on the HRAs were to decrease weight, improve diet, and increase physical activity (Table 4). Other common recommendations were to decrease cholesterol and blood pressure. Participants were given specific recommendations on the types of changes to make to achieve the various recommendations such as increasing vegetable intake to improve the diet. Other advice given was to increase their amount of sleep per night, and decrease alcohol consumption. Some of these recommendations may have been enough motivation for participants to make positive lifestyle changes, while other participants may have been motivated by a combination of the HRA results and other interesting factors as seen in Figure 2.

Table 4 - Most Common Changes Recommended to Participants of HRAs

Changes Recommended by HRAs
1. Decrease Weight
2. Improve Diet
3. Increase Physical Activity

9.1.2. Changes Made by Participants During the Workday

The most common changes made by participants during their work day were to be physically active during their lunch break, as well as take time during lunch to mentally have a break, and some made the effort to just take a lunch break more often (Table 5). Others made the choice to bring their lunch from home more often, and bring healthier

foods for lunch, as well as healthier foods to snack on. Participants also chose to increase the amount of water they drink, while others chose to use the stairs more frequently. A complete list of changes made by participants can be seen in Appendix H.

Table 5 - Most Common Changes Made by Participants During the Workday

Changes Made During the Workday
1. Be More Physically Active During Lunch Break
2. Take Time During Lunch to Mentally Have a Break
3. Make an Effort to Take a Lunch Break More Often

9.1.3. Changes Made by Participants During Time Away From Work

Common changes made by participants during their time away from work include improving diet, which commonly included increasing fruit and vegetable intake. Increasing physical activity was also a common change made, with some participants choosing the gym, while others chose outdoor activities, or chose to use a treadmill or Wii Fit at home (Table 6). A complete list of changes made by participants can be seen in Appendix H. All participants except for 2, reported making lifestyle changes specific to the recommendations made by their HRA results. The more common changes participants reported making both during and away from work, correspond to the more common HRA recommendations reported by participants.

Table 6 - Most Common Changes Made by Participants During Time Away From Work

Changes Made During Time Away From Work
1. Improve Diet
2. Increase Physical Activity

The changes made by the participants in this study upon receiving recommendations to improve their health, are similar to those made by the participants of other studies where

health behaviours were measured. The changes in health behaviour and in cardiovascular disease risk were measured for a group of Hispanic women in California (Hayashi et al., 2010). They were divided into a control group called a usual care group (UCG), or an enhanced intervention group (EIG). The EIG group had three face to face counselling sessions in six months where they were counselled on nutrition and physical activity (Hayashi et al., 2010). The results of the study determined that a greater percentage of women from the EIG group made behaviour improvements in both eating habits and physical activity as compared to the UCG (Hayashi et al., 2010).), highlighting the importance of a behaviour change health intervention.

While it is valuable to document what behaviour changes occurred, understanding the process for why lifestyle changes are made is an important aspect for better understanding behaviour change, in an effort to encourage these changes. The following section discusses how or why participants might have made the decision to make changes to their lifestyle or not, upon receiving the results of their HRAs.

9.1.4. Understanding Differences in Behaviour Change

TTM and SOC Theory

It was clear that upon receiving the results of their HRAs, participants were at various stages in the six Stages of Change that make up the TTM (Prochaska et al., 2002) (Table 1). Some participants reported making extensive changes, others reported making a few changes, while others reported making no changes at all. It is possible that some people that made changes were in a similar SOC as someone who made few or no changes. It might have been that their HRA results were not the type of motivator that worked for that

participant to make changes to their lifestyle at that time. Future research could include determining the stage of change participants are in, both before and after the HRA in order to determine the effect HRA results have on the decision to make lifestyle changes. There may have been other factors that helped motivate participants to make some of the changes recommended in their HRAs, as is shown in the Lifestyle Behaviour Change Model [Figure 2]. These factors identified by participants are discussed later in this study.

Change Theory

The participants in this study who made lifestyle changes exhibited aspects of the Change Theory. For example by deciding to choose healthier foods over less healthy foods, it is possible that they went through the three stages included in this theory (Table 2). In Stage 1, known as *Unfreezing*, participants would have been motivated to change their behaviours (Schein, 1995). This theory states that a person becomes motivated when there is sufficient dissatisfaction with the current conditions (Schein, 1995, and Wirth, 2004). For some participants, their HRA results provided sufficient dissatisfaction with their current state of health, making them motivated to change. Participants in this study that were motivated to make changes may have experienced survival anxiety, in which they found some of their previous beliefs about their health to be invalid. This would have happened upon receiving their HRA results. They may have also overcome any existing learning anxiety. This anxiety often triggers defensiveness and resistance due to the challenge of having to unlearn what was previously accepted (Schein, 1995 and Wirth, 2004). Therefore, for change to occur survival anxiety must be greater than learning anxiety, or learning anxiety must be reduced (Wirth, 2004). For example, a participant's HRA may have suggested that they did not get enough exercise, whereas the participant might have

previously thought they did get enough, which according to this theory could evoke survival anxiety. They may have also experienced learning anxiety, not wanting to re-learn their daily routine to now include more exercise. To then be motivated to increase their daily amount of exercise, how invalid they perceive their previous thoughts about their exercise level, would have to outweigh their resistance to re-learn a daily routine.

In Stage 2, participants would have identified *what needed to be changed*. Their HRA results would have helped them with this identification. This is also the stage in which participants would make the changes that they had identified needed to be changed. Changing a behaviour requires adding new factors for change, or removing some existing factors that are currently perpetuating the behaviour (Schein, 1995 and Wirth, 2004). The participants that made changes would have added factors for change, for example they brought healthy snacks to work, or joined a gym. They would have removed existing factors such as purchasing their lunch, or being sedentary.

Stage 3 involves participants making their changes permanent by *Refreezing*. A new behaviour becomes habitual in this stage (Schein, 1995, and Wirth 2004). While it is unknown if the changes participants made are permanent, this theory states that in order for this to happen, they would have to develop a new self-concept and identity, and establish new interpersonal relationships (Schein, 1995, and Wirth 2004). For example, they might have begun to think of themselves as someone worthy of making changes to improve their health. Participants also established new relationships with the factors they changed such as food and exercise. The people in their lives were also found to be a source of support for these changes.

Health Belief Model

The Health Belief Model includes constructs that suggest a person's perceptions about their health, as well as their *self-efficacy* and *cues to action*, can determine their behaviour with regards to their health (Janz, et al., 2002. P.49) (Appendix B and Table 3]. More specifically, it identifies that people will take action to prevent, screen, or control their health issues; if they perceive themselves as susceptible to a condition, if they think it may have serious consequences, if they believe a certain action would successfully reduce their *susceptibility* or *severity* of a condition, or if they believe the costs of the action outweigh the *benefits* (Janz. et al., 2002. p. 47-48). For example, a participant who received information from their HRA suggesting they reduce their blood pressure, may have changed their behaviour if they perceived themselves to be susceptible to heart disease and stroke risk. How severe of a health issue they perceive high blood pressure to be may also play a role, as well as how much of a threat to their health they perceive it to be. The theory also suggests that the participant who decided to try and reduce their blood pressure perceived a certain level of benefit to doing this. The participant's level of *self-efficacy* would also have been great enough for them to make changes to try and reduce their blood pressure (Janz. et al., 2002. p. 48-51). An additional component to the model, *cues to action*, identifies cues that lead to action to influence health (Janz. et al., 2002. p. 48-51). In this study, a possible cue for the participant to take action to reduce their blood pressure was their HRA results that actually identified high blood pressure.

Open Systems Theory

Open Systems Theory states that most organizations are an example of a system capable of self-maintenance, based on a throughput of resources obtained from the environment (Scott, 1992, p.83) (Figure 1). The participants of this study exist in an open system. Their environment both at, and away from work includes many factors that could have influenced their decision to make the lifestyle changes recommended by their HRAs. These factors support or challenge their decision to try and improve their health. This research focused on what factors present in the work environment that helped individuals make lifestyle changes to improve their health. However there could have also been additional factors in environment that influenced individual's decisions to make lifestyle changes. These external environmental factors could have also influenced the organization's decisions to provide HWP initiatives and programs. External environmental factors could include current laws, the economy and allocation of funds to the department, technology, social trends, and available health information. These factors are considered under motivational factors in Figure 2. This study did not identify what external factors might have played a role in participants lifestyle behaviour change; therefore it is an area for future research.

9.1.5. Overall Personal Impact of Participating in HRAs

Participants identified many positive aspects and outcomes of participating in the HRAs, as the experience extended over a three year period from the first HRA in 2007 to the second in 2010. These positive outcomes are the final piece of the Lifestyle Behaviour Change Model as seen in Figure 2. This variety of outcomes is a result of participants being

motivated to change their health through a variety of factors. These motivating factors are highlighted in Figure 2. Participants identified that having quantifiable figures in their HRA results was a positive aspect, and that the results in general provide a good benchmark for their health status. Others identified that the blood work results and more specifically the cholesterol screening were interesting. Another participant also identified that they will now get their blood pressure checked more frequently (for example at a pharmacy). Another participant identified that the graph of their stress level provided with their HRA results was beneficial. It was also identified that having the results “on paper” reinforced what they needed to do to improve their health.

The HRAs were beneficial to participants as it helped them realize the consequences their lifestyle had on their health. This can be explained by the HBM constructs of *Perceived Susceptibility* and *Perceived Severity* (Janz et al., 2002). Another positive aspect outlined by participants was the recommendations provided by the HRA results. Some participants found that the specificity of the recommendations was helpful, and that it let them know exactly what they needed to do to improve their health. Many participants also identified the HRAs to be helpful as it confirmed their expectations of their health, either good or bad. Another participant found the HRAs provided them with the knowledge that had more changes to make, and they needed to keep going. For some participants, the HRAs were beneficial as they helped them for the first time to start thinking about diet, exercise, and overall health. Others mentioned the HRAs helped them to re-evaluate their food choices.

One participant was quoted saying:

“I’m noticing that I frequent different spots in the grocery store than I used to. I have a tendency now to go with the fresh fruits and vegetables and meats and that sort of thing. I

barely go up and down the aisles where you have your chips and your packaged foods. So I am noticing that sort of shift.”

The ability to attend HRA activities during lunch was identified as beneficial as it provided a 15 minute break from work. HRAs were also identified as helping with weight loss, motivation, and team building. They also help them have fun, participate in other HWP initiatives, and provides them with a general sense of well-being.

Good relations with the Registered Nurse conducting the HRA improved participation. It was identified that the she provided helpful information about their results, was very nice, approachable, and was a person they could ask questions and feel comfortable, making them inclined to sign up for this initiative again. Another participant identified that it was beneficial to have a medical professional available for the initiative, while another identified the feedback from the nurse was positive as there were no derogatory remarks made about the participant’s size.

Many participants also thought the HRAs were a good reminder for them to make healthy choices; re-emphasizing the importance of health.

One participant was quoted saying:

“I think part of it was just that wake-up call to start thinking about your health a little bit more seriously. Because the theory is, a lot of us sort of put off doing stuff until we retire. And if we don’t look after ourselves, we’re not going to be able to do it when we retire. Sort of that level of awareness, I really do have to stop and think.”

In 2003, 88% of the general population of Canadians self-rated their health as good to excellent (Canadian Community Health Survey, 2003). This perception of good health could potentially prevent some people from getting regular health check-ups or screenings. Some

participants in the study who thought they were healthy found the HRAs beneficial, as they were able to get tests done that they otherwise would not have requested of their doctor. It was identified as a good second check of their own doctor's results, and prompted a participant to see their doctor as a result of the HRA. Receiving HRA results helped a participant begin an informed conversation about their health with their doctor as well. The initiative also helped with requesting additional health screenings/tests from their doctor. It was also reported by a participant that because they are at a healthy weight, they assumed their health was fine. Their HRA identified that this is not always the case. The HRAs also provided more awareness about personal health that did not exist prior to participating. The initiative was also identified as beneficial as it showed employee's that their employer was interested in their health. There was also a greater sense of awareness among management that participated in the HRAs, in ensuring that staff get their breaks, and do not have to cancel doctor's appointments because of work.

Many participants reported the initiative was beneficial as they took steps to change their diet and/or level of physical activity and inspired a participant to quit smoking. The HRAs were also identified as benefiting the people around them at home as well.

9.1.6. Impact of HRAs on Others

The HRAs had a positive impact on others, such as participant's family, friends, and coworkers, as illustrated in Figure 2. Changes participants made to their lifestyle at home influenced family members to be more active. A couple of participant's did the 'Take Off Ten-in-Ten' challenge that was originally done in the workplace, at home, and their spouses lost weight as well. Their dietary choices had an impact on their family's diet as well,

especially increasing their fruit and vegetable intake, and reading food labels and ingredient lists. The changes participants made to improve their health helped open dialogue at home and between other family members. They reported sharing knowledge that was gained from various HWP information sessions, and emailing health information to family members. The impact on family also came from family becoming supportive of their lifestyle changes by also making dietary changes, or by making lunches for them.

One participant was quoted saying:

“I think because I was aware, I think we’ve made changes at home, so other people at my home have also benefited from what I’ve learned here and from the diet change and the exercise. I think we’re all eating healthier.”

Participation in HRAs had an impact on friends, as they sometimes pass along health information they received at work to others. After participants discussed their HRA experience, friends thought it was a positive experience and described it as showing commitment by the employer to employees; some wanted to learn more about the HRAs. Conversations about the HRAs with people in other government departments and work areas were also reported. One participant had people notice they were happier because of their lifestyle changes. In the 2008 Canadian Community Health Survey, satisfaction with life was found to be strongly linked to health. Among those that were satisfied with life, 63% rated their overall health as good or excellent (Canadian Community Health Survey, 2008). Other participants had an impact on the people around them as they have become supportive of their lifestyle changes.

The HRAs had an impact on participant’s coworkers as well, as some decided to participate when they saw others participating, others encouraged their coworkers to participate.

One participant was quoted saying:

“(The HWP Committee) encouraged people to use the stairs; which is now my habit. And I’ve also used it to encourage others.”

It was also reported that HRAs helped open up discussion between coworkers both before and after the HRAs about their results, as well as their plans to follow up on their results.

One participant reported that coworkers make healthier choices when they go out to eat, and some participants reported encouraging their coworkers to go outside with them during breaks and/or lunch breaks, and sometimes go for a walk. Another participant also reported that others in the department were impacted as they are less concerned about the time they returned from lunch if they go to the gym or for a walk during lunch. As well, the fact that some coworkers had participated in the HRAs, made it a team approach to try and improve the collective health, of everyone. Participants noticed that their coworkers went to the gym more often, and participated in some of the HWP initiatives.

One participant was quoted saying:

“The one where they (the HWP committee) encouraged people to use the stairs; which is now my habit. And I’ve also used it to encourage others.”

Some participants reported that having all coworkers participate in the HRAs helped to inspire some friendly competition.

9.1.7. Impact of HRAs on the Organization

From the reported changes made by the participants in this case study, it is possible that the improved lifestyle changes will have a positive impact on the Department of Finance. The Positive Outcome construct of the Lifestyle Behaviour Change Model therefore

includes positive outcomes for the individual, the people around them, as well as positive outcomes for the organization.

Employers may benefit from investing in employee wellness through reductions in employee health care costs and fewer missed days (Baicker et al., 2010). While most participants in this study reported making changes to improve their health, tracking health care costs and missed days were not within the scope of this study. It is possible that the number of missed days decreased for these participants, and others that participated in the HRAs. Determining cost savings for the Department would be an interesting area for future research. High participation rates for HRAs and health promotion programs is essential in order to yield a good return on investment in these programs (Meunier, 2008). Conditions for high participation include having a good program that captures the interests of participants, educates and encourages behaviour change, and good communication starting from the top of the organization including emails, easy navigation and comprehension (Meunier, 2008). There must also be easy accessibility to the HRA or program through the internet or website, as well as quick and easy completion of the HRA (less than 15 minutes), and adequate incentives and prizes, privacy, quality of results or aggregate report, and quality customer service from those providing the HRA (Meunier, 2008). The HRAs conducted at the Department of Finance fulfilled many of these criteria, therefore a financial benefit is likely.

Employers can also benefit from investing in employee wellness through improved productivity by healthy workers (Baicker et al., 2010). Workplace physical activity programs have been found to be successful in improving employee health and productivity (Pronk & Kottke, 2009). In this study, increased physical activity was one of the most

common changes reported by participants, which may have helped improve their productivity.

When workplace stress is reduced, employee productivity is also increased (Buch, 2010). Increased physical activity by participants might have also helped reduce their stress levels, therefore improving productivity on the job. Today, many people are required to work past the point of physical exhaustion, without recharging. This leaves them unable to function at their maximum potential because of the fatigue of the brain, making forgetfulness common. Late in the afternoon or evening, employee's ability to solve problems or make complex decisions is negatively affected after working hard and feeling stressed all day. If the brain does not get a chance to rest by taking a break and going for a walk, listening to music, taking a nap, or talking to a co-worker about something other than work, their brain will not work efficiently (Buch, 2010).

Since many participants in this study reported taking more breaks, and some included physical activity and/or social interaction during these breaks, it is likely that they then worked more efficiently. Breaks such as these may also help reduce stress, again increasing productivity (Buch, 2010).

The organization may also benefit from the HRAs by retaining employees. Some participants in this study reported that the HRA offered at the workplace showed that the Department cared about them and their health. This sense of appreciation from their employer may help employees feel more positive about their work and the workplace, and help them be happier while at work. If employees have positive feelings about their workplace, this may play a role in employee retention. In a study of social workers in Wales, it was found that heavy workload, job stress, low pay, lack of appreciation, and

being taken for granted were identified by at least half of the employees who had plans to leave their current job (Evans and Huxley, 2009). The literature highlights that by treating employees like people, and showing that they are valuable as employees and individuals, an employer develops productive, cohesive, and happy employees that are unlikely to look for other employment (Robard, 1998).

The HRAs were also identified as having helped with team building, and created a sense of healthy competition between coworkers, particularly when later participating in HWP initiatives, or when making changes to their lifestyle. It has been found that the workplace can be a good environment for health initiatives as co-workers can also be a source of support for one another when making healthy lifestyle choices (Paton, 2008). This sense of being part of a team could potentially help coworkers build relationships, making work more productive and enjoyable, which would have a positive impact on the Department. The importance of group participation in lifestyle change was also seen in a study of a LIFE (lifestyle change, individual readiness, fitness excellence, healthy eating) wellness program. In a group of US military employees who participated in the program it was found that feedback from other participants of the program was the second most important motivator and reinforce for weight loss (after exercise) (Bowles et al., 2006).

For these reasons, the HRAs along with other HWP initiatives are critical factors to change the culture of the Department of Finance to one that is healthier both physically and emotionally, and one that recognizes the benefit of such a culture, and supports it.

9.2. Motivating Factors that Positively Influence Lifestyle Behaviour Change

9.2.1. Impact of the HRA Process on Positive Lifestyle Behaviour Change

The participants of this case study identified many different aspects of the HRA process as being helpful in their decision to make positive lifestyle changes. This is one of the contributing factors for behaviour change outlined in Figure 2.

Many participants identified that the measurements taken during the HRAs are the most helpful. Specific examples identified as being helpful include waist measurement and BMI, blood pressure, percent body fat, and blood work including blood glucose level. Some participants said these measurements were helpful to them making lifestyle changes; as they provided a benchmark, and a guideline for what needed to be improved.

One participant was quoted saying:

“The results of the BMI shocked me. It was definitely the emphasis for me there to take some action.”

While another participant was quoted saying:

“I got satisfaction to know that some of my (measurements) like by blood pressure and all of those things were great and it actually makes you more aware of what you’re doing to your body. It was very informative, I think it was great, it was very worthwhile.”

Participants also identified that stepping on a scale to measure their weight was a helpful aspect of the HRA process, while other participants found the diet and exercise results helpful to them. Some of the HRA results were displayed graphically, and these were also identified as a positive aspect. The nurse from Creative Wellness Solutions was available to discuss the HRA results and participants identified that having someone to do this was

helpful. Some participants specifically the information on specific topics, and the use of visual learning tools. One participant was quoted saying:

“ Obviously she (the nurse) was very good, very accommodating, and very informative, put you at ease, explained everything that was going to happen. I had no questions to do it again because of my first experience.”

It was also identified that the HRA process was convenient as it was conducted at work. While it was offered all day, they also found it convenient that they were able to attend on their lunch break as the nurse conducting the assessments was very accommodating. Others identified the HRA gives them a level of awareness about their health and that it provided perspective. Another participant felt that it was a good reminder of what to do (to be healthy), and identified the level of accountability as being helpful.

Another aspect of the HRAs were that along with results about participant’s state of health, they were also given specific recommendations to improve, and were able to discuss their results and receive additional information from the Registered Nurse if desired. This may have therefore made participants more likely to make changes to improve their health, as they would have been given specific information on how to achieve certain health outcomes. However it is notable that many factors could have played a role in determining whether they actually made the recommended changes or not.

9.2.2. Impact of the Organization and It's Culture on Positive Lifestyle Behaviour Change

In this study, the employee's workplace is considered their internal environment, and factors within this environment have the potential to influence employee's behaviour. This research identified factors within the department that had a positive influence on lifestyle behaviour change. The existing organizational culture of the Department of Finance positively influenced participant's lifestyle choices. Participants identified that the HWP Committee does great work within the Department, are organized in their initiatives, are well-respected by employees, and able to offer various types of support to employees. Participants also identified that the HWP initiatives available throughout the organization are helpful in making positive lifestyle changes. The Senior Advisor for Workplace Initiatives was also identified as helping employees make lifestyle changes through encouraging reminders to get involved in the initiatives. The email communication was also identified as positive and motivating, and she was identified as a source of information, help, and support. The fact that the employer was taking an interest in the health of their employees, and the feeling that government cares about employees through their support of HWP initiatives was also identified as supporting employee lifestyle change.

One participant was quoted saying:

"I think it's cool that our employer is at least interested in us and supportive enough to offer such an opportunity (to participate in the HRAs) on their dime to check into our health and see where we're at and to know, without having to do it after work."

The changes in the workplace made by participants were sometimes similar to those changes made during time away from work. Changes made by other participants varied

from the workplace, to their time away from work. This indicates that different factors motivate people in different settings. For instance, if a person feels supported to make lifestyle changes at work, but does not feel that way at home, then changes may be limited to a place in which they feel supported. Support can come in many different forms, and from many different sources, and what supports one person, may not support another. These factors for support can also be considered factors that helped motivate participants to make positive lifestyle changes, and are included as the motivational factors component of Figure 2.

An organization's shared norms, values, and assumptions contribute to its culture are important in understanding how the organization functions (Schein, 1996). Many participants reported that since the HRAs, they take a lunch break more often, which indicates that for these participants, taking a lunch break had not been a part of their daily norm. Through participation in the HRAs, they not only began to see the value in this change, but reported taking this break with co-workers. Over time this health behaviour could become the new norm in their organization, therefore becoming part of their culture. As was found in this study, co-workers can positively influence each other's decisions about health if they find strength in making changes with their fellow co-workers (Shein 1996). A complete list of factors within the Department and HWP Committee that positively influenced participant lifestyle change can be seen in Appendix I.

The external environment is considered to be the environment outside the workplace. Factors also exist here that have the potential to influence their decision to make positive lifestyle changes. While these factors were not studied in the course of this research, they may include things such as the individual's education, available health information,

influences from people around them, the media, technology, and marketing of products and services [Figure 2].

9.3. Opportunities for Additional Positive Outcomes

9.3.1. HWP Initiatives That Support Positive Lifestyle Behaviour Change: A Needs Assessment

Opportunities for additional positive outcomes lie in working with employees to discover what works for them, and what motivates them to make positive lifestyle changes. In the past, the HRA results have acted as a needs assessment for the department and the HWP committee. This case identifies the specific HWP initiatives found to be helpful in making positive lifestyle changes, and the initiatives participants would like to see repeated. This information will be used as a needs assessment for future initiative planning by the HWP committee. It will aid with the planning process, but also help increase participation by employees. If employees are interested and enthusiastic about the initiatives offered, they will be more likely to participate in these initiatives, and thus experience health benefits from having participated. The table below identifies the HWP initiatives participants identified that they would like to see repeated in the workplace.

Table 7 - HWP Initiatives Participants Identified as Would Like to See Repeated

HWP Initiatives	
*Take off Ten-in-Ten	Social Events
*Dragon Boat Race	Healthy Living Information
*Climb Mount Everest Stair Climbing Challenge	Healthy Cooking Session, Superstore
*Health Risk Assessments	Employee Recognition
*Healthy Snacks	Interaction with Senior Management
The Biggest Loser	Baseball Team
Pedometer Challenge	Diversity Awareness
On-site Gym (Provincial Building)	Respectful Workplace Reminders
Lunch and Learn/Information Sessions: - Chiropractor - *Intestinal Cleansing - *Menopause - Credit Union - Diabetes - EAP - Cancer - Drive Wiser - Financial Management	

***Indicates 3 or more participants would like to see this initiative repeated.**

Activities that inspire competition were identified as most enjoyable and motivating. The enthusiasm of those that participate was also found to help motivate others. Initiatives that involved group participation were also identified as encouraging and motivating due to the team aspect, as participants were accountable to someone for their actions. For example, during the Climb Mount Everest Stair Climbing Challenge if one member of a team did not take the stairs as often as another team member, that person may be motivated to try and increase his or her stair use to help the team reach their goal.

One participant was quoted saying:

“(In terms of) the weight loss stuff, although I’m always trying to do it on my own, it’s nice to be involved as far as a team effort, to know that the (other) people are working towards it. Also, measuring yourself on a weekly basis (for the ‘Take Off Ten-in-Ten’ Challenge) as opposed to just doing it on your own---somebody’s watching. That definitely helps at times.”

Another participant was quoted saying:

“I just think in general (the HWP initiatives and the HWP committee),I just find them as being good motivators, the competition aspect of it, the prizes, things like that. I just find those things are beneficial and where they are completely voluntary, they certainly motivate people to participate regardless of how committed they are to it, I guess to those goals.”

Initiatives and information sessions (i.e. Lunch and learn sessions) that pertained to topics of personal interest for, were the ones identified as the most helpful in supporting their ability to make lifestyle changes. Enjoyable initiatives such as these can increase participation rates, and can be one of the key factors for improved employee health. The initiatives identified by participants as helping them make positive lifestyle changes are part of the internal environmental motivating factors in the Lifestyle Behaviour Change Model [Figure 2].

Some new ideas for HWP initiatives identified by participants were to have an information session on food-labelling, to be able to meet with a dietitian one-on-one, to have a healthy “pubcrawl”, and attend a nutrition information-sharing session.

9.3.2. Ideal Situations in Which Participants Would Make Additional Lifestyle Changes

In line with *The Three Wishes* questioning of Appreciative Inquiry, participants in this study were asked what they would wish for in order to have more positive experiences like the ones they previously described (Christie, 2006). Participants identified some ideal situations in which they would make further changes to improve their health. The majority of participants reported situations that allow them to be more physically active, both at and away from the workplace. These situations also include being able to commit to themselves or others to be more active, be able to get up earlier to be active, or have care for their children in order to go to the gym. Other participants identified that having a gym in the Provincial Building, or having time during the workday to exercise instead of going during lunch, would be ideal. Having more flexibility with work hours was also identified as an ideal situation in which further lifestyle changes could be made, and many participants identified that simply having more time in their day to make healthy lifestyle choices would be ideal for them. Participants also reported that reducing stress, being happier, and having more pleasant interactions at work would be ideal situations in which further lifestyle changes would be possible. In a study of over 10,000 men and women civil servants in London, UK, 32% of the effect of work stress on coronary heart disease was attributable to its effect on health behaviours (in particular, low physical activity and poor diet) and the metabolic syndrome (Chandola et al., 2008).

Some of these wishes include situations that occur outside the workplace, while others transpire at the workplace. It is that strategic opportunities exist for the department, HWP committee, and other leaders in HWP to help champion these important changes.

10. Limitations

The differences in lifestyle changes made from the 2007 to the 2010 HRA were not determined in this study. While some participants identified differences from the first HRA to the second, it was not identified by all participants, and therefore may be observed as a limitation of this study. Another potential source of error was the fact that the information gathered was self-reported and based on participant's memory recall, which cannot be fully depended on for accuracy. As well, it cannot be determined by this case study whether participants would have made these changes if they had not participated in the HRAs.

11. Conclusion

This study will help fill a gap in the literature, as the appreciative inquiry methodology was used to identify the positive lifestyle changes made by employees of the Department of Finance, and the factors that contributed to the healthy changes they made. In addition it provides information that will be critical in supporting employee lifestyle change in the future.

Aspects of the HRAs that participants found to be positive were identified in this study, which will help inform HRAs held in the future at the Department of Finance. As well, identification of the changes employees made, and the identification of the HWP initiatives they found most beneficial, will help inform HWP initiatives held in the future. Factors within the workplace that employees identified as helping support their lifestyle changes will also help inform the Department so that these factors may be continued.

Positive outcomes within the department as a result of the HRAs in their role in building a

sense of team among employees, and in potential cost savings, indicates the value of HRAs in the workplace. The overall impact the HRAs had on participant's lives, the ripple effect to the lives of those around them, as well as the impact on the Department of Finance indicates the broader value of conducting HRAs. The information in this study will not only be of benefit to the employees of the Department of Finance, but also to the HWP committee, senior management, and the Department as a whole. This study may be valuable for other departments or organizations wanting to conduct HRAs or provide HWP initiatives, as methods of helping to improve employee health as well as benefit the organization.

12. Knowledge Translation

This case study, published as a Master's Thesis for MSVU will be used within the Department of Finance as an information sharing tool. It will also be provided to them as an executive summary report. This study may also be used as a resource across the Nova Scotia government with wider distribution to those interested in HWP. For dissemination to the broader academic community the results from this important work will be presented at a conference and submitted for peer-reviewed publication.

13. Future Recommendations

The results of this case study warrant the recommendation to continue to conduct HRAs on a bi-annual basis at the Department of Finance. High participation with HRAs and health promotion programs has been found to be essential to obtain a good return on investment

(Meunier, 2008). Participation for the 2007 Department of Finance HRA was 70%, and in 2010 was 50%. It is therefore recommended to increase participation of HRAs at the Department of Finance. Factors that help increase participation include having a good program that captures interest, educates, and encourages behaviour change. Other factors include having good communication that starts from the top of the organization, easy navigation, comprehension, and accessibility of the HRA, as well as easy and fast completion of the HRA. It is also important to provide adequate financial incentives and prizes, confidentiality, quality of the results (e.g. quality of the aggregate report), and quality of customer service by the company providing the HRA (Meunier, 2008). Some of these factors were present in the HRAs included in this study, which accounts for some of the success seen in the number of participants, especially in the 2007 HRA. These factors also provide information which may help HRAs be successful in the future. A possible reason for the decrease in participation from 2007 to 2010 was the length of time the HRA was available for employees to participate was shorter in 2010 than 2007. As well, the 2010 HRA was conducted at a busier time of year for employees of the department of finance.

This study plays a key role in fulfilling the priorities of the Department of Finance Healthy Workplace Strategic Plan 2010-2014 (Nova Scotia Department of Finance, 2010), and provides further opportunity for recommendations. These priorities include:

1. **Program Development:** Respond to the needs identified in the HRAs and work survey.

The study responds to this priority by identifying which approaches and programs were effective, by taking a positive approach from appreciative inquiry methodology. It

determined what HWP initiatives such as physical activity challenges, lunch and learn sessions, and healthy snacks in the lunch room and meetings were most helpful to participants making positive lifestyle changes and should be continued.

2. **Staff Involvement:** Involving staff to help them feel as though they are taking part in the decisions and programs that affect them.

Staff were the participants of the case study, and at the time the data was collected they were informed that the feedback they provided for the study would be valuable. It is recommended that the information provided in this case study help shape future HRAs and HWP initiatives in the department.

3. **Senior Management Support:** Management contributing to planning, organizing, resourcing, leading or directing, and controlling for the purpose of accomplishing HWP goals.

It is recommended that these results be used to help management contribute to the planning of HWP initiatives that employees identified as being helpful in making healthy lifestyle choices. Management's support is identified as having a positive impact on participants in this study; this provides evidence of the importance for continued support from senior management.

4. **Healthy Workplace Certification and Recognition:** Level II (Planning) of the NQI PEP® Healthy Workplace® Certification is awarded when the organization has established and successfully implemented a set of predefined criteria (Nova Scotia Department of Finance, 2010).

It is recommended that the Department of Finance continue Nova Scotia Government's

commitment to improving the health of its workplaces, by following a Healthy Workplace® (HWP) Model developed by the NQI (Used with permission of NQI, National Quality Institute, 2006). It is also recommended that this study be used to help achieve Level II certification in the NQI PEP® in HWP® by helping the department meet some of the action steps for NQI certification. These include helping to assess and evaluate employee needs in regard to healthy workplace programs, workplace culture, and a supportive environment.

Recommendations for future research include conducting a quantitative study whereby the HRA results of the entire population of employees that participated in the first HRA are compared with the results of the second HRA to determine any statistically significant changes in health. This would provide further evidence to support the need for HRAs. It would also be of interest to determine the length of time lifestyle behaviour changes were maintained by participants. Determination of cost savings to the department would also be of value. The amount of available information about HRAs is increasing in Canada. As the concept of HWP continues to grow, more is understood about the value of HWP initiatives to the employee, the employer and the community. Therefore evaluation of these initiatives must continue. While there is increasing literature in the area of positive health outcomes after the completion of a HRA in other areas of Canada, there is little-to-no literature that links positive lifestyle change to HRAs in Nova Scotia; and even fewer data that provide rationale for this positive behaviour change. This study provides valuable meaning to the HRA outcomes at the Department of Finance. Through identification of lifestyle behaviour changes, and factors in the workplace that positively influence change, this research plays a vital role in helping the culture of HWP move forward in the Nova Scotia Government.

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Appendices

A: List of Healthy Workplace Activities and Initiatives 2008-2010

B: Constructs of the Health Belief Model

C: Ethics Application

D: Email invitation to be sent to employees of the Department of Finance that participated in the 2007 and 2010 Health Risk Assessments

E: Information Sheet and Informed Consent Form

F: Information Sheet and Informed Consent Form for Audio Recorder Use

G: Interview Guide

H: Lifestyle Changes Made During Time At Work and Away From Work

I: Factors Within the Department of Finance and HWP Committee that Helped Participants Make Positive Lifestyle Changes

Appendix A - Healthy Workplace Activities and Initiatives 2008-2010

“How’s Work Going” Survey and follow up Focus Groups and report to Senior Executive
Nova Scotia Department of Finance Healthy Workplace Action Plan 2008-2014 update and
finalized as Nova Scotia Department of Finance Healthy Workplace Strategic Plan 2010-
2014

2 HRA’s (2007 & 2010) – (prizes & incentives for participation)

Expanded committee membership

Tied to being a job development opportunity, training opportunities

Same recruitment strategy for OH&S

Taken on ReThink approach –additional initiatives under re-think sub committee

- Earth Hour participation
- Info workshops & challenge events around recycling
- Initiated & introduced the design, programs development & use of new recycling containers & program for Finance which other Depts adopted

Working with Deputy and senior management team

Training sessions offered including diversity, team building, respectful workplace,
workplace violence, etc

Performance Management through performance appraisals

Lunch & Learn workshops

- Menopause
- Drive Wiser from Conserve NS
- Financial Management – 2 sessions by guest presenters
- Intro to EAP
- Intestinal cleansing
- Intro to basics of Chiropractic treatments
- Wellness Coach

What’s new at Finance Session X 2 per year to update staff on departmental Activity

Dragon boat races x 3yrs

Climb Mount Everest, pedometer challenge program

Recognition (treats at Halloween etc.)

Employee Recognition Policy and Program (Development in Progress)

Post New Years Levy (invitations from management)

Department involved heavily with United Way

Social committee (St. Patrick’s Day social, cookies, fruit & veg, soy smoothies, Christmas
kids party, post new years levy, Christmas party, Christmas dinner to raise money for non-
profit organizations)

2, Ten-in-Ten programs (weight loss program)

Encourage stair use

Healthy breakfast – campaign

- Desserts for Breakfast
- Breakfast wraps
- Fund raising event selling Healthy Breakfast foods (yogurt, ½ muffins, fresh fruit, cheese)

Healthy snacks at meetings

Monthly Healthy Snacks in kitchen

Purchase HWP "Workplace Wellness Systems" from Creative Wellness Solutions

Minister gave polo shirts in recognition to all staff

Dept cost-shared with staff the price of Pedometers

Travel mugs (provided to staff with a thank you note from DM in Recognition of their commitment

Germ Reduction program

HWP corner (info/handouts, free-weights, medicine ball, scale)

HWP committee member's recognition with subscription to "Your Workplace" Magazine

Appendix B – Health Belief Model

TABLE 3.1. KEY CONCEPTS AND DEFINITIONS OF THE HEALTH BELIEF MODEL.

Concept	Definition	Application
Perceived susceptibility	One's belief regarding the chance of getting a condition	<p>Define population(s) at risk, risk levels</p> <p>Personalize risk based on a person's characteristics or behavior</p> <p>Make perceived susceptibility more consistent with an individual's actual risk</p>
Perceived severity	One's belief of how serious a condition and its sequelae are	Specify consequences of the risk and the conditions
Perceived benefits	One's belief in the efficacy of the advised action to reduce risk or seriousness of impact	Define action to take: how, where, when; clarify the positive effects to be expected
Perceived barriers	One's belief about the tangible and psychological costs of the advised action	Identify and reduce perceived barriers through reassurance, correction of misinformation, incentives, assistance
Cues to action	Strategies to activate one's "readiness"	Provide how-to information, promote awareness, employ reminder systems
Self-efficacy	One's confidence in one's ability to take action	<p>Provide training, guidance in performing action</p> <p>Use progressive goal setting</p> <p>Give verbal reinforcement</p> <p>Demonstrate desired behaviors</p> <p>Reduce anxiety</p>

(Janz et al., 2002.)

Appendix C – Ethics Application



MSVU Ethics Review Application Form

Directions: All proposals submitted for review must have this cover sheet. You must include all relevant supporting documentation in final form (e.g. surveys, interview questions, informed consent forms). To facilitate the referencing of reviewers' comments on the submission, please ensure that the pages are appropriately numbered and that changes made to the proposal are clearly indicated when re-submission is required. Please forward the required number of copies to the Chair, University Review Ethics Board, located in the Research and International Office (RIO).

Note: If you are not sure that your research project requires ethics review, please consult with the Research Office before submitting an application.

The Number of Copies required:

Two copies – if the proposal is an Honours Thesis, Directed/Independent Study, or Class Project that has received departmental REB approval and does not exceed minimum risk.
Three copies – for all other proposals that do not exceed minimum risk.
Eight copies – for all proposals that exceed minimum risk.

Note – to complete this form click on the shaded box once to begin data entry

General Information

Date: August 6 /2010
Name of person(s) submitting application: Megan Wood
Title of project: A Case Study Evaluation of Department of Finance Employees that Participated in a Health Risk Assessment: Identification of Positive Lifestyle Changes
Department(s): Applied Human Nutrition
E-mail addresses:
Student: Megan Wood Supervisor: Dr. Misty Rossiter

Category of Researcher:

Faculty
 Graduate Student - Program of Study/Degree Master of Science Applied Human Nutrition
Please specify: Graduate Project, Thesis or Independent Study? Master Thesis
 Honours Student
 Other (please specify):

Category of Research:

Minimal Risk - Expedited Review
 Exceeds Minimal Risk
 Re-revie

This project is currently under review by:

Or

This project has already been reviewed by (attach relevant documentation):

External agency / specify:

MSVU Committee on Research and Publications

X Thesis Committee (**NOTE:** A copy of the thesis proposal acceptance must be attached to your ethics application prior to review)

Departmental Research Ethics Board

Third party: (e.g., school board, hospital, etc.)

Specify and attach a copy of the approval (s)

Funding/Sponsorship

Has this project received funding (internal or external): Yes or X No

If yes, please indicate the source of funding:

Agreement: I/we have read the MSVU University Research Ethics Board (UREB) Instructions for Completion and Submission of Ethics Protocol Review, the MSVU Senate Policy on Ethical Conduct for Research Involving Humans, and the Tri-Council Policy Statement on the Conduct of Research Involving Humans and agree to comply with the policies and procedures outlined therein. In the case of student research, as Faculty Supervisor, my signature indicates that I have read and approved the application and proposal, deem the project valid and worthwhile, and agree to provide continuing and thorough supervision of the student(s). I/we have read and will make every effort to meet the requirements of the Tri-Council Policy Statement on Ethical Conduct for Research Involving Humans.

Signatures:

For Faculty/Staff Research Projects:

Signature(s) of investigator(s):

Date:

For Students or Thesis Research Projects:

Signature(s) of student investigator(s): Megan Wood

Date: Aug 6/10

Signature(s) of Faculty Supervisor(s) Dr. Misty Rossiter

Date: Aug 6/10

A. Summary of Proposed Research

Describe the purpose of the research (maximum 500 words). Include enough background information to enable the UREB to understand the rationale for the study. This should be an overview of the proposed research and the purpose of the research: what are you doing and why?

This research intends to determine if employees of the Nova Scotia Department of Finance made positive lifestyle behaviour changes after having participated in two Health Risk Assessments (HRAs), one in 2007 and one in 2010. A HRA is a tool to assess personal health and current lifestyle, and can help

create awareness of any potential health risks. They offer suggestions to improve health through changes in lifestyle, however they are a practical guide and not a medical diagnostic tool. They are comprised of three elements: 1) assessment of personal health habits and risk factors (usually obtaining information about health risk factors through questionnaire and biomedical measurements), 2) quantitative mortality risk, 3) education and/or recommendations to improve health. The HRAs were initiatives of the Department of Finance's Healthy Workplace (HWP) Committee, and were purchased from and conducted by Creative Wellness Solutions and their research affiliate the Atlantic Health and Wellness Institute.

The research also intends to determine what factors within the workplace helped employees make any changes either at or away from work. Employees will be invited to participate through email invitation. Those that express interest will be contacted by the researcher to set up an in-person or phone interview where they will be asked questions about lifestyle changes by the researcher, which will last approximately 30 minutes. The researcher will follow an interview guide, with the questions following an appreciative inquiry methodology, which takes a positive approach to inquiry, using strength-based language.

Data will be analyzed using up to four theoretical frameworks including: 1) Transtheoretical Model and Stages of Change Theory, 2) Change Theory, 3) Health Belief Model, and 4) Open System Theory. The data will be presented as a case study, as it is an ideal methodology when data is collected in the field, and the researcher has little control over the events (past and/or current).

This type of research has not been conducted within Nova Scotia Government, so is significant in that the information gathered will help assess the impact and effectiveness of the HWP Committee's initiatives, it can also be used as a needs assessment for the HWP Committee's future initiatives. The research will also help fulfill the four priorities outlined in the Department of Finance's HWP Strategic Plan 2010-2014 to work on: 1) Program Development (respond to needs identified in HRA and work survey), 2) Staff Involvement, 3) Senior Management Support, and 4) HWP Certification and Recognition. This research will be published as a Master's Thesis and will be used within the Department as a needs assessment for future HWP initiatives by the HP Committee, as well as an information sharing tool within the Department about what is being done to support healthy lifestyle changes among employees. It will also potentially be used across other Department's of Nova Scotia Government as a sharing tool, as well as by others interested in HWP. It may be also be published in academic journals should there be opportunity.

B. Special Considerations

1. If the context of the research is "non-traditional" or specialized in any way (e.g., research in another culture, research with hard-to-access groups, research with mature minors, research with persons with special needs), describe the information that the UREB needs to keep in mind when reviewing this application.
2. Research with vulnerable persons
 - a. One of the guiding ethical principles of The Tri-Council Policy on Conducting Research Involving Humans is respect for *vulnerable persons* who are "those whose diminished competence and/or decision making capacity make them vulnerable". Competence refers to "the ability of prospective subjects to give informed consent in accord with their own fundamental values".
 - b. The Tri-Council Policy specifies that in regard to competence, researchers "must comply with all applicable legislative requirements". In Nova Scotia, the age of majority is nineteen. If research is undertaken with *mature minors* (i.e., adolescents under the age of majority but otherwise deemed competent to give

informed consent), the researcher(s) must provide a detailed rationale explaining why parental/guardian consent is not needed.

- c. The researcher(s) should pay scrupulous attention to the possibility that a subject may be vulnerable as a result of a special need (e.g., difficulty reading print text). The researcher(s) should make all reasonable efforts to insure that subjects with special needs are respected and, to the extent possible, accommodated.
3. If the research project is but one component of a larger non-research study (e.g., international development project), describe briefly the larger context of the project.

No special considerations.

C. Research Approach or Method

1. Describe your research method. How will you collect the data?
2. Describe/identify your participants.
3. Describe the procedure(s) for recruiting participants.
4. Outline any particular incentives you are using for participation (e.g., payment).

Data will be collected by one-on-one in person or phone interviews conducted by the researcher, lasting approximately 30 minutes each. In-person interviews are preferable, and will be held in a private room at the Department of Finance. Data will be recorded using an audio recording device and written notes by the researcher. The researcher will follow an interview guide, developed by the researcher, which will follow an Appreciative Inquiry methodology. This is an appropriate method of evaluation for this study as it can be used as an approach for organizational change and development, and builds on past success. It is based on the philosophy that deficit-based approaches are not necessarily the most effective or efficient. When evaluation looks for problems, it generally finds more problems, and there may be a feeling of helplessness, which can detract from the original topic being evaluated. By reflecting on what worked well in a situation and using affirmative and strength-based language, participant's enthusiasm about the future may be increased, creating a more positive atmosphere. This may highlight what is working within the Department of Finance that helped/helps employees make positive lifestyle changes during their workday and beyond. There are three sets of core questions used in this type of inquiry. The first asks about *Peak Experiences*, such as what was happening that contributed to a successful experience. The second set asks *Values* questions, where participants describe what they value most about the topic, and what value they add to the inquiry. The third is a question called *The Three Wishes*, where participants are asked what they would wish for in order to have more positive experiences like the ones they previously described.

As this type of evaluation can come with recommendations for changes of what's being evaluated or potentially provide evidence of the importance of various initiatives, it is important to have support of leadership. This has been considered at the Department of Finance, as the Healthy Workplace Chair, Janet Briggs, has been involved with the development of this proposal, and is a member of the committee for the proposed thesis. She will also aid in the process of informing potential participants of the study through helping with participant recruitment, and encouraging them to voluntarily participate. Other government employees in leadership positions also support the development and growth of a HWP in this department and others, as the Nova Scotia Government as a whole identified providing a healthy, safe and supportive work environment for its employees as a priority, and developed a policy to support this. It is hoped that having this support within the Department for this and other initiatives related to HWP, will help encourage employee participation in this study.

Employees of the Department of Finance who have participated in the 2007 and 2010 HRAs will be invited to participate in the study. Employees will be contacted through Departmental email by the Senior Advisor, Health Workplace Initiatives using an invitation written by the researcher (Appendix A: Email invitation to be sent to employees of the Department of Finance that participated in the 2007 and 2010 Health Risk Assessments). Those interested will have two weeks to contact the researcher through phone or email information given in the invitation, to set up an interview. The first 20 to respond to the invitation will be interviewed, or until saturation of information has been reached. Those excluded from the study will be those who accept the invitation to participate, but are unable to meet for an interview or phone interview within the two week data collection period (Appendix B: Timeline for Procedure). If low response rate, a second email invitation will be sent by the Senior Advisor to Workplace Initiatives, with one additional week allowed for recruitment. Incentives will not be used for recruitment as there is generally a good response rate for HWP initiatives, as well as for research in HWP across government. Also, those employees being invited to participate are expected to be interested in activities related to HRAs, as they have already voluntarily chosen to participate in both HRAs in the past.

D. Debriefing (if applicable) - Describe debriefing procedures

Debriefing occurs at the end of a study when the researcher provides participants with additional information. Debriefing is usually thought of in the context where the researcher uses deception in a study and therefore at the end of the procedure discloses to participants the nature of the deception and explains the rationale for its necessity. Participants at this point should be given the opportunity to withdraw their data from the study if possible. However, debriefing is also necessary to alleviate any potential negative effects of a procedure. For example, if the researcher believes that answering a certain type of question may cause distress in some participants, the researcher needs to help the participant deal with the distress. If the researcher is not qualified to deal with the negative consequences, is concerned the participants will not disclose the negative consequences, or that the negative consequences may occur at a later time after the procedure, the researcher needs to provide all participants with contact information for sources that can aid the participants in dealing with negative consequences.

A member-check will be conducted with participants that choose so. It will be an option provided to them on the informed consent forms. Participants that choose this option will be given a written copy of their interview transcript within one week of their interview. They will then have one week to contact the researcher about any necessary changes or clarification. This will be an option for participants to ensure that the information they provided during the interview was interpreted correctly.

E. Third Party Permission

1. If you are using data provided by outside agencies, explain how you will establish agency consent.
2. If data will be collected offsite (e.g., school boards, community agencies, etc.), describe how you will establish consent of third parties. Final approval is contingent upon the researcher's formal confirmation that third party permission has been granted.

1.N/A

2.Consent has been given by the Department of Finance's Senior Advisor in Healthy Workplace, Janet Briggs, as well as Executive Director Frank Dunn, to conduct research within the Department and use necessary information provided by the Department to aid in the research process. The researcher and advisor have also sent a letter outlining the proposed research to the Department of Finance, also acting

as documentation of the proposed study. In addition to third party verbal permission, a letter has been requested from the Department of Finance to confirm third party permission.

Provided ethics approval is granted, a presentation will also be given at the Department of Finance's Director's Forum meeting in September. This will provide information about the proposed research to Department managers.

The researcher has experience conducting research in the area of HWP within government, as she conducted an internal environmental scan of HWP activity within all Departments of the Nova Scotia Government in 2008, which was published and used as an information sharing tool about successes and challenges of HWP across government.

F. Research Surveys, Questionnaires, Instruments, Etc.

1. Append of all documents in final form.
2. Indicate the sources of questions (e.g. public domain; developed by the researcher; etc.) and the relationship to the purpose of the study.
3. For instruments under copyright, the onus is on researcher(s) to obtain permission for use.

1. Appendix C: Interview Guide.

2. The questions included in the interview guide were developed with the intention to meet the objectives of the study by obtaining information about positive lifestyle changes of employees at or away from the workplace, how they may or may not have related to their HRA results, and what factors within the workplace may have had a positive influence on these changes. The questions were developed by the researcher, along with consultation with Janet Briggs, Senior Advisor for Healthy Workplace at the Department of Finance so that the researchers objectives will be met, and the Department will also have valuable information they can share within the Department and across other departments, as well as meet some of the goals outlined in their 2010-2014 Healthy Workplace Strategic Plan. Questions will follow Appreciative Inquiry Methodology, which is an appropriate method of evaluation for this study as it can be used as an approach for organizational change and development, and builds on past success. It is based on the philosophy that deficit-based approaches are not necessarily the most effective or efficient. When evaluation looks for problems, it generally finds more problems, and there may be a feeling of helplessness, which can detract from the original topic being evaluated. By reflecting on what worked well in a situation and using affirmative and strength-based language, participant's enthusiasm about the future may be increased, creating a more positive atmosphere. This may highlight what is working within the Department of Finance that helped/helps employees make positive lifestyle changes during their workday and beyond. There are three sets of core questions used in this type of inquiry. The first asks about *Peak Experiences*, such as what was happening that contributed to a successful experience. The second set asks *Values* questions, where participants describe what they value most about the topic, and what value they add to the inquiry. The third is a question is called *The Three Wishes*, where participants are asked what they would wish for in order to have more positive experiences like the ones they previously described. The questions developed for this study follow this general pattern of inquiry.

3. Permission has been granted to the Nova Scotia Government to use information about the National Quality Institute's Model for a Healthy Workplace®.

G. Risks

Minimal risk is defined as: "if potential subjects can reasonably be expected to regard the probability and magnitude of possible harms implied by participation to be no greater than those encountered in everyday life."

1. Specify and describe any potential risks to participants, making special note of situations that exceed minimal risk.
2. If there is the potential to incur risk, outline the safeguards that you will put in place to protect participants.
3. Please pay special attention to situations in which the researcher may have dual relationships with participants (e.g., professors using their own students as participants; counsellors whose clients may also be their research participants).

1. Confidential medical information will be collected and potentially used within the thesis. Any information gathered of this nature will be kept confidential as participant names will not be used, and numbers will be assigned to represent each participant. Only the researcher will have access to which number corresponds to which participant.

2. If medical information is used within the thesis, it will be used in general terms such that the participant is not able to be identified (Example: The participants that identified having high blood pressure, participated in a walking program). The data will be kept in a locked file with only the researcher and advisor having access. Interview will also be conducted in a private room with only the researcher and participant present, so that information will be kept confidential. Information will be recorded using an audio recording device, as well written notes will be taken. All data will be destroyed within 5 years of publication of the thesis.

3. Janet Brigg's role with recruitment will simply be to send out the email invitation. Employee will not feel obligated to participate as Janet is not in a position of authority over the employees, as they are co-workers. As well, there is no consequence for non-participation or withdraw from the study, and Janet will not know who accepts the invitation to participate, unless they decide to make it known to her by their own free will.

H. Free and Informed Consent

1. Informed Consent Forms must be placed on departmental letterhead and must address the points below.
2. Written informed consent is normally expected. If you believe written consent is impossible or unwarranted, explain why.
3. These items need to be explicit in the Informed Consent Form. These are:
 - a. The identity of the researcher(s) and contact information, and supervisor information (if applicable);
 - b. An invitation to participate;
 - c. A statement of the research purpose;
 - d. A description of the tasks to be performed and the expected time commitment;
 - e. A description of foreseeable harm and benefits, including limitations to confidentiality
 - f. Confirmation that prospective participants may decline participation or withdraw at any time without penalty;
 - g. An arm's length contact in case of questions about the conduct of the research: "If you have questions about how this study is being conducted and wish to speak with

someone who is not directly involved in the study, you may contact the Chair of the University Research Ethics Board (UREB) c/o MSVU Research and International Office, at 457-6350 or via e-mail at research@msvu.ca."

4. Please note that the consent of the participants shall not be conditional upon or include any statement to the effect that, by consenting, participants waive any legal rights.
5. If participants are a captive/vulnerable population, participants must be assured that non-participation will not affect their primary care in any way. For example, students must be assured that refusing to respond to a survey will not affect them academically. When it is not clear that potential participants have the capacity to provide informed consent, or if the research participants are from a population recognized as having diminished capacity to provide informed consent (e.g. children, adults with mental disabilities), informed consent must be obtained from an individual who bears responsibility for decisions concerning the well-being of the participant (e.g. parent, guardian, care-giver). When the participant is able to provide assent for the research (i.e. express their willingness to participate at the time of conducting the research), this should also be sought.
6. If participants are being photographed; videotaped and/or voice recorded, separate letters of consent must be attached to the Informed Consent Form.
7. Researcher(s) should provide a description of the criteria that they will use to judge assent/dissent of a participant in the protocol that they submit for review.
8. Parental consent is required for persons under the age of majority.
 - a. Consent of both the child and the parent(s) are required in research studies where children are minors but are 7 years or older.
 - b. With children under 7, consent of the parent(s) only is necessary for the child's participation in research.
9. Attach the Informed Consent Form(s) to the application.

Please note that if you provide the above information in a separate information letter or introduction letter, it must be repeated exactly the same in the Informed Consent Form.

Describe how you will obtain Informed Consent:

Information about the study and the participant’s right to withdraw at any time without consequence will be outlined in the email invitation (Appendix A: Email invitation to be sent to employees of the Department of Finance that participated in the 2007 and 2010 Health Risk Assessments). As well, the same information will be included in the written informed consent which will be obtained at the time of the interview (Appendix D: Information Sheet and Informed Consent Form). A second informed consent form, describing that an audio recorder will be used during the interview will also be provided to participants at the time of the interview (Appendix E: Information Sheet and Informed Consent Form for Audio Recorder Use.)

Checklist for Informed Consent (On Letterhead)

✓ Introduction
✓ Invitation
✓ Research Purpose
✓ Researcher Identity
✓ Tasks Outlined
✓ Time Commitment

✓ Harms/Benefits
✓ Decline Participation
✓ Withdrawal Anytime
✓ Arm’s Length Contact (UREB Chair)
✓ Special Population
✓ Obtaining Consent

✓ Signature area
✓ Special Consent for Audio
✓ Separate Consent for Photographs, Video

I. Privacy, Confidentiality, Anonymity

1. How will anonymity and/or confidentiality be maintained?

- while collecting data (please identify situations in which confidentiality cannot be guaranteed (e.g. abuse; self-harm; etc);
- after data collection (i.e. storage, disposal of raw data);
on resulting publications.

If you are utilizing secondary data, state its original source and confirm that the data does not allow for identification of participants.

1. Anonymity and confidentiality will be maintained during recruitment as employees will respond to the researcher if interested in participating. They will reply either through their secure Government email to the researcher's secure Mount Saint Vincent University email account, or by phone. Anonymity and confidentiality will be maintained during data collection as interviews will be held one-on-one with the researcher in a private room at the participant's workplace. Numbers will be assigned to participants in place of names and only the researcher will have access to the numbers that correspond to the names. All data will be kept in a locked file with only the researcher and supervisor having access. All data (including medical information) will be presented in the published work as general statements so that participants cannot be identified. Data will be destroyed by the researcher five years after publication.

2. N/A

J. Dissemination of Results

Describe how participants will be informed of the results of the study.

This research will be published as a Master's Thesis and will be used within the Department of Finance to help inform future HWP initiatives, and help achieve the priorities outlined in the Department of Finance's Healthy Workplace Strategic Plan 2010-2014. A summary report will be made available to participants, as well as other Department employees and management. The researcher will also be available to present on the findings, in which participants would be invited to attend, as well as management, and members of the HWP Committee. A summary report may also potentially be used within other Departments of the Nova Scotia Government as a sharing tool, as well as by others interested in HWP. It may also be published in academic journals should there be opportunity.

Appendices for Application Included:

Email invitation to be sent to employees of the Department of Finance that participated in the 2007 and 2010 Health Risk Assessments

Timeline of Procedure

Interview Guide

Information Sheet and Informed Consent Form

Information Sheet and Informed Consent Form for Audio Recorder Use

Appendix D – Email Invitation to Employees of the Department of Finance that Participated in the 2007 and 2010 Health Risk Assessments

Invitation

You are invited to take part in a research study that is being conducted by Mount Saint Vincent University and the Department of Finance. Taking part in this study is voluntary and you may withdraw from the study at any time, without consequences. The study is described below and outlines any risks or inconvenience you may experience as a result of participating in this study.

What is the study about?

The purpose of the study is to explore lifestyle changes, including changes in diet and/or physical activity that can have a positive impact on health. Changes include those made during time at work and away from work, since having completed two Health Risk Assessments (HRAs).

How will information be collected?

You are asked to participate in one individual phone, or in-person interview to share your experiences regarding potential healthy lifestyle changes made after receiving the results of your 2007 and 2010 HRA. The interview will take approximately 30 minutes. You will be contacted to set up the date and time of the interview according to your preference. The interviews will be recorded by digital recorder as well as in writing. All responses will be kept anonymous and your responses will be unidentifiable in any reports or publications. All data collected will be stored in a locked, secure file only accessible to the researcher and her advisor. Should you choose, you will be delivered a summary of your responses within one week of the interview to ensure the accuracy of the researcher's interpretation.

Risks and Benefits

While there is no substantial risk involved in sharing your experiences, general information about the results of your HRA may be included in the report, as to demonstrate the types of changes made in relation to the health risks outlined in your HRA results (Example: The participants that identified having high blood pressure, participated in a walking program). The information you share may be of benefit to the Department of Finance, as it may identify healthy workplace initiatives that help employees make healthy lifestyle changes. The research may also determine factors that have facilitated lifestyle changes. The reported information will be published as a Master's Thesis for Mount Saint Vincent University, and will also act as a tool to facilitate information sharing across the Department of Finance and potentially the Nova Scotia Government. This research activity has met the ethical standards of the University Research Ethics Board at Mount Saint Vincent University. If you have any questions or concerns about this study

and wish to speak with someone who is not directly involved with this study, you may contact the University Research Ethics Board, by phone or by email, or the Thesis Advisor Dr. Misty Rossiter by phone or email.

Appendix E – Information Sheet and Informed Consent



Excellence • Innovation • Discovery

Information Sheet and Informed Consent

Study Title: A Case Study Evaluation of Department of Finance Employees that participated in a Health Risk Assessment: Identification of Positive Lifestyle Changes

Invitation

You are invited to take part in a research study that is being conducted by Mount Saint Vincent University and the Department of Finance. Taking part in this study is voluntary and you may withdraw from the study at any time, without consequences. You can discuss any questions you have about this study with the researcher Megan Wood, student of the Master's of Science in Applied Human Nutrition program at Mount Saint Vincent University (contact information below). The study has received ethics approval through Mount Saint Vincent University's Ethics Board.

What is the study about?

The purpose of the study is to explore lifestyle changes, including changes in diet and/or physical activity that can have a positive impact on health, made by employees of the Department of Finance of the Nova Scotia Government since participating in two Health Risk Assessments (HRAs). The research will also determine factors that have helped facilitate lifestyle changes. The reported information will be published as a Master's Thesis for Mount Saint Vincent University, and will also act as a tool to facilitate information sharing across the Department of Finance and potentially the Nova Scotia Government.

How will information be collected?

You are asked to participate in one individual phone, or in-person interview to share your experiences regarding potential healthy lifestyle changes made after receiving the results of your 2007 and 2010 HRAs. The interview will take approximately 30 minutes. The interviews will be recorded by audio recorder as well as in writing. All responses will be kept anonymous and your responses will be unidentifiable in any reports or publications. All data collected will be stored in a locked, secure file only accessible to the researcher and her advisor. Should you choose, you will be sent a summary of your responses via email within one week of the interview to ensure the accuracy of the researcher's interpretation.

Risks and Benefits

While there is no substantial risk involved in sharing your experiences, general information about the results of your HRA may be included in the report, as to demonstrate the types of changes made in relation to the health risks outlined in your HRA results. Only myself and my thesis advisors will have access to the information obtained. All paper, electronic and audio data will be destroyed 5 years after publication of the thesis. The information you share may be of benefit to the Department of Finance, as it may help identify Healthy Workplace initiatives or other factors in the workplace that help employees make healthy

lifestyle changes, so they can continue to focus on what's working well in terms of positive outcomes of Healthy Workplace.

The reported information will be published as a Master's Thesis for Mount Saint Vincent University, and will also act as a tool to facilitate information sharing across the Department of Finance and potentially the Nova Scotia Government.

This research activity has met the ethical standards of the University Research Ethics Board at Mount Saint Vincent University. If you have any questions about how this study is being conducted and wish to speak with someone who is not directly involved with this study, you may contact the Chair of the University Research Ethics Board (UREB) c/o MSVU Research and International Office by phone or email. You may also contact the Thesis Advisor Dr Misty Rossiter by phone or email.

Informed Consent Form

I, _____ (please print name), have read the explanation about this study and understand that I am being asked to participate in a research study entitled *A Case Study Evaluation of Department of Finance Employees that participated in a Health Risk Assessment: Identification of Positive Lifestyle Changes* specifically as a participant. I have been given the opportunity to discuss the research, and my questions have been answered to my satisfaction. I hereby consent to take part in this study. However, I realize that my participation is voluntary and I am free to withdraw from the study at any time.

Participant Signature _____ Date _____

Principal Investigator Signature _____ Date _____

If you would like to confirm the accuracy of the researcher's interpretation of your interview (through a member-checking process) please provide a contact number and email address you can be reached at.

Appendix F – Information Sheet and Informed Consent for Audio Recorder Use



Excellence • Innovation • Discovery

Study Title: A Case Study Evaluation of Department of Finance Employees that participated in a Health Risk Assessment: Identification of Positive Lifestyle Changes

Invitation

You are invited to take part in a research study that is being conducted by Mount Saint Vincent University and the Department of Finance. Taking part in this study is voluntary and you may withdraw from the study at any time, without consequences. You can discuss any questions you have about this study with the researcher Megan Wood, student of the Master's of Science in Applied Human Nutrition program at Mount Saint Vincent University (contact information below). The study has received ethics approval through Mount Saint Vincent University's Ethics Board.

What is the study about?

The purpose of the study is to explore lifestyle changes, including changes in diet and/or physical activity that can have a positive impact on health, made by employees of the Department of Finance of the Nova Scotia Government since participating in two Health Risk Assessments (HRAs). The research will also determine factors that have helped facilitate lifestyle changes. The reported information will be published as a Master's Thesis for Mount Saint Vincent University, and will also act as a tool to facilitate information sharing across the Department of Finance and potentially the Nova Scotia Government.

How will information be collected?

You are asked to participate in one individual phone, or in-person interview to share your experiences regarding potential healthy lifestyle changes made after receiving the results of your 2007 and 2010 HRAs. The interview will take approximately 30 minutes. The interviews will be recorded by audio recorder as well as in writing. All responses will be kept anonymous and your responses will be unidentifiable in any reports or publications. All data collected will be stored in a locked, secure file only accessible to the researcher and her advisor. Should you choose, you will be sent a summary of your responses via email within one week of the interview to ensure the accuracy of the researcher's interpretation.

Risks and Benefits

While there is no substantial risk involved in sharing your experiences, general information about the results of your HRA may be included in the report, as to demonstrate the types of changes made in relation to the health risks outlined in your HRA results. Only myself and my thesis advisors will have access to the information obtained. All paper, electronic and audio data will be destroyed 5 years after publication of the thesis.

The information you share may be of benefit to the Department of Finance, as it may help identify Healthy Workplace initiatives or other factors in the workplace that help employees make healthy lifestyle changes, so they can continue to focus on what's working

well in terms of positive outcomes of Healthy Workplace.

The reported information will be published as a Master's Thesis for Mount Saint Vincent University, and will also act as a tool to facilitate information sharing across the Department of Finance and potentially the Nova Scotia Government.

This research activity has met the ethical standards of the University Research Ethics Board at Mount Saint Vincent University. If you have any questions about how this study is being conducted and wish to speak with someone who is not directly involved with this study, you may contact the Chair of the University Research Ethics Board (UREB) c/o MSVU Research and International Office, by phone or email. You may also contact the Thesis Advisor Dr. Misty Rossiter by phone or email.

Informed Consent Form for Audio Recorder Use

I, _____ (please print name), have read the explanation about this study and understand that I am being asked to participate in a research study entitled *A Case Study Evaluation of Department of Finance Employees that participated in a Health Risk Assessment: Identification of Positive Lifestyle Changes* specifically as a participant. I understand that I will be recorded using an audio recording device. I have been given the opportunity to discuss the research, and my questions have been answered to my satisfaction. I hereby consent to take part in this study. However, I realize that my participation is voluntary and I am free to withdraw from the study at any time.

Participant Signature _____ Date _____

Principal Investigator Signature _____ Date _____

Appendix G – Interview Guide

Interview Guide

In October 2007 and January 2010 you participated in a Health Risk Assessment at your workplace. You were then given confidential written information about your health, and were potentially given recommendations by a registered nurse on ways you could improve your health. Information about any positive lifestyle behaviour changes you made after this process either in your work or home life, would be very helpful for future program planning by the Healthy Workplace Committee at the Department of Finance, and may also provide positive reinforcement to others in the department, government, and elsewhere.

Interview Script

1. Did the results of either of your HRAs suggest you should make lifestyle changes to improve or maintain your health? If so, what were some of the recommended changes?
2. Did you made any positive changes during your workday after either of the HRAs? (eg. Healthy eating, physical activity, lunch break, etc.).
3. Did you made any positive changes in eating/physical activity during your time away from work after either HRA?
4. What aspects of either of the HRA processes helped you make positive lifestyle changes?
5. Have you participated in any HWP initiatives held by the Department of Finance? If yes, after which HRA, and which initiatives did you participate in?
6. Are there any aspects of the Department or HWP committee that helped(s) you make positive lifestyle changes?
7. Can you think of any additional positive aspects/outcomes of participating in the HRA?
8. What did you get out of your participation in the HRAs?
9. How did the experience impact you, your family, friends, or co-workers? (positive impact/outcomes)
10. Are there any HWP initiatives or programs you would like to see repeated? If yes, did you participate in them when they were held?
11. Are there any changes would like to make, but did not?
12. Describe the ideal situation in which you would make these changes.

13. If you did not make any lifestyle behaviour changes recommended after the HRAs, describe the ideal situation in which you would make changes.

14. Was there anything in particular that helped you participate in this invitation to participate in this study at this time?

Appendix H – Lifestyle Changes Made During Time At Work and Away From Work

Changes to Improve Diet -Increase Fruit and Vegetable Intake -Consume Flax -*Healthy Snacks -Bring a Healthy Lunch -*Increase Water Intake -Reduce Coffee Intake -Eat a Lighter Supper Meal -Avoid Snacking at Night -Reduce Meat Intake -Choose Healthy Protein -Reduce Sodium Intake -Portion Control -Decrease Packaged and Canned Foods -Reduce Fat Intake -Eat Tracker Program (Dietitians of Canada) -Increase Fibre Intake	**Increase Physical Activity -Swimming -Weight Training -Cardio Activity - Stretching -Physiotherapy Exercises -**Running/Treadmill -Yoga -**Gym Membership -*Use Stairs -Weight Loss Program -Play Bagpipes -Wii Fit -Outdoor Activities
**Take a lunch break -*Bring a Healthy Lunch -*Walk During Lunch Break	Check Blood Pressure
*Participate in HWP Initiatives	Increase Sleep
Reduce Alcohol Intake	Quit Smoking

*Indicates 3 or more participants identified these factors within the Department of Finance and HWP Committee as helpful in making positive lifestyle changes.

**Indicates 5 or more participants identified these factors within the Department of Finance and HWP Committee as helpful in making positive lifestyle changes.

Appendix I – Factors within the Department of Finance and from the HWP Committee that Helped Participants Make positive Lifestyle Changes

Weight Loss Initiatives	*Climb Mount Everest Stair Climbing Challenge
*Team/Group Aspect of Initiatives Accountability of Initiatives Challenge Aspect Enthusiasm of Those Participating	Creative Wellness Solutions -Information session after HRA -Discussion after presentation of Aggregate Report
**Healthy Snack Initiative	Dessert for Breakfast Initiative
**HWP Initiatives Overall	Health Risk Assessment
*Lunch and Learn Information Sessions	Healthy Tips from Coworkers
Emphasis Put on Health and Healthy Lifestyle Within the Department of Finance	Employer -Interested and supportive to offer the HRA -Cares about employees, trying to make things better
HWP Posters	Grocery Store Tour
*Senior Advisor for Workplace Initiatives -*Delivery of health information -Rallying of participants for initiatives -Informing/Reminding employees of initiatives -Providing a portion plate -Email communication (positive and motivating)	*Take Off Ten-in-Ten -Competition -Fun -Well-planned and structured -Good ideas -Anonymous -Voluntary
Being a HWP Committee Member	The HWP Committee

*Indicates 3 or more participants identified these factors within the Department of Finance and HWP Committee as helpful in making positive lifestyle changes.

**Indicates 5 or more participants identified these factors within the Department of Finance and HWP Committee as helpful in making positive lifestyle changes.