UNDEREMPLOYMENT, UNEMPLOYMENT, AND MENTAL HEALTH

(Spine title: Underemployment and Mental Health)

(Thesis format: Integrated Article)

by

Heather Lorraine Maddocks

Graduate Program in Sociology

A thesis submitted in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy

The School of Graduate and Postdoctoral Studies
The University of Western Ontario
London, Ontario, Canada

© Heather Maddocks 2012

THE UNIVERSITY OF WESTERN ONTARIO
School of Graduate and Postdoctoral Studies

CERTIFICATE OF EXAMINATION

Joint Supervisor

_____
Dr. William R. Avison

Joint Supervisor

_____
Dr. Andrea Willson

Examiners

_____
Dr. Wolfgang Lehmann

_____
Dr. Paul-Philippe Paré

_____
Dr. Kathy Speechley

_____
Dr. Mark Tausig

The thesis by

Heather Lorraine Maddocks

entitled:

Underemployment, Unemployment, and Mental Health

is accepted in partial fulfillment of the
requirements for the degree of
Doctor of Philosophy

_____
Date

_____
Chair of the Thesis Examination Board

ABSTRACT

Inadequate employment, through unemployment or underemployment is expected to have consequences for the health and well-being of Canadians. This dissertation presents three studies centered on the relationship between underemployment and mental health. In the first study, ideal indicators for underemployment are described, and the stress process model is proposed as a theoretical framework for understanding the relationship between underemployment and adverse health outcomes. The second and third studies use data from a community-based survey conducted in London, Ontario, Canada in 1994/5 and 1996/7. Four indicators of underemployment are used including: lower income or benefits than in a previous job, involuntary part-time work, or over-education. The second study tests for the effects of social selection or social causation between psychological distress and employment status using both survey waves. A reciprocal process is found only for unemployment, where elevated psychological distress increases the odds of job loss by the second interview, and losing adequate employment is associated with elevated psychological distress. The transition into or out of underemployment is not associated with psychological distress. The third study focuses on over-education and its association with psychological distress using a stress process model. Potential mediators are tested including chronic strain, financial strain, work-satisfaction, self-esteem, and mastery. Among males, over-education is a significant predictor of elevated psychological distress and lower self-esteem and work satisfaction. For females, over-education is only associated with elevated psychological distress and lower work satisfaction until household income is controlled for. Gender differences are highlighted in this study, demonstrating that males and females experience

underemployment differently, and the greater salience of employment status for men's mental health. In addition, support is found for the stress process model as a framework for investigating the mechanisms that link the experience of employment to adverse health outcomes.

Keywords: Underemployment, unemployment, over-education, over-qualification, health, mental health, psychological distress, CES-D, stress process model, chronic strain, financial strain, work satisfaction, mastery, self-esteem, social causation, social selection, gender.

ACKNOWLEDGEMENTS

I would like to take this opportunity to thank my supervisors Bill Avison and Andrea Willson for their thoughtful contributions and support in my professional development. I would also like to thank the staff and faculty of the department of sociology for their encouragement, with a special thanks to Denise Statham, Sam Clark, and Wolfgang Lehman. Thank you also to Moira Stewart and Amardeep Thind at the Center for Studies in Family Medicine for their ongoing mentorship, celebration of my accomplishments, and encouragement to finish.

Thank you to my parents Marjorie and David, and my sister Krystal. You gave me the confidence to go after my dreams. Thank you to my friends, old and new, for seeing me through the daily grind. Finally, a very special thank you to my cousin Ken Vance, for showing me at a young age the magic of thinking big.

TABLE OF CONTENTS

CERTIFICATE OF EXAMINATION ii

ABSTRACT iii

ACKNOWLEDGEMENTS v

TABLE OF CONTENTS vi

LIST OF TABLES x

LIST OF FIGURES xi

LIST OF APPENDICES xii

LIST OF ABBREVIATIONS xiii

CHAPTER ONE: INTRODUCTION 1

1.0 The Concept of Underemployment 1

1.1 The Significance of Underemployment 2

1.2 Purpose 3

1.3 Overview of the Research 4

CHAPTER TWO: UNDEREMPLOYMENT: IDEAL INDICATORS INFORMED BY THEORY AND AN APPROACH TO STUDY UNDEREMPLOYMENT'S RELATIONSHIP TO HEALTH 11

2.0 Introduction 11

2.1 Purpose 12

2.2 Boundaries of the Concept of Underemployment 13

2.3 Theory 15

2.3.1 Theoretical Models Explaining the Relationship Between Work and Health 15

2.4 Research Literature 20

2.4.1 Current Measures of Underemployment 20

2.4.2 Subjective Underemployment: 23

2.4.3 Psychologically and Economically Good Jobs 24

2.5 A Proposed Measure of Underemployment 26

2.5.1 Resource Mismatch 26

2.5.1.1 Indicator - Income 27

2.5.1.2 Indicator - Other economic benefits 29

2.5.1.3 Indicator - Hours 29

2.5.2 Occupational Mismatch 31

2.5.2.1 Indicator - Education or Skills Mismatch 32

2.5.2.2 Indicator - Field of Training 34

2.5.3 Social psychological Mismatch 34

2.5.3.1 Indicator - Perceived Underemployment 35

2.5.3.2 Indicator - Status Mismatch 36

2.5.3.3 Indicator - Development of Potential 37

2.6 Limitations, Excluded Indicators 37

2.7 A Stress Process Model of Underemployment 39

2.7.1 Pathway – Financial strain 41

2.7.2 Pathway - Mastery 43

2.7.3 Pathway – Self-esteem: 45

2.8 Conclusion 45

2.9 References 48

CHAPTER THREE: UNDEREMPLOYMENT, UNEMPLOYMENT, AND MENTAL HEALTH: A TEST OF SELECTION AND CAUSATION EFFECTS 55

3.0 Introduction 55

3.1 Measures of Underemployment 59

3.2 Previous Research on Unemployment, Underemployment and Mental Health 61

3.3 Purpose 62

3.4 Methods 63

3.4.1 Sample 65

3.4.2 Variables and Measurement 65

3.5 Results 68

3.6 Discussion 74

3.7 Limitations and Future Research 75

3.8 Conclusion 75

3.9 References 77

CHAPTER FOUR: EDUCATIONAL MISMATCHES AND MENTAL HEALTH: MEASURING THE EFFECTS OF OVER-EDUCATION ON PSYCHOLOGICAL DISTRESS 92

4.0 Introduction 92

4.1 Gender Differences in the Effects of Underemployment 94

4.2 Purpose 96

4.3 Methods: 97

4.3.1 Sample 98

4.3.2 Variables and Measurement: 98

4.3.3 Outcome Variable 99

4.3.4 Mediators 100

4.3.5 Control Variables 102

4.3.6 Analysis 102

4.4 Results 102

4.4.1 Descriptive Results 102

4.4.2 Predictors of CES-D 103

4.4.3 Social Influences on Mediators 108

4.5 Discussion 110

4.6 Future Research 113

4.7 Conclusion 113

4.8 References 115

CHAPTER FIVE: CONCLUSION 128

5.0 Summary of the Research 128

5.1 Summary of the First Study 128

5.2 Summary of the Second Study 133

5.3 Summary of the Third Study 135

5.4 Connections among the three studies 138

5.5 Support for a theoretical framework to study underemployment and mental health 140

5.6 Conclusion 142

5.7 References 144

CURRICULUM VITAE 147

LIST OF TABLES

Table 3.1 CES-D Scores for Males and Females at Time 1 and Time 2, Employment Survey ……84

Table 3.2 OLS Regression Models Predicting CES-D at Time 1 Employment Survey ……85

Table 3.3 OLS Regression Models Predicting CES-D at Time 2 Employment Survey ……86

Table 3.4 OLS Regression Models Predicting CES-D at Time 2 for Adequately Employed at Time 1, Employment Survey …….87

Table 3.5 OLS Regression Models Predicting CES-D at Time 2 for Underemployed at Time 1, Employment Survey ……88

Table 3.6 Multinomial Logistic Regression Models Predicting Odds of Employment Status at Time 2, for Adequately Employed at Time 1…89

Table 3.7 Multinomial Logistic Regression Models Predicting Odds of Employment Status at Time 2, for Underemployed at Time 1……...90

Table 3.8 Logistic Regression Model Predicting Odds of Job Loss at Time 2, for All Employed at Time 1……..…….91

Table 4.1 Descriptive Statistics, Employment Survey, Time 2 ……123

Table 4.2 OLS Regression Models Predicting CES-D by Gender Employment Survey, Time 2……124

Table 4.3 OLS Regression Models Predicting Self-Esteem by Gender Employment Survey, Time 2……125

Table 4.4 OLS Regression Models Predicting Work Satisfaction by Gender Employment Survey, Time 2……126

LIST OF FIGURES

Figure 2.1 A Stress Process Model Framework for Studying the Relationship Between Underemployment and Health ……40

Figure 3.1 Plot of the Interaction between Over-education and Mastery as a predictor of CES-D values: Female Respondents (n=309)……107

Figure 3.2 Plot of the Interaction between Over-education and Mastery as a predictor of CES-D values: Male Respondents (n=252)……107

LIST OF APPENDICES

Appendix 3.1 Number of Cases Used in the Analysis……..…..83

Appendix 4.1 Number of Cases Used in the Analysis……..….122

LIST OF ABBREVIATIONS

CES-D – Center for Epidemiologic Studies Depression Scale

NOC – National Occupational Classification

OLS – ordinary least squares

CHAPTER ONE: INTRODUCTION

1.0 The Concept of Underemployment

The concept of "underemployment" refers to types of employment that are inadequate for the worker. These could include over-qualification through the inability to use one's education, inadequate wages, or involuntary part-time work when full-time work is desired. Even the perception of being underutilized can constitute underemployment. From a macroeconomic perspective, underemployment and unemployment represent the underutilization of labour resources. However, an individual focus on the study of employment is warranted, because insufficient hours, earnings and skills can affect an individual's schedule, finances, families, and subsequently their health and well-being. The experience of underemployment, whether it be through over-education, lower wages, benefits and hours than desired, is expected to have negative consequences for the health and well-being of individuals.

There is a need to distinguish the concept of underemployment as it is applied in this study from other concepts such as non-standard work, precarious employment, or job dissatisfaction. Non-standard work is defined in contrast to standard employment where employees can expect to work full-time, year round with the expectation that they will be employed indefinitely. Precarious employment can describe some forms of non-standard work, including part-time work with variable work schedules, low wages and lack of job security, creating stressful psychosocial relationships and working conditions (Benach

and Mutaner 2007). Precarious employment is expected to have negative consequences for all individuals who hold these types of jobs. Likewise, individuals who simply dislike their job or are experiencing dissatisfaction with their work are not necessarily underemployed. They may be in a position that utilizes their educational attainment, or provides the best income and benefits they've ever had or could expect. In contrast, underemployment as it is applied in this study refers to the experience of employment as unsatisfactory for the individual in comparison to their expectations or previous employment. It is based on the individual's metric of comparison between past and present employment, including a comparison of the income and benefits provided by a previous position to their current position, working part-time involuntarily, the type of job they prepared for through educational attainment, or the perception of their own underutilization. Thus, underemployment is a condition for the individual and not necessarily an inherent feature of the job itself.

1.1 The Significance of Underemployment

Given that job growth has lagged (Summers 2010) since the economic downturn of 2007 (National Bureau of Economics Research 2010) and unemployment has remained high at around 10 percent (Bureau of Labor Statistics 2010; Miller and McKee 2009) the effects of unemployment and underemployment on population health should be of interest to social policy makers. After re-employment, workers tend to find jobs of lower quality than those they lost (Gowan, Riordan, and Gatewood 1999; Hijzen, Upward, and Wright 2010; Kinicki, Prussia, and McKee-Ryan 2000; Leanna and Feldman 1995; Waters 2007) putting them at risk of underemployment (McKee and Harvey 2011). Over

the past several decades, researchers have developed the theory and methods to study the effects of unemployment on health. Seldom have researchers extended their work to study forms of inadequate employment (Dooley and Prause 2004). The negative health effects of underemployment resemble those of unemployment (Cassidy and Wright 2008; Dooley 2003; Kinicki et al. 2000; Leanna and Feldman 1995; Sadava, O'Conner, and McCreary 2000; Wilkins 2007), making the study of underemployment and its effect on health of importance.

1.2 Purpose

This dissertation addresses a gap in the literature on underemployment by providing an exploration of the theories and methods used to study unemployment and underemployment, proposing a set of ideal indicators, and a theoretical framework tested through empirical analysis examining the effect of underemployment and unemployment on mental health.

Much of the research on underemployment has been atheoretical, and empirical studies have been conducted on the relationship between underemployment and health while applying theoretical explanations post hoc (Feldman 1996). More research needs to be done to provide theoretical explanations behind the dynamics of underemployment (Feldman 1996). In addition, there is a lack of an agreed upon definition and measures for underemployment both within and across disciplines. These studies will propose and test a definition of underemployment informed by a critical evaluation of current measures, and theoretical explanations linking the dimensions of underemployment to adverse health outcomes. Furthermore, more longitudinal research on underemployment

needs to be done (Dooley and Prause 2004) to test for potential social causation effects on mental health of becoming underemployed and social selection effects by controlling for baseline mental health measures to determine whether increased psychological distress is selecting individuals into underemployment or unemployment. The mechanisms through which underemployment affects mental health need to be identified. This dissertation also tests for possible mediators in the relationship between underemployment and mental health in a stress process framework (Pearlin 1989; Pearlin et al. 1981).

1.3 Overview of the Research

This dissertation is composed of three studies, centered on the mental health consequences of inadequate employment through underemployment or unemployment.

The first study will review the theories that have been used to explain the relationship between unemployment and adverse health outcomes with a view to extend these theories to the study of underemployment. A critical review of the current measures of underemployment will be done, and a set of ideal indicators for underemployment will be proposed with an explanation of how to operationalize them. At the end of this review, a theoretical framework will be proposed for the study of the relationship between the dimensions of underemployment and adverse health outcomes with hypothesized mechanisms linking the stress associated with underemployment to adverse health outcomes.

The second and third studies in this dissertation are empirical evaluations of the relationship between unemployment and/or underemployment and psychological distress

as measured by the Center for Epidemiologic Studies scale of depressive symptoms (CES-D) (Radloff 1977). The data for the second and third studies are derived from a large community-based survey of married couples with at least one child under 18 years of age in London, Ontario, Canada. For this Employment Survey (Avison 2001; Cassidy and Davies 2003) two survey waves were conducted in 1994/5 (Time 1) and 1996/7 (Time 2). This survey focuses on the effects of recent or previous involuntary job loss and subsequent unemployment on individuals and their spouses, and provides a rich source of data on work history and measures of mental health. Households who had experienced recent unemployment in the four years prior to the study are oversampled, and the remainder are made up of stably employed individuals who have not experienced unemployment for a period longer than four week in the past four years. First time job seekers, or those who voluntarily left their jobs are not included in the sample.

The economic recession of the mid 1990s coincided with the time of the data collection for the Employment Survey, and the period of unemployment experienced by some individuals during the four years prior to the first survey wave. A lack of full-time job creation and high rates of unemployment hovering around 10 percent were seen during the 1990s in Canada (Picot and Heisz 2000), mirroring the economic climate of the current recession (Statistics Canada 2009).

The second empirical study in this dissertation applies the ideal indicators of underemployment suggested in the first study to identify a sample of respondents in the Employment Survey who are underemployed, adequately employed, or unemployed at either Time 1 and/or Time 2. Underemployment is measured using a subset of the ideal indicators proposed in the first study and by using information on present employment

and work history I am able to identify individuals who are underemployed through four types of measures. In this study, respondents are underemployed if they are involuntarily working part-time and would prefer full-time work, if they have lower income than in a previous position, or fewer economic benefits provided by their employer than in a previous position, and finally through over-education, where they have a higher level of educational attainment than required by their job according to the National Occupational Classification (NOC) scale (HRDC 1993).

In the second study, psychological distress as it is measured using the CES-D scale is used to control for baseline mental health symptoms at Time 1 while testing for social causation effects of losing adequate employment and becoming underemployed or unemployed on psychological distress at Time 2. Furthermore, social selection effects will be tested to see whether heightened psychological distress at Time 1 predicts subsequent transition from adequate employment to job loss between interviews, and underemployment or unemployment by Time 2. The cross-sectional association between the three employment statuses and psychological distress at Time 1 and Time 2 are also tested in this study.

The third and final study in this dissertation focuses on underemployment as it is experienced through over-education and tests for mechanisms that link this experience to psychological distress using a stress process framework. Potential mediators are tested, including chronic strain, financial strain, work satisfaction, self-esteem, and mastery. Individuals who are over-educated at Time 2 are identified using a comparison between the educational attainment of respondents and the educational requirements for their main employment position using the NOC. The association between over-education and

psychological distress is tested and the effects of each of the mediators are examined to see whether they change the focal relationship. Over-education is also tested as a predictor of each of the mediators examined in the study. Gender differences in the experience of over-education are also explored.

The three studies that comprise this dissertation are now presented in the following three chapters. A concluding chapter will provide a summary of the findings from the three studies, relating their findings to one another, and identifying their contribution to the literature and theory on the study of underemployment and mental health. Limitations and future research will also be addressed.

1.4 References

Avison, William R. 2001. "Unemployment And Its Consequences For Mental Health." Pp. 177-200 in *Restructuring Work and the Life Course*, edited by V. W. Marshall, W.R. Heinz, H. Kruger, and A. Verma. Toronto, Ontario, Canada: University of Toronto Press.

Benach, Joan. and Charles Muntaner. 2007. "Precarious Employment and Health: Developing a Research Agenda." *British Medical Journal* 61(4). Retrieved March 7 2012 (http://jech.bmj.com/content/61/4/276.full.pdf+html).

Bureau of Labor Statistics, United States Department of Labor. 2010. *Employment Situation Summary*. Released January 08, 2010, for December 2009. Retrieved March 7 2012 (http://www.bls.gov/news.release/empsit.nr0.htm).

Cassidy, Gail. L. and Lorraine Davies. 2003. "Explaining Gender Differences in Mastery among Married Parents." *Social Psychology Quarterly* 66(1). Retrieved March 7 2012 (http://www.jstor.org/stable/pdfplus/3090140.pdf).

Cassidy, Tony and Liz Wright. 2008. "Graduate Employment Status and Health: A Longitudinal Analysis of the Transition from Student." *Social Psychology and Education* 11. Retrieved March 7 2012 (http://www.springerlink.com/content/p55756654567266u/fulltext.pdf).

Dooley, David and JoAnn Prause. 2004. *The Social Costs of Underemployment :Inadequate Employment as Disguised Unemployment.* New York: Cambridge University Press.

Dooley, David. 2003. "Unemployment, Underemployment and Mental Health: Conceptualizing Employment Status as a Continuum." *American Journal of Community Psychology* 32. Retrieved March 7 2012 (http://www.springerlink.com/content/j0924451371l3513/fulltext.pdf).

Feldman, Daniel C. 1996. "The Nature, Antecedents and Consequences of Underemployment." *Journal of Management* 22(3). Retrieved March 7 2012 (http://journals1.scholarsportal.info/tmp/17543244007352185903.pdf).

Gowan, Mary A., Christine Riordan and Robert D. Gatewood. 1999. "Test of a Model of Coping with Involuntary Job Loss Following a Company Closing." Journal of Applied Psychology 84. Retrieved March 7 2012 (http://journals2.scholarsportal.info/tmp/757536271348346847 2.pdf).

Hijzen, Alexander, Richard Upward, and Peter Wright. 2010. "The income losses of displaced workers." *Journal of Human Resources* 45. Retrieved March 7 2012 (http://web.ebscohost.com/ehost/pdfviewer/pdfviewer?sid=9d4be6ac-89c8-4b20-90a8-494140f42f51%40sessionmgr114&vid=2&hid=126).

HRDC (Human Resources Development Canada). 1993. *1991 National Occupational Classification: Occupational Descriptions*. Ottawa: Ministry of Supply and Services, Cat. MP53–25/1–1993E.

Kinicki, Angelo J., Gregory Prussia, and Francis McKee-Ryan. 2000. "A Panel Study of Coping with Involuntary Job Loss." *Academy of Management Journal* 43. Retrieved March 7 2012 (http://www.jstor.org/stable/pdfplus/1556388.pdf).

Leana, Carrie R., and Daniel C. Feldman. 1995. "Finding new jobs after a plant closing: Antecedents and outcomes of the occurrence and quality of re-employment." *Human Relations* 48(12). Retrieved March 7 2012 (http://journals2.scholarsportal.info/tmp/4300621558369930229.pdf).

Miller, Rich and Michael McKee. 2009. "Experts: Economy will Rebound, Job Growth Won't." *Bloomberg Business Week* December 14. Retrieved March 7 2012 (http://www.businessweek.com/investor/content/dec2009/pi20091214_791251.htm).

McKee-Ryan, Frances M., and Jaron Harvey. 2011. "'I have a Job, But…': A Review of Underemployment." *Journal of Management* 37(4). DOI: 10.1177/0149206311398134.

National Bureau of Economic Research. 2010. *Business Cycle Dating Committee*. Report September 20. Retrieved March 7 2012 (http://www.nber.org/cycles/sept2010.html).

Pearlin, Leonard I. 1989. "The Sociological Study of Stress." *Journal of Health and Social Behavior* 30(3). Retrieved March 7 2012 (http://www.jstor.org/stable/pdfplus/2136956.pdf?acceptTC=true).

Pearlin, Leonard I., Elizabeth G. Menaghan, Morton A. Lieberman, and Joseph T. Mullan. 1981. "The Stress Process." *Journal of Health and Social Behavior* 22(4). Retrieved March 7 2012 (http://www.jstor.org/stable/pdfplus/2136676.pdf).

Pearlin, Leonard I., Scott Schieman, Elena M. Fazio, and Stephen C. Meersman. 2005. "Stress, Health, and the Life Course: Some Conceptual Perspectives." *Journal of Health and Social Behavior* 46(2). Retrieved March 7 2012 (http://www.jstor.org/stable/pdfplus/4150398.pdf).

Picot, Garnett and Andrew Heisz. 2000. "The Performance of the 1990s Canadian Labour Market." *Canadian Public Policy*. XXVI Supplement:1. Retrieved March 7 2012 (http://www.jstor.org/stable/pdfplus/3552501.pdf).

Radloff Lenore S. 1977. The CES-D Scale : A Self-Report Depression Scale for Research in the General Population. Applied *Psychological Measurement* 1(3). Retrieved March 7 2012 (http://apm.sagepub.com/content/1/3/385.full.pdf+html).

Sadava, S. W., R. O'connor and D. R. McCreary. 2000. "Employment Status and Health in Young Adults: Economic and Behavioural Mediators?" *Journal of Health Psychology* 5(4). Retrieved March 7 2012 ().

Statistics Canada. 2009. *The Canadian Labour Market at a Glance*. Catalogue 71-222-X, page 12. Retrieved March 7 2012 (http://www.statcan.gc.ca/pub/71-222-x/71-222-x2008001-eng.pdf).

Summers, Lawrence H. 2010. "Principles for Economic Recovery and Renewal." *Business Economics* 45. Retrieved March 7 2012 (http://web.ebscohost.com/ehost/pdfviewer/pdfviewer?sid=fc8a00dd-728a-44ee-87d9-40e4a439ecf9%40sessionmgr14&vid=2&hid=126).

Waters, Lea. 2007. "Experiential Differences Between Voluntary and Involuntary Job Redundancy on Depression, Job-Search Activity, Affective Employee Outcomes and Re-Employment Quality." *Journal of Occupational and Organizational Psychology* 80. Retrieved March 7 2012 (http://onlinelibrary.wiley.com/doi/10.1348/096317906X104004/pdf).

Wilkins, Roger. 2007. "The Consequences of Underemployment for the Underemployed." *Journal of Industrial Relations* 49(2). Retrieved March 7 2012 (http://journals2.scholarsportal.info/tmp/15499069648787648817.pdf).

CHAPTER TWO: UNDEREMPLOYMENT: IDEAL INDICATORS INFORMED BY THEORY AND AN APPROACH TO STUDY UNDEREMPLOYMENT'S RELATIONSHIP TO HEALTH

2.0 Introduction

Over the past several decades, researchers have developed theory and methods to study the effects of job loss or unemployment on health. Unemployment is only one form of labour market hardship. Seldom have researchers extended their work to study forms of inadequate employment (Dooley and Prause 2004). The concept of "underemployment" refers to types of employment that are inadequate for the worker, for example, inadequate wages, part-time hours when full-time work is desired, or over-qualification by having more education, skills or training than the position requires. Also, some workers may consider themselves to be underutilized, working fewer hours than they would have hoped, earning less income in their new job after a lay off, or over-educated for the requirements of their position. Involuntary part-time work, inadequate pay and the inability to use one's skills and education are all expected to have negative consequences for the health and well-being of individuals.

Since the economic downturn that began in December of 2007 (National Bureau of Economics Research 2010) job growth has lagged (Summers 2010) and unemployment has remained high at around 10 percent (Bureau of Labour Statistics 2010; Miller and McKee 2009). Given that re-employed workers tend to find jobs of lower quality than those they lost (Gowan, Riordan and Gatewood 1999; Hijzen, Upward and Wright 2010;

Kiniki, Prussia and McKee-Ryan 2000; Leanna and Feldman 1995; Waters 2007) many unemployed are at risk of becoming underemployed (McKee-Ryan and Harvey 2011). Researchers have found that the deleterious health effects of underemployment closely resemble those of unemployment (Cassidy and Wright 2008; Dooley 2003; Kiniki et al. 2000; Leanna and Feldman 1995; Sadava, O'Conner and McCreary 2000; Wilkins 2007), thus the study of underemployment and its effects on health and well-being should be of importance to social policy makers (McKee-Ryan and Harvey 2011).

From a macroeconomic perspective, unemployment and underemployment indicate an underutilization of labour resources. From the worker's perspective, insufficient hours, earnings or use of their skills can affect their finances, schedule, families, and subsequently their health and well-being. Underemployment concerns the experience of inadequate work in comparison to previous or expected employment, warranting an individual level focus on the study of underemployment and its effect on the health and well-being of individuals.

2.1 Purpose

This paper will review the theories that have been used to explain the relationship between unemployment, underemployment and adverse health outcomes. Next, a critical examination of the measures that have been used to study underemployment will be conducted, with a proposal for a series of ideal indicators that have been informed by theory. Finally, the stress process model (Pearlin 1989; Pearlin et al. 1981) will be proposed as a framework to study the effects of underemployment by identifying potential mechanisms linking the stressors to adverse health outcomes.

There are two key limitations to research in the area of underemployment. First, there is no established definition or agreed upon measure of underemployment within or across disciplines (Feldman 1996). Some studies have used one or two dimensions such as low income, part-time work, or educational over-qualification. The measures used have often been selected on the availability of data and the way the indicators were operationalized varied by study. Second, much of the research on underemployment has been atheoretical (Feldman 1996). Many researchers have documented empirical relationships between underemployment and health, and have then applied theoretical explanations post hoc, without collecting data to test specific theoretical propositions. Feldman (1996) argues that more attention needs to be paid to the theoretical explanations behind the dynamics of underemployment to advance research in the area.

2.2 Boundaries of the Concept of Underemployment

Before moving forward, there is a need to distinguish the concept of underemployment from other concepts such as non-standard work, precarious employment and job dissatisfaction. Non-standard work has typically been defined in contrast to a standard employment relationship where employees work full-time year-round, receiving statutory benefits, and have the expectation that they will be employed indefinitely. The concept of precarious employment has been put forth by sociologists to describe some forms of non-standard work, including part-time work or variable work schedules, reduced job security, lack of union protection, low wages, lack of employer sponsored benefits, or stressful psychosocial relationships and working conditions (Benach and Mutaner 2007). These dimensions are meant to identify jobs that engender precarious work relationships where the employee has little or no legal or regulatory

protection against experiences such as the potential loss of their job, a decline in their hours of work, or control over the labour process (Cranford, Vosko and Zukewich 2003). Some of these dimensions of precarious work are similar to those used to identify underemployment, such as part-time work or low wages. Precarious jobs are expected to have negative consequences for all individuals who hold them. However, underemployment indicators identify jobs that are unsatisfactory for the individual in comparison to a previous job or expectations. For example, having part-time employment when full-time work is desired, or earning lower wages than in a previous job rather than simply having part-time work at low wages. Some individuals may desire part-time, flexible work contracts, or may be employed in a precarious employment relationship without being underemployed. Underemployment is a condition for the individual and not necessarily an inherent feature of the job itself.

Likewise, individuals who simply dislike their job or are experiencing job dissatisfaction are not necessarily underemployed. Underemployment is a concept that is used to identify individuals who are over-qualified or underpaid and who may feel they could have a better job if one were available. It is based on the individual's metric of comparison between past and present employment. Underemployed individuals are likely to be working in lower paying employment that does not utilize their skills and education, which may also lead to job dissatisfaction, however it is the contrast between the type of job they could have had, and their present employment that constitutes underemployment.

2.3 Theory

2.3.1 Theoretical Models Explaining the Relationship Between Work and Health

The theory and methods developed to study the effect of job loss on measures of health and well-being can be extended to incorporate other forms of employment, including underemployment. This literature provides a theoretical framework and empirical guidelines for studying other sources of employment stress, including underemployment. For example, deprivation theory emerged from a functionalist approach to the study of unemployment and mental health and argued that there were manifest and latent functions of work that were lost when an individual experienced unemployment (Jahoda 1982). The latent functions of work were thought to include income, time structure, social contacts, purpose, status, and activity. The environment of unemployed individuals was argued to lack these functions, leading to psychological distress and reduced well-being. Likewise, vitamin theory (Warr 1987) identified several dimensions of work that were thought to have adverse effects when taken in too large or small doses, or removed completely. For example, opportunity for control, task variety, or opportunity for open communication would be harmful if workers are given too little or too much (Warr 1987).

Fryer (1986) argued that the latent functions of work identified by Jahoda may also operate as costs. For example, the latent function of time structure provided by employment may also cause psychological distress because it disregards human needs. Fryer argued that individuals were not passive recipients of the latent functions of work,

but were proactive agents, and unemployment would only be harmful to the extent that loss of income affected their agency.

Control theory can be used as a psychological framework for understanding the stress and health effects of job loss or inadequate employment. This approach assumes people want primary control over their environment and when they cannot obtain this they will seek secondary control over their cognitive disposition and attitudes (Heckhausen and Schulz 1995). "Falling from adequate employment into...underemployment could, therefore, serve as an adverse transition that threatens workers' sense of control" (Dooley and Prause 2004:33). When people are unable to attain certain goals they may lose primary control and experience frustration and depression. The ability to exert secondary control and either change themselves or their goals will determine their mental health consequences (Heckhausen and Schulz 1995).

Studies of unemployment have traditionally used a dichotomy to examine the differences between those who are unemployed and those who are not. Various theories have emphasized the benefits of employment that, when lost, result in stress or adverse health outcomes, implying that any employment is better than unemployment. For example, the financial strain resulting from decreased income and standard of living during unemployment may mediate the connection between unemployment and health outcomes (Kessler, Turner and House 1988). Physical and mental health outcomes of the individual and their family may be affected by economic deprivation and unstable work patterns (Burke 1986). Dooley and Prause (2004) used the "benefits of employment" perspective where jobs that are economically inadequate "..may lack some of Jahoda's latent functions, may lack the agency desired by Fryer, and may be too high or too low on

some of Warr's vitamin dimensions" (Dooley and Prause 2004:33). If underemployed individuals resemble unemployed individuals in their mental health outcomes this adds weight to the argument that not all forms of employment are equally beneficial. By expanding the dichotomy of employed versus unemployed into a continuum with a range of employment statuses, we can determine whether the mental health effects of underemployment are similar to those of unemployment (Dooley and Prause 2004).

Fenwick and Tausig (1994) argued that we need to address the role that macroeconomic changes have had on the structure of work. As economic changes transformed the organization of work, they modified the work environment, subjecting employees to stressful work conditions. The "work stress" literature examined the relationship between job characteristics and the health of individuals. For example, hazardous work conditions, psychosocial stressors of work design, or social and environmental context all had the potential to cause health problems. The "economic stress" literature examined "the direct relationship between the aggregate features of the economy and aggregate indicators of mortality and morbidity" (Fenwick and Tausig 1994:266). For example, aggregate level studies of unemployment aimed to connect the context of community level unemployment to increases in annual psychiatric admissions (Brenner 1973). Fenwick and Tausig (1994) linked the economic stress and work stress approaches by arguing that macroeconomic and economic changes affect exposure to life events such as unemployment as well as the level of stress from changing work roles and the structure of the workplace.

Ferman and Gordus (1985) proposed a model in which economic change resulted in displacement and loss of work for some groups. Displaced individuals may accept

employment with fewer economic and other benefits including protection from unfair work practices, or lower status positions. Career patterns of these individuals may change, as they find immediate re-employment, move from job to job, or remain unemployed, and this was argued to cause stress and instability.

The stress process paradigm (Pearlin 1989; Pearlin et al. 1981) has been the most widely used model to explain the link between job disruptions, such as unemployment, and personal health outcomes (Dooley and Prause 2004). This model assumed that most people benefited from the latent and manifest functions of work (Dooley and Prause 2004). The stress model of unemployment can also be used to study the health effects of underemployment. Dooley (2003) hypothesized that changing from adequate to inadequate employment involved economic and psychosocial losses similar to unemployment, including financial strain and loss of time structure for involuntary part-time workers.

Pearlin (1989) proposed that the stress process model could be used to explain the links between sources of stress, mediators of stress, and the manifestations of stress, and demonstrated how they formed a stress process. This model has been used to explain how discrete life events such as unemployment and long-term chronic strains increased the risk of adverse health and well-being outcomes. Mediating resources, such as self-esteem, mastery, social supports, and coping resources acted as a defense to change behaviors or perceptions in response to life events and chronic strains. Social status and social roles such as age, sex, race, marital or socio-economic status determined exposure to stress and levels of mediating resources. For example, secondary wage earners or those with substantial savings accounts reduced the effect of underemployment on

financial strain, and therefore health. As a result, we can expect a social patterning of stress, including the stresses of underemployment.

Furthermore, the lifecourse perspective can be applied to the stress process model to study how the frequency, duration and context of underemployment affect health and well-being. For example, Pearlin and Skaff (1996) suggested that location in the lifecourse determined both exposure to stressors and the availability and effective use of resources. Thus, we can hypothesize that the experience of underemployment will vary by age, and the way older individuals are affected by their underemployment may be different based on their access to mediating resources to relieve financial strain, self-esteem, or mastery. Early adversities such as the experience of underemployment may create financial strain and lead to the continuation of lower status jobs and repeated experiences of underemployment over the lifecourse (Pearlin *et al.* 2005). Family characteristics such as lower socio-economic status may limit educational attainment of children, setting up early adversities that can channel individuals into more difficult work lives with irregular employment histories and occupational stressors that negatively affect well-being (Pearlin *et al.* 2005).

The theoretical models described above have emphasized the effects of inadequate employment statuses such as unemployment on mental health. To measure the effects of underemployment on mental health requires the use of a definition and measure of underemployment that is grounded in a theoretical model.

2.4 Research Literature

2.4.1 Current Measures of Underemployment

Perhaps the most influential model of underemployment processes has been Hauser's (1974) Labor Utilization Framework (LUF), which does not have a theoretical underpinning for the concepts or measures used. Hauser's LUF was developed as a response to the International Labour Organization's call to improve the operationalization of a range of employment statuses when creating labour market statistics including the counting of both "visible" and "invisible" underemployment (International Labour Organization 1971). Visible underemployment included involuntary part-time work, and invisible underemployment included measures of low productivity, insufficient wages, and underutilization of skills (Dooley and Prause 2004).

Hauser's LUF was originally comprised of six mutually exclusive categories "S, U, H, I, M, A" in hierarchical order to represent a continuum of labour market hardship. Individuals who were not otherwise categorized as (S) sub-employed and who have given up looking for work because they believe none was available, or (U) unemployed, could be categorized into one of the following employment statuses: (H) hours underemployed, included those with mainly involuntary part-time hours, (I) income underemployed, with income less than the poverty level, or (M) a mismatch between the level of education and occupation, leaving (A) to represent the adequately employed who don't fall into the remainder of the categories. Workers can only be assigned to the highest category for which they qualify. For example, if a worker has low income, but also has involuntary part-time work, he/she would be ranked in the (H) category for hour's underemployment.

The prevalence of each category can be measured and summed to obtain the overall prevalence of underemployment (excluding the category of those who are adequately employed).

Many researchers have used Hauser's LUF (1974) as a basis for measures of underemployment (Clogg 1979; Clogg, Sullivan and Mutchler 1986; Sullivan 1978) and adapted the framework to include additional categories and exclude others. For example, Tipps and Gordon (1985) included intermittent employment to recognize the economic hardship of those who have had a history of unemployment over the past year, and Friedland and Price (2003) added status based underemployment, to recognize the importance of status rewards as a "...critical labour market reward" (34), arguing that individuals may experience negative outcomes when they are in a lower status position than would have been predicted from their socio-economic background. Dooley and Prause (2004) opted to exclude the mismatch category of the LUF, arguing that there is no strictly economic basis for mismatch as a form of underemployment.

There are several limitations to Hauser's LUF. First, Hauser was not proposing a single concrete way of operationalizing the components of underemployment. Instead, Hauser offered a framework within which measures could be developed within each nation to account for their own context and availability of data. Hauser also asserted that standardized measures could be selected to allow international comparisons. The consequence however, has been that many researchers have used some combination of hours, income, and mismatch to measure underemployment, but have not come to an agreement about which components are essential, or how they should be operationalized

and measured. As a reflection of this, underemployment has not been used as an official labour market indicator alongside measures of unemployment.

Second, the small number of mutually exclusive categories used by Hauser do not acknowledge the possibility of individuals having more than one type of underemployment. Hauser's solution was to allocate individuals to the highest category for which they qualified. However the hierarchy of underemployment levels proposed by Hauser do not reflect the importance or severity of experience of various forms of underemployment for the individual. For example, mismatch may have a greater effect on well-being for individuals who have invested time, money and effort in their education. In addition, males may experience the stigma of part-time work in a culture that expects men to be industrious in a full-time capacity. The order of the categories may reflect the importance awarded by economists seeking to fully utilize their nation's workforce. In this case, lack of full-time work among those desiring it or the inability for individuals to earn sufficient wages for a satisfactory quality of life may take economic precedence over the problem of over-education of the nation's workforce.

The third limitation to the LUF approach is that it provides only a measure of the prevalence of underemployment. It does not provide a measure of the amount of underemployment experienced within the labour force such as the total number of hours underemployed (reflecting underutilization) or the quantity of income underemployment experienced by low wage workers. For example, Wooden (1993) proposed a measure to describe the extent of involuntary part-time underemployment that would divide the aggregate desired hours of work by the sum of the actual hours worked plus the desired

additional hours. However, these analyses are hindered by the lack of available data on the desired hours of work (Denniss 2003).

2.4.2 Subjective Underemployment:

Economists and other researchers have been drawn to the quantifiable categories proposed by the LUF such as hours, income and mismatch because they are relatively objective measures of underemployment. In contrast, organizational behavior researchers and social psychologists have given more weight to self-report of individuals' perceptions of being underemployed (Feldman 1996). For example, Maynard, Joseph and Maynard's (2006) nine-item scale of perceived over-qualification measures the perceptions of over-qualification and experience relative to job requirements (see also Maynard and Joseph 2008). Similarly, Sadava et al. (2000) used four underemployment subscales derived from factor analyses by Kambouris and Sadava (1997). These subscales included questions on whether the workers felt that their job allowed them to make use of their training, or whether they felt over-qualified. Feldman (1996) argues that to understand the psychological dynamics of underemployment, we need to understand both the perception of underemployment as well as an objective measure of the degree of underemployment experienced by the individual.

Another approach to quantifying the extent of underemployment has been to combine the various dimensions of underemployment into a scale. In a study of re-employment after a factory shut down, Burke (1986) used a 10-item index of job characteristics to compare present employment to previous employment. Workers were asked to compare their present job to their last job as the same, better, or worse. They

were questioned about working hours, wages, opportunity to use skills, job security, union representation, supervision, nearness to home, working conditions and fringe benefits. Burke's scale, which measured the extent of underemployment, was more in line with the new paradigm suggested by Dooley and Prause (2004), characterizing underemployment as a range or continuum. Burke's scale incorporates multiple dimensions and aspects of work that are important to the individual's experience of underemployment.

The LUF was proposed by Hauser to represent a continuum with hierarchical categories, however it did not allow for overlap between categories, or the experience of perceived underemployment. Burke's scale of underemployment at least provides a count for each individual describing the extent of various factors of underemployment summed together. However, equal weighting and possible intercorrelation of each factor used in the scale might affect the quality of the resultant statistic.

2.4.3 Psychologically and Economically Good Jobs

In another approach stemming from the objective measures of adequate and inadequate work in the LUF, Grzywacz and Dooley (2003) incorporated psychological dimensions of work, such as low demands and high control in work tasks, factors that may influence the experience of work and the perception of underemployment. Their aim was to create a continuum of mutually exclusive categories representing a range of employment statuses that can be either economically optimal, psychologically optimal, or both. Factor analysis was used to identify factors influencing underemployment. The first factor included psychological attributes of work, and the second included both

economic attributes such as wages, and health benefits, and non-economic attributes such as stability of employment. Two data sources were used to operationalize the range of employment statuses, including the 1998 wave of the California Work and Health Survey (CWHS), and the National Survey of Midlife Development in the United States, collected in 1995. The categories on the continuum were operationalized differently for each survey and the results were compared. To provide an example, the continuum created with data from the CWHS used the categories ranging from optimal jobs to inadequate employment and unemployment. For example, *optimal jobs* included two or more economic attributes, as well as two or more psychological attributes. Jobs with fewer than two economic attributes, but at least two psychological attributes, were labeled *psychologically good*. Alternatively, jobs with fewer than two psychological attributes, but at least two economic attributes were labeled *economically good*. *Barely adequate employment* would have fewer than two of both types of attributes, and *inadequate employment* included all individuals whose household income was below the poverty level for their household size. One limitation of Grzywacz and Dooley's (2003) approach is that other aspects of employment were not included in the continuum because they were not available in the data sources selected. For example, Grzywacz and Dooley (2003) suggested that future studies could develop a more reliable measurement strategy by determining "...the major aspects of employment that people use to assess the quality of their job" (Grzywacz and Dooley 2003:1759). This would require research studying what aspects of employment are used by individuals to assess the quality of their jobs.

Given the limitations of Hauser's and others measures, we need to construct a more comprehensive and easily utilized method of measurement for the concept of

underemployment. In the following section three key dimensions of underemployment will be outlined with guidelines for their ideal measurement.

2.5 A Proposed Measure of Underemployment

Common to most of the current literature is a mismatch between the aspects of jobs and an individual's characteristics. Three broad dimensions of underemployment were discussed in the theoretical and research literature and all included a form of mismatch. Briefly, the three broad dimensions of underemployment included: 1) *resource mismatch,* where the position offers lower income, economic benefits or fewer hours than desired, 2) *occupational mismatch* of education, skills or field of study with those required by the position, and 3) *social psychological mismatch* between desired and obtained occupational status.

Each of the three broad dimensions of underemployment identified can be measured using a series of associated indicators. The operationalization of each of these three broad dimensions is outlined below. After assessment of the criticisms and problems found with previous measures, a proposal for an optimal measure of each dimension will be made.

2.5.1 Resource Mismatch

Resource mismatch occurs when the position offers lower income, economic benefits or fewer hours than desired.

2.5.1.1 Indicator - Income

Measuring the inadequacy of present income or wages can take two approaches: present wages compared to a previous job, or the adequacy of income to maintain the individual above a defined poverty threshold such as the poverty line. Using the former approach, Zvonkovic (1988) considered workers to be underemployed if "their current annual earnings were at least 20 percent less than they had earned in any previous job during the past five years" (Zvonkovic 1988:162). Glen Elder's research on income loss during the Great Depression used a rate of 33 percent as the cost of living also fell during the depression (Bennett and Elder 1979; Elder 1974; Liker and Elder 1983).

Measurement of income loss after re-employment requires the following information: a) the identification of individuals who are re-employed after a period of unemployment, b) the present income of those individuals, and c) income prior to unemployment. Reference periods have to be defined, including the length of time the job prior to unemployment was held to count as the main job prior to unemployment, and the length of the period of unemployment that would signal a true period of unemployment, as opposed to a voluntary job change.

When measuring income in comparison to a level determined by policy officials, the low income or "poverty line" can be used as a referent. For example, Dooley and Prause (2004) defined poverty wages using the NLSY definition of an average weekly wage of less than 1.25 times the United States Federal poverty level for unrelated individuals less than 65 years of age. Their measure uses the total earnings of the previous calendar year divided by 52 to provide a weekly estimate. Similarly, Scott-Marshall, Tompa and Trevethick (2007) used Statistics Canada's Low Income Measure

(Paquet 2001) for a single individual multiplied by 1.25 and converted to an hourly wage rate. The individual's current hourly wage in his or her main job could be compared to this low income reference wage to determine if he/she was income underemployed. Unfortunately, this does not take into account multiple job holders who need to hold more than one low income job to increase their total income, or secondary earners who may have a higher total household income. Another criticism of this approach is that the time references for the categorization of type of underemployment would be mixed. Categorization into income underemployed would use annual earnings from the previous year, while unemployment, hours and mismatch are all based on current labour force status and present level of educational attainment.

It is for these reasons that the proposed measure of income inadequacy would be lower income than in a previous position. The amount by which the income would be considered lower would be determined by the limitations of the data and the research question. For example, many data sets only measure income using categories, thus the decision to use a report of one or more categories lower would depend on the distance between categories and the reporting one or category lower on income in a new position. The measure of income would also need to be consistent with the reference period for all the other measures of underemployment, such as employment status and mismatch. Comparison of income to a poverty line threshold would identify individuals with inadequate incomes, but they may not be underemployed on other dimensions, such as over-qualification for their position. In conclusion, the proposed measure of income as a dimension of underemployment would compare income in the designated reference period to that of a previous position that had higher earnings.

2.5.1.2 Indicator - Other economic benefits

The existence of a health plan, other benefits, or a pension may make a difference in the amount of income that needs to be spent on health care costs or saved for future retirement. The expenditure on these items in an already low paying position may result in further financial strain. Gryzwacz and Dooley (2003) also identified these items as factors that make jobs economically good. However, not all positions offer these benefits, and the level or extent of benefits varies by country and organization. Likewise, not all individuals are qualified for positions that typically offer benefits. To account for this, an ideal measure of underemployment would include the indication of whether an individual had one or more of these other economic benefits in a previous position, and if the current job provides the same number of benefits.

To measure the receipt of other economic benefits we could collect data asking a) whether a health plan was provided by the employer, b) other benefits provided, and/or c) if an employer contributed pension was made available to them in both their current position and their past position. The loss of a position that offered a greater number of benefits would be expected to contribute to financial strain, and is indicator of underemployment.

2.5.1.3 Indicator - Hours

Hours underemployment has been defined as involuntary part-time work when full-time work is desired but unavailable from the employer. This is another commonly measured dimension of underemployment used by researchers such as Hauser (1974), and variants on the LUF (Clogg 1979; Clogg et al. 1986; Sullivan 1978). When

individuals desire full-time permanent positions " ...[they] experience the sense of deprivation most associated with underemployment" (Feldman 1996:389). Hours underemployment is expected to reduce the overall income of the individual and affect their financial strain, and threaten their sense of mastery.

For example, the United States Bureau of Labor statistics defines involuntary part-time work as working less than 35 hours in the week prior to the survey for one of the following economic reasons: slack work, material shortages, equipment/plant repair, the start of a new job, or the end of an old one, or the inability to find full-time work (Dooley and Prause 2004). These are all economic reasons for the inability to work full-time and must be distinguished from the individuals who are choosing to work part-time for personal or lifestyle reasons.

Brown and Pintaldi (2006) address the subjective element of choice (i.e., the desire to work additional hours) and its importance when evaluating the quality of work. Some researchers have also specified that the individual needs to be available to work more hours to be categorized as involuntarily hours underemployed (Brown and Pintaldi 2006). This differentiates individuals who are unavailable to work full-time because they are combining school or family responsibilities with part-time work from those who are involuntarily working part-time. Brown and Pintaldi (2006) also argue that it is not enough to ask individuals whether they work full-time or part-time, because the definition of full-time work varies by occupation, industry, and country. A drawback to the measure of hours underemployment is that it is not comparable across nations, because there is cross-national variation in the number of hours that correspond to full-time employment (Brown and Pintaldi 2006). Rather than asking respondents whether they

are part-time or full-time workers, a more stringent and homogeneous measure would ask respondents to indicate the number of hours they are employed (Brown and Pintaldi 2006). This would leave the researcher free to designate cut-points below which all individuals would be classified as part-time and hours underemployed.

To measure hours underemployment, we need to ask individuals how many hours they worked per week in the reference period and establish an hourly cut off point to identify full-time versus part-time work. For consistency, the hourly cut off point used would be the same for everyone in the country, despite the room for variations within industries and occupations. For example, Statistics Canada uses 30 hours or more to identify full-time work (Statistics Canada 2010). For this dimension, individuals would need to be asked: a) how many hours they worked in the reference week, or in a "usual week" at their main job, and b) if they would prefer full-time work. Individuals would then c) be classified as hours underemployed if they preferred full-time work and had hours of work less than the threshold.

2.5.2 Occupational Mismatch

An occupational mismatch occurs when a person is over-qualified for their job, i.e. they have more skills or education than they require to perform the position and they are being "underutilized". There are many ways that could be used to identify mismatch, including subjective self-report of over-qualification, over-education, more training or skills than are required to be hired, or to perform the job, and more experience in the field. As mentioned earlier, Khan and Morrow (1991) used a Likert scale to measure the level of perceived over-qualification, and also measured relative education by asking

respondents about the perceived minimum qualifications that would be required to perform their job. Feldman (1996) also describes having asked individuals whether their job utilizes their previous experience and education, and whether people with less experience and education could perform their jobs. However, the problem with these methods is that self-report of over-qualification or mismatch would not provide an objective measure of mismatch. Another method is to determine the mean or mode educational attainment of all workers in a type of occupation and identify respondents with an educational attainment greater than one standard deviation above the value as over-educated (Hartog 2000), however this ignores variation of educational requirements across jobs within an occupation. Additionally, the above methods assume that the skills of workers are homogeneous within occupations, so all workers with the same years of schooling are perfect substitutes for one another. For example, if a plumber only requires a high school diploma, and is working in any other occupation requiring a high school diploma, they would be misclassified as matched despite having skills that are underutilized (Halaby 1994).

2.5.2.1 Indicator - Education or Skills Mismatch

To construct an objective measure of mismatch would require the following information: a) the occupational title of the individual in the reference period; b) the highest level of education obtained; c) occupation specific training or apprenticeships; and d) the minimum level of education or training required to perform the occupation by occupational title or group.

The 2001 National Occupational Classification (NOC) is used in Canada as a standardized framework to classify occupations by skill level and skill type (Statistics Canada 2001). The NOC groups occupations into four skill groups: i) occupations requiring no education or training, ii) occupations requiring some secondary school and/or occupational specific training, iii) occupations requiring college education or apprenticeship training, or iv) occupations requiring university education or higher.

The measurement of educational over-qualification requires classifying individuals into categories commensurate with those used to classify occupations in the NOC. Thus, an individual's highest level of education completed would be coded into one of four categories: i) no high school diploma, ii) high school diploma, iii) college diploma, or iv) university degree. To accurately measure mismatch, however, would also require information on the level of occupational specific training. If this were available, those with no secondary school but some occupational specific training, or those with no secondary school, but apprenticeship training could be more accurately coded as over or under-qualified.

Based on a comparison between educational category and the NOC category an individual can be classified as: i) over-qualified and having more educational attainment than required for the position, ii) no mismatch, where educational attainment and occupation are commensurate, or iii) under-qualified, where educational attainment is below that which is required for their occupation.

2.5.2.2 Indicator - Field of Training

Occupational mismatch (and therefore under-utilization of an individual's expertise) can also occur when individuals are working outside their field of training. To measure whether a person is working outside of their field would require information on: a) an individual's current occupation, and b) their field of training. Each occupation and field of training would need to be coded into a field and compared to identify cases with a discrepancy. It would not be possible to objectively observe this mismatch assigning current occupations and training to a set of 'fields'. The most probable means of measuring this mismatch would be to use a survey question asking whether a person is working outside their area of training or field. Even if this was the case, working outside their field of training would not necessarily result in underemployment if the occupational status obtained is higher than what they would have obtained if they were working within their field of training. It is for this reason that a measure of working outside own field may not be feasible using existing available data.

2.5.3 Social psychological Mismatch

Individuals may be underemployed through social psychological mismatch, even when they are not objectively categorized as over-qualified by education or skills in the occupational mismatch dimension. Feldman (1996) argues that an understanding of psychological dynamics of underemployment requires information on both the perception of underemployment as well as an objective measure of the degree of underemployment experienced by the individual. This would require self-report data on the individual's perception of being underemployed, and a comparison to their level of occupational

mismatch. The perceived experience of underemployment is expected to be influential in the experienced mastery and self-esteem of the individual.

2.5.3.1 Indicator - Perceived Underemployment

To obtain a measure of subjective underemployment, survey questions would need to ask whether the respondent feels over-qualified for their current occupation. This would require the respondent to reflect on their education, training and experience and compare this to their perception of whether their position requires fewer of these attributes or whether they thought they were capable of taking on a higher status position. Questions could include: a) whether the individual feels over-qualified for their position, b) whether they think they deserve a better job, or c) whether they think they could obtain a better job.

The problem with this concept of perceived underemployment is that there would be the opportunity to misinterpret the question and concepts such as “over-qualified” or “better job”. The data obtained would reflect only a subjective evaluation of underemployment and it would not be an objective comparison of actual educational attainment or experience that is required by the position. Furthermore, individuals with different objective levels of underemployment may perceive underemployment differently, and use a different metric to evaluate their own circumstances.

Subjective or perceived underemployment has been measured by Khan and Morrow (1991) using a Likert scale. Likewise, Maynard et al. (2006) validated a scale of over-qualification using principal-components analysis, and included 9 items measuring perceptions of surplus education, experience, and “KSAs” (knowledge, skills and

abilities). Questions included in the scale asked whether the job requires less education than the respondent holds, use of work experience, skills and training. A potential problem associated with the use of this scale is that it requires individuals to have some knowledge of the actual education, experience and training required for the position. Again, this would produce a subjective evaluation of underemployment; however, the subjective experience of underemployment may be more directly related to mental and physical outcomes, validating its use as a measure of underemployment.

2.5.3.2 Indicator - Status Mismatch

Status mismatch is another form of perceived underemployment that leads to social psychological mismatch. Assuming educational requirements and income are determinants of the socio-economic status of an occupation, measuring status mismatch would require information on a person's expected occupational status and current occupational status. Boyd (2008) generated an occupational status scale that can be used to identify the status of occupational categories listed in the NOC. For this scale, Boyd used the median educational attainment and median income of individuals holding particular occupational titles to apply status rankings to the occupational categories of the NOC.

To measure a status mismatch would require the following information: a) an individual's current occupational title, b) the corresponding NOC occupational category, and c) the Boyd (2008) status ranking for the NOC category. To determine if there was a mismatch, would require some reference status such as the expected occupational status of the individual given their parental occupational status. This would however measure

intergenerational mobility, and would not provide an objective measure of underemployment based on the individual's educational attainment and motivation to obtain a higher status occupation.

2.5.3.3 Indicator - Development of Potential

The ability to develop one's potential is also expected to be related to a social psychological mismatch. For example, Burris (1983) found that low level clerical workers with college or higher levels of education felt stifled in their positions because they lacked the opportunity to move up the corporate ladder or obtain training or other activities to develop their potential. To measure the ability to grow and develop potential in a position, individuals would be asked about whether they a) have access to training and other development opportunities on the job, and b) whether they have an opportunity to advance in their career within the organization, and c) whether they desire these opportunities. Regardless of the individual's qualification for jobs that provide opportunities for advancement, it is the desire for the opportunity that would identify inadequate employment. Additionally, in the case of re-employed workers, a comparison could be made between the advancement opportunities in their present and previous positions.

2.6 Limitations, Excluded Indicators

There are other aspects of employment that are not included in the three broad dimensions of underemployment including working conditions, precarious employment, and intermittent employment. Gryzwacz and Dooley (2003) found that factors related to working conditions, such as high demands and low control in the work process were

linked to the perceived experience of "psychologically good" and "bad" jobs. These characteristics of working conditions can lead to dissatisfaction or dislike for the positions, but they are not indicators of underemployment unless the individual would be qualified for a higher level position and is experiencing occupational mismatch.

The concept of "precarious employment" describes atypical work arrangements that can involve low job security, lack of control over working conditions and wages, few regulatory protections from unions or benefit plans, and income inadequacy (Rodgers 1989). Some of these dimensions of precarious work are similar to those used to identify underemployment and can be tested as potential threats to mastery, financial strain, and self-esteem (Tompa *et al.* 2007). However, the dimensions of precarious work are used to identify types of employment that fall under the wider concept of non-standard work, and they are not used to compare present to previous employment for each individual, as in the dimensions of underemployment.

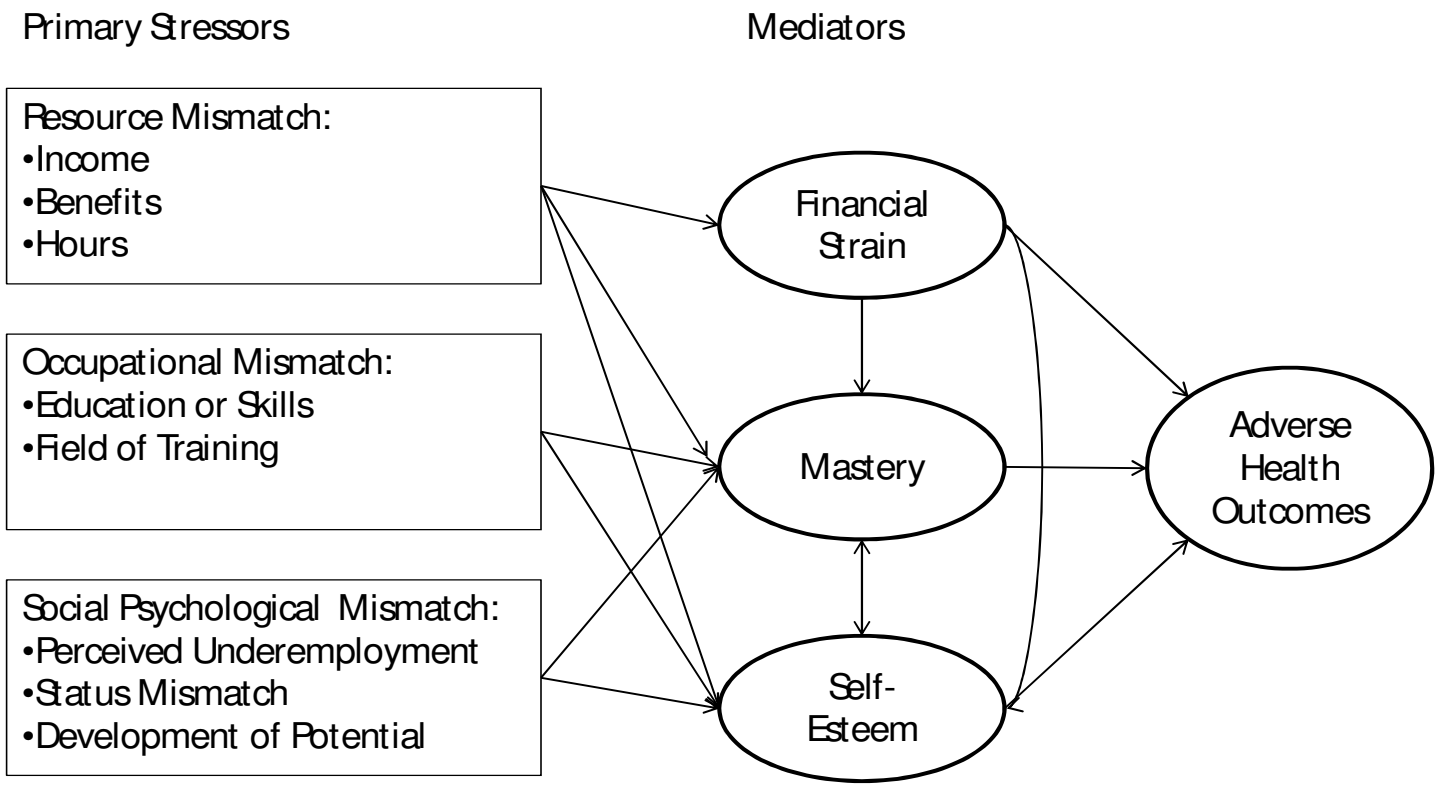
Some researchers have included measures of intermittent employment to reflect the economic hardship of those who have experienced periods of unemployment over the reference period (Tipps and Gordon 1985; Nord, Phelps and Sheets 1988). Intermittent employment is expected to be linked to low job security, and precarious forms of work. However, like precarious employment it is not a feature of an individual job that can be used to compare present to previous employment to identify the experience of underemployment.

2.7 A Stress Process Model of Underemployment

The stress process model (Pearlin 1989; Pearlin et al. 1981) can be used to understand the pathways or mechanisms by which stressors experienced within the three broad dimensions of underemployment can result in adverse health outcomes. For example, Tompa et al. (2007) described a framework outlining the dimensions of work-related precarious experiences and the pathways to adverse health outcomes. In their study, the stress process model provided a conceptual framework outlining how undesirable work conditions or arrangements could result in strain, leading to stress, which may ultimately affect the health of individuals (Tompa et al. 2007). I propose a similar framework to explain the pathways between the experience of underemployment and health.

Stressful experiences and psychosocial resources are the major mechanisms through which underemployment can affect health. The transition to a job where an individual now becomes underemployed can be seen as an eventful stressor, and the long-term experience of underemployment can be seen as a chronic life stressor. Each of the three broad dimensions of underemployment (resource mismatch, occupational mismatch, and social psychological mismatch) and can be seen as primary stressors that operate through three proposed pathways to affect health. These pathways or mechanisms include *financial strain, mastery,* and *self-esteem*. See Figure 2.1.

Figure 2.1 – A Stress Process Model Framework for Studying the Relationship Between Underemployment and Health



As shown in Figure 2.1, the dimensions of underemployment and their individual indicators are expected to affect more than one pathway at a time. For example, resource mismatch is expected to result in both financial strain, and lower levels of mastery and self-esteem. Both occupational mismatch and social psychological mismatch are also expected to operate through the pathways of mastery and self-esteem. No direct relationship between occupational mismatch and financial strain is hypothesized, as occupational mismatch is a status mismatch that is expected to influence levels of resource mismatch, which would then influence financial strain. At the same time, occupational mismatch is expected to influence the experience of social psychological mismatch, which then affects self-esteem and mastery. Social psychological mismatch is also not expected to have a direct link to financial strain, because it is a perceived status mismatch that is expected to have social psychological consequences on the mediators of mastery and self-esteem.

Connections between the three pathways are also expected, where financial strain can reduce personal resources of self-esteem and mastery. In contrast, higher levels of these mastery and self-esteem resources can help reduce the stressful experience of financial strain.

2.7.1 Pathway – Financial strain

Financial strain, the first pathway between underemployment and mental health in the model is expected to arise when an individual experiences the primary stressors of resource mismatch, including lower earnings, or fewer health and pension benefits than a previous job, or the inability to work enough hours. Financial strain would act as a

secondary stressor, leading to mental health outcomes. For example, Kessler et al. (1988) argued that the financial strain resulting from decreased income and standard of living during unemployment may mediate the connection between unemployment and health outcomes. Income is one of the manifest functions of work (Jahoda 1982), and when it is lost because of unemployment, or reduced during underemployment this can lead to financial strain. Insufficient income can lead to secondary stressors, including a spectrum of deprivations from the need to lower expenditures on food, shelter, heat and other necessities (Price, Choi, and Vinokur 2002). In addition, poorly paid positions frequently lack health plans, benefits, or pensions. When health care expenses must be paid by the employee, this creates a challenge to saving and financial planning, increasing the likelihood of financial strain (Loibl *et al.* 2010).

Financial strain can include both objective and subjective components. Objective measures of financial strain would include total household income and composite measures of financial need based on marital status and family size. Subjective components of financial strain include the negative emotional reactions from perceived income adequacy to meet basic living needs and lifestyle desires (Sinclair et al. 2010). The model proposed here assumes objective financial strain resulting from resource mismatch in the form of lower income than previously earned, fewer benefits than received in the past, and involuntary part-time work will be primary stressors, expected to increase perceived financial strain, which will then act as a mediator between underemployment and mental health outcomes. Financial strain is not expected to be the direct consequence of either occupational mismatch or social psychological mismatch, as these are both subjective components of underemployment, and they may manifest in

resource mismatch which will then influence financial strain. These two forms of mismatch are expected to have however a direct influence on mastery and self-esteem.

2.7.2 Pathway - Mastery

The second pathway informing the selection of underemployment measures is mastery. Pearlin (2010) defines mastery as "a self-belief, a conviction that one is able to control the important circumstances that are currently impinging on one's life" (pg. 211). Having a higher level of personal control has been shown to be related to better psychological and physical health outcomes (Haidt and Rodin 1999). In the stress process model, mastery is defined as the ability to control one's environment and to have one's will acted upon. Control theory and Fryer's Agency Restriction Theory have been used in the unemployment literature to explain the relationship between job loss and reduced mental well-being, and supports the use of mastery as a pathway between dimensions of underemployment and health. For example, Agency Restriction Theory proposed that the negative consequences of unemployment include the restriction of personal agency, and economic deprivation imposes restrictions to planning for the future (Fryer 1986).

In the model, mastery is expected to be affected by all three forms of mismatch, and will serve as a mediator between underemployment and mental health. For example, the effect of resource mismatch on mental health is expected to be directly influenced by high levels of mastery, and the belief that an individual has that they can improve their position. The effects of financial strain are also expected to impact sense of mastery. In the model I hypothesize that individuals with higher levels of education would have

higher levels of personal mastery. However, the inability to use one's education during occupational mismatch is also expected to threaten their sense of mastery, and through this mediator, negatively affect mental health and well-being. Perceived or status underemployment under social psychological mismatch is expected to lower the sense of mastery, however opportunities to advance or learn new skills at work to develop to their potential are expected to contribute positively to mastery and self-esteem.

The effect of occupational mismatch or the inability to use one's acquired education on mental health outcomes is expected to be mediated by sense of mastery, and may vary by education level. As described above, Burris (1983) found that individuals with higher levels of education were more hopeful about their ability to change their situation and find better employment in the future, thus they may have higher levels of mastery, influencing their ability to cope with underemployment. Other threats to mastery also include the financial strain from resource mismatch, and the frustrations associated with social psychological mismatch including perceived underemployment, regardless of the actual level of underemployment experienced. Opportunities to advance within a corporation or to learn new skills and develop one's potential are also important to a person's sense of mastery and self-esteem. Friedland and Price (2003) found that individuals with status underemployment, who held occupations of a lower socio-economic status than would be predicted by their educational attainment experienced lower levels of positive self-concept (measured using indicators of mastery and self-esteem). Price et al. (2002) found that changes in depression triggered changes in personal control, suggesting a reciprocal relationship where depression is both a

consequence of lower levels of mastery and self-esteem as well as depression being a cause of low personal control.

2.7.3 Pathway – Self-esteem:

The third pathway through which stressful underemployment experiences can adversely affect health is self-esteem. Lower self-esteem has been consistently tied to poorer psychological well-being (Dubois and Flay 2004). The main forms of underemployment expected to have the greatest impact on self-esteem are occupational mismatch and perceived underemployment. For example, in the model, the inability to find work within one's field, commensurate with one's expected status, or the experience of perceived or real barriers within an organization to receive extra training and reach one's potential are all expected to lower the self-esteem of individuals.

Likewise, self-esteem can also be a mediator for other aspects of underemployment and health outcomes, such as resource mismatch from income inadequacy and part-time hours, or occupational mismatch from the inability to obtain a position in one's area of expertise. In addition, resource mismatch and the resultant financial strain are expected to challenge and lower the self-esteem of an individual and influence the ability for self-esteem to buffer the relationship between measures of underemployment and mental health.

2.8 Conclusion

The concept of underemployment and the indicators used to measure it are inconsistent, incomplete, and have not been informed substantially by theory. Most

studies use measures of low income, insufficient hours, and over-qualification. This paper critically assessed current measures of underemployment and proposed a series of indicators informed by theory. Studies of the psychological effects of unemployment and job loss have been informed by a variety of theories, mostly centering around the idea that there are certain benefits of employment, such as income, time structure and opportunity to use skills, that when lost, can result in psychological distress. We can combine the benefits of employment perspective with the stress process model for a study of underemployment by understanding underemployment as a move to a less desirable form of employment. Traditionally, a dichotomy has been used to distinguish unemployment from employment. It is assumed that when an individual becomes unemployed he/she loses the benefits associated with employment and this can therefore serve to reduce their mastery and self-esteem, or increase financial strain. Moving to less desirable forms of employment may also reduce the benefits of work and this involves moving down an increment along a continuum of employment with some forms of inadequate employment in between.

The stress process model has been used previously to model the effect of unemployment on mental health. Thinking about how underemployment may affect these aspects of psychology or experience can inform the selection of measures. The stress process model provides an opportunity to model the mechanisms that link stressors to adverse health outcomes. The mechanisms or pathways described in this paper included financial strain, mastery and self-esteem. By taking a benefits of employment perspective and working within the stress process model, the mechanisms that may link underemployment to adverse health outcomes can be identified.

From my review of the literature on underemployment and the theories used to study unemployment and health, I have outlined three broad dimensions of underemployment and proposed the ideal indicators that can be used to measure them. These broad dimensions of underemployment are all forms of mismatch: Resource mismatch occurs when there are fewer resources offered by the job than are desired such as income, benefits and hours. Occupational mismatch occurs when there is a discrepancy between the education, skills and field of the occupation and the individual's educational background, and social psychological mismatch captures the perceived underemployment and inability to develop one's potential. Future research will develop a measure that can be tested using available data to evaluate the proposed model, and to test the influence of potential moderators, such as age, gender, immigrant status on the experience of underemployment.

2.9 References

Benach, Joan., and Charles Muntaner. 2007. "Precarious Employment and Health: Developing a Research Agenda." *British Medical Journal* 61(4). Retrieved March 7 2012 (http://jech.bmj.com/content/61/4/276.full.pdf+html).

Bennett, Sheila Kishler and Glen. H. Elder, Jr. 1979. "Women's Work in the Family Economy: A Study of Depression Hardship in Women's Lives." *Journal of Family History* 4(2). Retrieved March 7 2012 (http://jfh.sagepub.com/content/4/2/153.short).

Boyd, Monica. 2008. "A Socioeconomic Scale for Canada: Measuring Occupational Status from the Census." *Canadian Review of Sociology* 45(1). Retrieved March 7 2012 (http://onlinelibrary.wiley.com/doi/10.1111/j.1755-618X.2008.00003.x/pdf).

Brenner, M. Harvey. 1973. *Mental Illness and the Economy*. Cambridge, Mass: Harvard University Press.

Brown, Giorgina. and Federica Pintaldi. 2006. "A Multidimensional Approach in the Measurement of Underemployment." *Statistical Journal of the United Nations Economic Commission for Europe* 23(1). Retrieved March 7 2012 (http://iospress.metapress.com/content/4qhyw7mbf6v433xm/fulltext.pdf).

Bureau of Labor Statistics. 2010. *Current Population Survey (CPS) Table: Employment Status of the Civilian Noninstitutional Population 16 Years and Over by Sex*, *1973 to Date*. Retrieved March 7 2012 (http://www.bls.gov/cps/cpsaat2.pdf).

Burke, Ronald. J. 1986. "Re-employment on a Poorer Job After a Plant Closing." *Psychological Reports* 58(2):559-570.

Burris, Beverly H. 1983. "The Human Effects of Underemployment." *Social Problems* 31(1). Retrieved March 7 2012 (http://www.jstor.org/stable/pdfplus/800412.pdf?acceptTC=true).

Cassidy, Tony and Liz Wright. 2008. "Graduate Employment Status and Health: A Longitudinal Analysis of the Transition from Student." *Social Psychology and Education* 11. Retrieved March 7 2012 (http://www.springerlink.com/content/p55756654567266u/fulltext.pdf).

Clogg, Clifford C. 1979. *Measuring Underemployment :Demographic Indicators for the United States*. New York; Toronto: Academic Press.

Clogg, Clifford. C., Teresa A. Sullivan, and Jan E. Mutchler. 1986. "Measuring Underemployment and Inequality in the Work Force." *Social Indicators Research* 18(4). Retrieved March 7 2012 (http://www.springerlink.com/content/j7864052337k2245/fulltext.pdf).

Cranford, Cynthia J., Leah F. Vosko, and Nancy Zukewich. 2003. "Precarious Employment in the Canadian Labour Market: A Statistical Portrait." *Just Labour* 3(Fall):6-22.

Denniss, Richard. 2003. "Flexible Measures for a Flexible Labour Market." *Australian Bulletin of Labour* 29(2). Retrieved March 7 2012 (http://go.galegroup.com/ps/retrieve.do?retrieveFormat=PDF_FROM_CALLISTO&inPS=true&prodId=AONE&userGroupName=lond95336&workId=PI-0PMV-2003-JUN00-IDSI-1.JPG|PI-0PMV-2003-JUN00-IDSI-2.JPG|PI-0PMV-2003-JUN00-IDSI-3.JPG|PI-0PMV-2003-JUN00-IDSI-4.JPG|PI-0PMV-2003-JUN00-IDSI-5.JPG|PI-0PMV-2003-JUN00-IDSI-6.JPG|PI-0PMV-2003-JUN00-IDSI-7.JPG|PI-0PMV-2003-JUN00-IDSI-8.JPG|PI-0PMV-2003-JUN00-IDSI-9.JPG|PI-0PMV-2003-JUN00-IDSI-10.JPG|PI-0PMV-2003-JUN00-IDSI-11.JPG|PI-0PMV-2003-JUN00-IDSI-12.JPG|PI-0PMV-2003-JUN00-IDSI-13.JPG&docId=GALE|A111856228&callistoContentSet=PER&isAcrobatAvailable=false).

Dooley, David and JoAnn Prause. 2004. *The Social Costs of Underemployment :Inadequate Employment as Disguised Unemployment.* New York: Cambridge University Press.

Dooley, David. 2003. "Unemployment, Underemployment and Mental Health: Conceptualizing Employment Status as a Continuum." *American Journal of Community Psychology* 32. Retrieved March 7 2012 (http://www.springerlink.com/content/j092445137l13513/fulltext.pdf).

DuBois, David L. and Brian R. Flay. 2004. "The Healthy Pursuit of Self-Esteem: Comment on and Alternative to the Crocker and Park (2004) Formulation." *Psychological Bulletin* 130(3). Retrieved March 7 2012 (http://psycnet.apa.org/journals/bul/130/3/415.pdf).

Elder, Glen. 1999. *Children of the Great Depression: Social Change in Life Experience*. Boulder, CO: Westview Press.

Feldman, Daniel .C., Carrie .R. Leana, and Mark C. Bolino. 2002. "Underemployment and relative deprivation among re-employed executives." *Journal of Occupational and Organizational Psychology* 75(4). Retrieved March 8 2012 (http://onlinelibrary.wiley.com/doi/10.1348/096317902321119682/pdf).

Feldman, Daniel C. 1996. "The Nature, Antecedents and Consequences of Underemployment." *Journal of Management* 22(3). Retrieved March 7 2012 (http://journals1.scholarsportal.info/tmp/17543244007352185903.pdf).

Fenwick, Rudy and Mark Tausig. 1994. "The Macroeconomic Context of Job Stress." *Journal of Health and Social Behavior* 35(3). Retrieved March 7 2012 (http://www.jstor.org/stable/pdfplus/2137280.pdf).

Fryer, David. 1986. "Employment Deprivation and Personal Agency during Unemployment: A Critical Discussion of Jahoda's Explanation of the Psychological Effects of Unemployment." *Social Behaviour* 1(1):3-23.

Gowan, Mary A., Christine Riordan and Robert D. Gatewood. 1999. "Test of a Model of Coping with Involuntary Job Loss Following a Company Closing." Journal of Applied Psychology 84. Retrieved March 7 2012 (http://journals2.scholarsportal.info/tmp/7575362713483468472.pdf).

Grzywacz, Joseph G. and David Dooley. 2003. "'Good Jobs" to "Bad Jobs": Replicated Evidence of an Employment Continuum from Two Large Surveys." *Social Science & Medicine* 56(8). Retrieved March 7 2012 (http://pdn.sciencedirect.com/science?_ob=MiamiImageURL&_cid=271821&_user=940030&_pii=S0277953602001703&_check=y&_origin=article&_zone=toolbar&_coverDate=30-Apr-2003&view=c&originContentFamily=serial&wchp=dGLzVlV-zSkzS&md5=1c3a414a7647655de25a90a8e853eebe/1-s2.0-S0277953602001703-main.pdf).

Haidt, Johnathan and Judith Rodin. 1999. "Control and Efficacy as Interdisciplinary Bridges." *Review of General Psychology* 3(4). Retrieved March 7 2012 (http://journals1.scholarsportal.info/tmp/835031511652396520.pdf).

Halaby, Charles N. 1994. "Over-education and Skill Mismatch." *Sociology of Education* 67(January). Retrieved March 7 2012 (http://www.jstor.org/stable/pdfplus/2112749.pdf?acceptTC=true).

Hartog, Joop. 2000. "Over-education and Earnings. Where Are We, Where Should We Go?" *Economics of Education Review* 19. Retrieved March 7 2012 (http://journals2.scholarsportal.info/tmp/2987324745482712046.pdf).

Hauser, P. M. 1974. "The Measurement of Labour Utilization." *Malayan Economic Review* 19(1):1-15.

Heckhausen, Jutta and Richard Schulz. 1995. "A Life-Span Theory of Control." *Psychological Review* 102(2). Retrieved March 7 2012 (http://journals2.scholarsportal.info/tmp/7971226107516150819.pdf).

Hijzen, Alexander, Richard Upward, and Peter Wright. 2010. "The income losses of displaced workers." *Journal of Human Resources* 45. Retrieved March 7 2012 (http://web.ebscohost.com/ehost/pdfviewer/pdfviewer?sid=9d4be6ac-89c8-4b20-90a8-494140f42f51%40sessionmgr114&vid=2&hid=126).

International Labour Organization. 1971. *Joint ILO/FAO Meeting of Consultants on the Concepts and Measurement of Underutilization of Labour in Developing Countries*. Geneva, November.

Jahoda, Marie. 1982. *Employment and Unemployment :A Social psychological Analysis*. New York: Cambridge University Press.

Kambouris, Irene and Stan W. Sadava. 1997. "Underemployment and Life Satisfaction in Young Adults: Moderating Effects of Social Support." Presented at the Annual Meeting of the Canadian Psychological Association, Toronto, June.

Kessler, Ronald C., J. Blake Turner and James S. House. 1988. "Effects of Unemployment on Health in a Community Survey: Main, Modifying, and Mediating Effects." *Journal of Social Issues* 44(4).

Khan, L. J. and P. C. Morrow. 1991. "Objective and Subjective Underemployment Relationships to Job Satisfaction." *Journal of usiness Research* 22(3):211.

Kinicki, Angelo J., Gregory Prussia, and Francis McKee-Ryan. 2000. "A Panel Study of Coping with Involuntary Job Loss." *Academy of Management Journal* 43. Retrieved March 7 2012 (http://www.jstor.org/stable/pdfplus/1556388.pdf).

Leana, Carrie R., and Daniel C. Feldman. 1995. "Finding new jobs after a plant closing: Antecedents and outcomes of the occurrence and quality of re-employment." *Human Relations* 48(12). Retrieved March 7 2012 (http://journals2.scholarsportal.info/tmp/4300621558369930229.pdf).

Liker, Jeffrey K. and Glen H. Elder Jr. 1983. "Economic Hardship and Marital Relations in the 1930s." *American Sociological Review* 48(June). Retrieved March 7 2012 (http://www.jstor.org/stable/pdfplus/2095227.pdf).

Loibl, Cazilia, Michal Grinstein-Weiss, Min Zhan, and Beth R. Bird. 2010. "More than a Penny Saved: Long-Term Changes in Behavior among Savings Program Participants." *Journal of Consumer Affairs* 44(1). Retrieved March 7 2012 (http://journals2.scholarsportal.info/tmp/17443022807367226780.pdf).

Maynard, D. C. and T. A. Joseph. 2008. "Are all Part-Time Faculty Underemployed? the Influence of Faculty Status Preference on Satisfaction and Commitment." *Higher Education* 55(2). Retrieved March 7 2012 (http://www.jstor.org/stable/pdfplus/29735171.pdf).

Maynard, Douglas C., Todd A. Joseph, and Amanda M. Maynard. 2006. "Underemployment, Job Attitudes, and Turnover Intentions." *Journal of Organizational Behavior* 27(4). Retrieved March 7 2012 (http://www.jstor.org/stable/pdfplus/4093914.pdf).

McKee-Ryan, Frances M., Meghna Virick, Gregory E. Prussia, Jaron Harvey, and Juliana D. Lilly. 2008. "Life After the Layoff: Getting a Job Worth Keeping." *Journal of Organizational Behavior.* DOI: 10.1002/job.566.

Miller, Rich and Michael McKee. 2009. "Experts: Economy will Rebound, Job Growth Won't." *Bloomberg Business Week* December 14. Retrieved March 7 2012 (http://www.businessweek.com/investor/content/dec2009/pi20091214_791251.htm).

National Bureau of Economic Research. 2010. *Business Cycle Dating Committee*. Report September 20. Retrieved March 7 2012 (http://www.nber.org/cycles/sept2010.html).

Nord, Stephen, John J. Phelps, and Robert G. Sheets. 1988. "An Analysis of the Economic Impact of the Service Sector on Underemployment in Major Metropolitan Areas in the United States." *Urban Studies* 25(5). Retrieved March 7 2012 (http://journals2.scholarsportal.info/tmp/12956738352075163090.pdf).

Paquet, Bernard. 2002. *Low Income Cut-Offs from 1992-2001 and Low Income Measures 1991-2000*. Catalogue No.: 75F0002MIE-005. Ottawa, Ontario: Statistics Canada.

Pearlin, Leonard I. 1989. "The Sociological Study of Stress." *Journal of Health and Social Behavior* 30(3). Retrieved March 7 2012 (http://www.jstor.org/stable/pdfplus/2136956.pdf?acceptTC=true).

Pearlin, Leonard I. 2010. "The Life Course and the Stress Process: Some Conceptual Comparisons." *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences* 65(2). Retrieved March 7 2012 (http://journals1.scholarsportal.info/tmp/14060029790989934100.pdf).

Pearlin, Leonard I. and Marilyn McKean Skaff. 1996. "Stress and the Life Course: A Paradigmatic Alliance." *The Gerontologist* 36(2). Retrieved March 7 2012 (http://journals2.scholarsportal.info/tmp/13002441221227239263.pdf).

Pearlin, Leonard I., Elizabeth G. Menaghan, Morton A. Lieberman, and Joseph T. Mullan. 1981. "The Stress Process." *Journal of Health and Social Behavior* 22(4). Retrieved March 7 2012 (http://www.jstor.org/stable/pdfplus/2136676.pdf).

Pearlin, Leonard I., Scott Schieman, Elena M. Fazio, and Stephen C. Meersman. 2005. "Stress, Health, and the Life Course: Some Conceptual Perspectives." *Journal of Health and Social Behavior* 46(2). Retrieved March 7 2012 (http://www.jstor.org/stable/pdfplus/4150398.pdf).

Price, Richard H., Jim N. Choi and Amiram D. Vinokur. 2002. "Links in the Chain of Adversity Following Job Loss: How Financial Strain and Loss of Personal Control Lead to Depression, Impaired Functioning, and Poor Health." *Journal of Occupational Health Psychology* 7(4). Retrieved March 7 2012 (http://journals1.scholarsportal.info/tmp/3104260341079634905.pdf).

Rodgers, Gerry. 1989. "Precarious Work in Western Europe: The State of the Debate." Pp. 1 in *Precarious Jobs in Labour Market Regulation: The Growth of Atypical Employment in Western Europe*, edited by G. Rodgers and J. Rodgers. International Institute of Labour Studies. Retrieved March 7 2012 (http://ilo-mirror.library.cornell.edu/public/english/bureau/inst/download/rodgers.pdf#page=9).

Sadava, S. W., R. O'connor and D. R. McCreary. 2000. "Employment Status and Health in Young Adults: Economic and Behavioural Mediators?" *Journal of Health Psychology* 5(4). Retrieved March 7 2012 ().

Scott-Marshall, Heather, Emile Tompa, and Scott Trevithick. 2007. "The Social Patterning of Underemployment and its Health Consequences." *International Journal of Contemporary Sociology* 44(1):7-34.

Sinclair, Robert R., Lindsay E. Sears, Tahira Probst, and Mark Zajack. 2010. "A Multilevel Model of Economic Stress and Employee Well-being." Pp. 1-20 in, *Contemporary Occupational Health Psychology: Global Perspectives on Research and Practice*, edited by J. Houdmont and S. Leka. United Kingdom: Wiley-Blackwell.

Statistics Canada. 2010. *Guide to the Labour Force Survey*. Labour Statistics Division, Labour Force Survey Program. Ottawa, Ontario: Statistics Canada.

Statistics Canada. 2001. *National Occupational Classification for Statistics (NOC-S) 2001*. Ottawa, Ontario: Ministry of Industry.

Sullivan, Teresa A. 1978. *Marginal Workers, Marginal Jobs: The Underutilization of American Workers*. Texas: University of Texas Press.

Summers, Lawrence H. 2010. “Principles for Economic Recovery and Renewal.” *Business Economics* 45. Retrieved March 7 2012 (http://web.ebscohost.com/ehost/pdfviewer/pdfviewer?sid=fc8a00dd-728a-44ee-87d9-40e4a439ecf9%40sessionmgr14&vid=2&hid=126).

Tipps, Havens C. and Henry A. Gordon. 1985. "Inequality at Work: Race, Sex and Underemployment." *Social Indicators Research* 16(1). Retrieved March 7 2012 (http://www.jstor.org/stable/pdfplus/27521268.pdf).

Tompa, Emile, Heather Scott-Marshall, Roman Dolinschi, Scott Trevithick, and Sudipa Bhattacharyya. 2007. "Precarious Employment Experiences and their Health Consequences: Towards a Theoretical Framework." *Work: A Journal of Prevention, Assessment and Rehabilitation* 28(3). Retrieved March 7 2012 (http://www.swetswise.com/FullTextProxy/swproxy?url=http%3A%2F%2Fiospress.metapress.com%2Flink.asp%3Ftarget%3Dcontribution%26id%3DA52U768176442L66&ts=1331154660676&cs=785020924&userName=7630476.ipdirect&emCondId=7630476&articleID=32060787&yevoID=1967276&titleID=217312&referer=2&remoteAddr=129.100.173.115&hostType=PRO&swsSessionId=-1owgVfJUxWMkRroqayEEQ__.pasc2).

Warr, Peter. 1987. *Work, Unemployment, and Mental Health*. New York: Clarendon Press Oxford.

Waters, Lea. 2007. “Experiential Differences Between Voluntary and Involuntary Job Redundancy on Depression, Job-Search Activity, Affective Employee Outcomes and Re-Employment Quality.” *Journal of Occupational and Organizational Psychology* 80. Retrieved March 7 2012 (http://onlinelibrary.wiley.com/doi/10.1348/096317906X104004/pdf).

Wilkins, Roger. 2007. “The Consequences of Underemployment for the Underemployed.” *Journal of Industrial Relations* 49(2). Retrieved March 7 2012 (http://journals2.scholarsportal.info/tmp/15499069648787648817.pdf).

Wooden, M. 1993. Underemployment*, Hidden Unemployment and Immigrants*. Canberra, Australia: Bureau of Immigration and Population Research, Australian Government Publication Service.

Zvonkovic, Anisa M., Tom Guss, and Linda Ladd. 1988. "Making the most of Job Loss: Individual and Marital Features of Underemployment." *Family Relations* 37(1). Retrieved March 7 2012 (http://www.jstor.org/stable/pdfplus/584430.pdf).

CHAPTER THREE: UNDEREMPLOYMENT, UNEMPLOYMENT, AND MENTAL HEALTH: A TEST OF SELECTION AND CAUSATION EFFECTS

3.0 Introduction

Work is a central part of our identities, lifestyles and well-being. Our occupations are intrinsically related to our identities because we often define ourselves by our job titles (Tausig 1999). When job displacement occurs from lay-offs, restructuring, or other involuntary job loss, it is typically followed by a substantial period of unemployment (Farber 2003; Podgursky and Swaim 1987). Previous research has established that unemployment has deleterious health effects including a greater number of reported medical conditions, higher use of medical services (Ferrie et al. 1998; Westin 1990), and worsening symptoms of depression, somatization, and anxiety (Avison 2001; Dooley, Catalano, and Wilson 1994; Gallo et al. 2000; Kessler, Turner, and House 1988; Kessler, Turner, and House 1989; Mascaro et al. 2007; Turner 1995).

Unemployment however, is only one form of labour market hardship. Some research has found that re-employment can resolve the distress associated with the unemployment experience (Kessler et al. 1988, 1989; Liem and Liem 1988; Warr and Jackson 1985; Turner 1995). However, not all forms of work are created equal or provide the same level of economic, social and psychological benefits to an individual, especially when compared to the previous work that an individual held. Jobs after re-employment are likely to be of reduced quality (Brand 2004) with lower wages, and can have lasting effects on long-term earning potential affecting both financial strain and work role related identity (Brand 2004; Jacobson, LaLonde and Sullivan 1993; Podgursky and Swaim

1987). For example, Perrucci et al. (1988) find that when a new job provides lower job security and less pay than the previous job that was lost, the well-being of individuals studied remained the same as those who continued to be unemployed. Clearly, the quality of the job also matters to the well-being of the individual.

Underemployment refers to types of employment that are inadequate for the worker. These include the inability to use one's education, skills or training, inadequate wages, lower income than previous jobs, or the need to settle for part-time hours because of an inability to find full-time work. The purpose of this paper is to explore the relationship between underemployment, unemployment and mental health. In particular, this paper will study transitions into and out of underemployment to determine whether selection or causation processes are operating based on mental health status prior, during, and after underemployment.

The concept of underemployment as it is applied in this study differs from other concepts used to describe inadequate work such as precarious employment. There has been a rapid growth in contingent work with limited contracts, part-time hours and without the promise of life-long careers (Tausig 1999). The concept of precarious employment has been used by sociologists to describe some forms of non-standard work that do not provide full-time, year round, indefinite employment with statutory benefits. Precarious employment can include part-time work, variable work schedules, low wages, reduced job security and lack of union protection and benefits (Benach and Mutaner 2007). These features are expected to have negative consequences for all those employed in these types of work. Some of these dimensions of precarious work are similar to those used to identify underemployment such as part-time work or low wages; however,

underemployment is a condition for the individual, and not necessarily an inherent feature of the job itself. Underemployment refers to jobs that are unsatisfactory to the individual who holds them, identifying individuals as over-qualified or underpaid, or who feel they could have a better job if one were available.

From a macroeconomic perspective, unemployment and underemployment represent an under utilization of labour resources. From the individual's perspective, having low earnings, insufficient hours, or the inability to use their skills and education can affect their finances, schedule, lifestyle, and subsequently their health and well-being. Of what consequence is it to the mental health of individuals when they lose well-paying, full-time employment that uses their education and become underemployed?

Little research has investigated the relationship between underemployment and mental health. Much work in the area has drawn on earlier theories that have been used to study the psychological effects of job loss. For example, Dooley and Prause's (2004) research on underemployment takes a "benefits of employment" perspective, influenced by Jahoda's (1982) deprivation theory which uses a functionalist approach. Deprivation theory argues that there are latent and manifest benefits of work such as income, time structure, status, purpose, and meaningful activity. Warr's (1987) vitamin theory also identifies several dimensions of work that are thought to have adverse effects when taken in too large or small doses, or when removed completely. These dimensions include opportunity for control, task variety, or opportunity for communication (Warr 1987). When individuals become either unemployed or underemployed, they may experience a loss of income, benefits or abilities to use their skills and education. With the loss of these benefits of work, Jahoda (1982) and Warr (1987) would argue that they may

become unable to meet their psychological needs, resulting in distress and reduced well-being.

Other theoretical perspectives that emphasize the loss of agency through negative work transitions have also been used to understand the effects of underemployment on well-being. In Fryer's (1986) agency restriction theory, financial deprivation from the loss of income is the main negative consequence of unemployment. In this theory, personal agency is restricted during unemployment because people are unable to make financial plans for the future. With the growth of contingent employment and part-time positions, income becomes unpredictable, wages are typically lower, and traditional employee benefits such as medical coverage and retirement pensions are not built into the employees working career (Tausig 1999). The move from one employment experience to another can put individuals at risk of falling into precarious employment, exposing them to these threats to agency.

Control theory also emphasizes the will to enact agency over one's circumstances and can be used as a psychological framework for understanding the stress and health effects of job loss or inadequate employment. This approach assumes that people want primary control over their environment and, when they cannot obtain this control, they will seek secondary forms of control, including control over their cognitive disposition and attitudes to protect their mental well-being (Heckhausen and Schulz 1995). If individuals cannot change their actual job, they can at least change the way they see their inadequate work situation to protect their well-being.

If we identify the transition from adequate to inadequate work as a primary stressor, Pearlin's (1989; Pearlin et al. 1981) stress process paradigm is useful to examine the potential pathways between underemployment and mental health. These pathways could include how negative employment transitions affect self-esteem, sense of mastery or control over one's life, and also increase financial strain. This model assumes that most people benefit from the latent and manifest functions of work (Dooley and Prause 2004). The stress process model enables both the application of a benefits of employment perspective to the study of underemployment and the ability to identify mechanisms that link the experience of work to the expression of psychological distress.

3.1 Measures of Underemployment

The lack of attention paid to the negative health consequences of underemployment may be due in part to the lack of an agreed upon definition or measure of underemployment both within and across disciplines (Feldman 1996). The measures that have been used in previous studies have been influenced by the availability of data and have not been informed by theory.

In this study, the concept of underemployment refers to types of employment that are inadequate for the worker in comparison to previous or expected employment. For example, when an individual settles for lower wages or part-time work after a period of unemployment, or accepts employment that does not use their skills and education. The quality of work is evaluated from the individual’s perspective in comparison to the quality of their former employment and their expectations.

Previous measures of underemployment have been based largely on the Labor Utilization Framework (LUF) developed by Hauser (1974), Sullivan (1978), and Clogg (1979). This framework identifies underemployment by the comparison of wages to a pre-defined low wage threshold such as the poverty level, involuntary part-time hours, or fewer hours than a defined threshold, or a mismatch between the level of education and occupation. The problem with the LUF measures is that they compare jobs against a defined threshold of low wages or number of hours and do not consider the individual's expectations or experiences of previous employment. As an example, economic and mental hardship may occur for those who lose a well paying position and take a job with even 10 percent lower wages

The perceived experience of underemployment is likely to arise from the inability to obtain a position commensurate with previous earnings. In addition to income, employment may provide medical and pension benefits that save the worker from having to allocate personal income to these expenses. When an individual moves from a position with a pension and medical or other benefits to one with fewer or no similar benefits, he/she may experience financial strain.

Involuntary part-time work is also expected to increase overall burden of stress, as individuals are forced to accept part-time work when they cannot find full-time positions, or cannot obtain more hours from their employer. The subjective element of choice, in the desire to work more hours differentiates these individuals from those that are unavailable or who do not desire to work full-time (Brown and Pintaldi 2006) and are satisfied with part-time hours.

An occupational mismatch occurs when an individual is overqualified for his/her job and has more skills or education than required to perform the position, rendering them "underutilized"; for example, when a school teacher has been laid off and accepts part-time work as an administrative assistant or teacher's aide.

Subjective or perceived underemployment is a social psychological mismatch, where an individual may still think that he/she deserves a better position despite not falling into the objective categories of lower pay, benefits, or hours than in a previous position, or the objective comparison of educational attainment with skills and educational requirements of the position. For example, Maynard, Joseph and Maynard (2006) evaluated the level of perceived over-qualification by asking respondents about whether their job requires less education than the respondent holds, or whether it uses their previous work experience, skills, education and training. This concept of perceived underemployment may also include status mismatch, where the socioeconomic background of an individual influences their expected occupational status.

3.2 Previous Research on Unemployment, Underemployment and Mental Health

Most research on change of employment has tested the social causation hypothesis that unemployment or underemployment causes mental health problems. A rival hypothesis to be considered is that mental health problems select individuals into unemployment or into less adequate forms of employment (Dooley and Prause 2004). There are very few longitudinal studies of underemployment and well-being, and the measures of underemployment have differed among studies.

Several studies have focussed on the effects of employment situation on health, and support for causation processes has been found. For example, over-qualification has been found to be associated with a decline in health status (Scott-Marshall, Tompa, and Trevithick 2007; Johnson and Johnson 1997) and inadequate income increased depression (Friedland and Price 2003) and distress (Grzywacz and Dooley 2003).

Support for selection processes has also been found, where those with higher baseline depression are more likely to experience subsequent unemployment (Dooley and Prause 2004; Dooley, Prause, and Ham-Rowbottom 2000; Prause and Dooley 2001). However, earlier depressive symptoms do not predict higher odds of moving from adequate to inadequate employment (Dooley et al. 2000).

In a longitudinal study of underemployment, Dooley and Prause (2004) conclude that both selection and causation processes operate in the relationship between employment status and depression. For example, both the underemployed and unemployed are seen to have significantly more depression than those who are steadily employed in adequate work. Within their sample, higher depression is seen by the second interview for those who experienced negative employment transitions by losing adequate work. In contrast, positive employment change through re-employment, whether into adequate or inadequate (underemployment) work, is associated with improvements in depression levels (Dooley and Prause 2004; Dooley et al. 2000; Prause and Dooley 2001).

3.3 Purpose

To explore the relationship between underemployment, unemployment and mental health this paper will study transitions into and out of underemployment to determine

whether selection or causation effects are operating based on mental health status prior, during, and after underemployment. This study addresses the following research questions:

1) Is the experience of unemployment and underemployment associated with elevated psychological distress?

2) Does the experience of losing an adequate job and becoming unemployed or underemployed increase psychological distress?

3) Does the experience of moving from underemployment to adequate employment or unemployment decrease psychological distress?

4) Are those with elevated psychological distress more likely to lose their adequate employment and become unemployed or underemployed?

5) Are those with lower psychological distress more likely to improve their employment situation and become adequately employed?

6) Does elevated psychological distress increase the odds of job loss between interviews?

3.4 Methods

The data for this study are derived from a large community-based survey of married couples with at least one child under 18 years of age in London, Ontario, Canada. Two survey waves were conducted in 1994/5 ("Time 1") and 1996/7 ("Time 2") (Avison 2001; Cassidy and Davies 2003). This survey focussed on the effects of recent or previous involuntary job loss and subsequent unemployment of at least four weeks on

individuals and their spouses. These data were not collected specifically to study underemployment, however they still provide a rich source of information on the mental health and work history of respondents. Households who had experienced recent unemployment in the three years prior to the study were over-sampled. The period of unemployment experienced by these individuals coincided with the economic recession of the early 1990s in Canada. The remainder of the sample was made up of households who were stably employed without having experienced unemployment for more than four weeks in the past four years. First time job seekers, or those who voluntarily left their jobs were not included in the sample.

To obtain the sample, the Telephone Survey Unit at The University of Western Ontario conducted random digit dial screening survey of the greater London area to identify a geographically stratified random sampling pool of approximately 10,000 married or co-habiting couples with at least one child living at home and identify families where at least one spouse was currently or previously unemployed, or both spouses were stably employed in the past three years. From this pool, the three employment groups were disproportionately sampled with a response rate of 64%, to have an approximately equal number of currently unemployed, previously unemployed, and stably unemployed families.

Face to face interviews and self-report surveys were conducted to obtain detailed work histories and information on a variety of measures of mental health and well-being. In some cases where a spouse was unable to participate, questions on his/her work history and other factors were provided by their husband or wife.

3.4.1 Sample

Of the 897 families who participated at Time 1, 1495 males and females were interviewed, and 1382 were re-interviewed at Time 2. For the purposes of this paper, only respondents who were in the labour force and could provide information on current and previous employment at both Time 1 and Time 2 were included. Respondents who were self-employed, on maternity, paternity or sick leave, temporary lay off, or out of the labour force at the time of either interview were excluded. Individuals who were missing data on their type of occupation were excluded (2 males, 8 females). This left 815 individuals available for analysis. (See Appendix 3.1 for a description of how the cases were selected for this study.)

3.4.2 Variables and Measurement

Four measures of underemployment were constructed: involuntary part-time employment, lower number of benefits than in a previous position, over-education, and lower income than in a previous position.

Involuntary part-time work was defined as current employment of less than 25 hours per week where respondents had looked for full-time work but were not able to find it, or their hours of work were cut back by their employer. Those with a preference for part-time work such as students or homemakers were not identified as involuntary part-time employees.

Benefits underemployment was defined as a loss of one or more work related benefits after changing jobs, for example, the loss of a pension plan or medical coverage,

and the inability to obtain a job with the same benefits after re-employment. At both interviews, respondents were asked whether they had: medical insurance (including prescription drug or optical benefits), dental insurance, retirement or pension plan, educational benefits, or paid sick leave in their current and previous jobs. Individuals with a higher total number of benefits in any previous job were identified as benefits underemployed. Only respondents who experienced a change in jobs and reported benefits at least once prior to, or during the study period were eligible to be benefits underemployed. Therefore, respondents in their first job, or who never had benefits in any previous employment were ineligible for this measure of underemployment.

To measure over-education, current and all previous jobs reported were coded using the 1993 National Occupational Classification (NOC) developed by Human Resources Canada (HRDC 1993). The NOC classifies occupations using a four digit code. The first digit indicates the skill type; the second digit indicates one of four skill levels according to educational attainment or training. The NOC does not assign a skill level to management occupations and for the purposes of this study, all of these occupations were assigned the highest skill level, requiring a university degree. The second highest skill level in the NOC definition requires 2-3 years of post-secondary education, or some combination of apprenticeship training or secondary school and work experience. The third NOC skill level requires some secondary and work experience, and the lowest skill level requires up to two years of secondary school.

The educational attainment of each respondent was compared to the NOC skill level of their current occupation. Respondents with a higher level of educational attainment than required for their current occupation were considered over-educated for

their position. Educational attainment was measured in the survey using years of education and whether they had a high school diploma and a university or college degree. Respondents with at least 16 years of education and a university or college degree were qualified to work at the highest NOC skill level. Respondents with 13 to 15 years of education were qualified to work at the second highest NOC skill level. Having between 9 and 12 years of education and a highschool diploma qualified respondents for the third NOC skill level. Respondents with less than 13 years of education and no high school diploma were qualified for the lowest NOC skill level. The educational attainment of each respondent was compared to the NOC skill level of their current occupation, and those with one or more higher levels of educational attainment than required for their current occupation's NOC level were classified as over-educated for their position.

Income underemployment was measured using categories of personal income measured in $3,000+ increments. Income underemployment was only measured at Time 2 for those who changed jobs, and reported lower personal income by at least one category. Individuals who were income underemployed at the time of the first interview were not identified because earnings in previous employment or past personal income was not reported.

Respondents were identified as underemployed at Time 1 if they had any one of the following types of underemployment: involuntary part-time work, benefits underemployed, or over-educated. At Time 2, respondents were identified as underemployed if they had any of the above types of underemployment, or if they were income underemployed.

Psychological distress was measured with the Center for Epidemiologic Studies-Depression Scale (CES-D) (Radloff 1977). This is a 20 item self-report scale of depressive symptomatology with possible range of scores from 0-60. Respondents indicated whether they experienced any of the following feelings or behaviours in the past seven days. These included questions about feeling unusually bothered, could not shake off the blues, experienced a loss of appetite, and hopefulness about the future. Scores ranged from 0 for rarely or none of the time, to 3 = most or all of the time.[1] The Cronbach's Alpha for respondents selected for the analysis at Time 1 was .88 for males, and .90 for females; and at Time 2, .90 for males, and .93 for females.

3.5 Results

At Time 1, 25.5 percent (n=208) of the respondents were underemployed, increasing to 37.2 percent (n=303) at Time 2. Of the underemployed at Time 1, 13.9 percent (n=29) were involuntary part-time workers, 17.8 percent (n=37) were benefits underemployed, and 78.4 percent (n=163) were over-educated. Most respondents had only one type of underemployment at Time 1 (91.3 percent, n=190), but of those who had more than one, the most frequent combination was involuntary part-time and over-education (4.8 percent, n=10). At Time 2, 10.6 percent (n=32) of the underemployed were involuntary part-time, 34.7 percent (n=105) were benefits underemployed, 62.4 percent (n=189) were over-educated, and 13.5 percent (n=41) were income underemployed. A larger proportion of respondents had two or more types of

---

1 Analyses revealed that respondents with a CES-D score greater than or equal to 45 were outliers and these cases were removed from the analysis (n=8 females).

underemployment at Time 2 (17.5 percent, n=53), with benefits underemployment and over-education being the most common combination (5.3 percent, n=16).

Table 3.1 displays the mean CES-D scores for each of the three employment statuses (adequately employed, underemployed, and unemployed) across time points and gender. At both time points, and for men and women alike, there is a monotonic increase in CES-D scores with each decline in employment status from adequate to underemployed, and between the underemployed and unemployed. In all cases, the adequately employed have lower mean CES-D scores than the underemployed, and the unemployed have the highest mean CES-D scores than either of the employed groups. ANOVA using a Bonferroni adjustment was conducted to determine whether the difference in mean CES-D scores between groups was statistically significant. At both time points, adequately employed males and females had statistically significantly lower mean CES-D scores than the unemployed. At Time 1, unemployed males had a significantly higher mean CES-D score than the underemployed, although this difference was not seen for males at Time 2, or for females at either time point. In addition, the difference in mean CES-D scores between the adequately employed and underemployed groups was not significant at either time point.

To examine whether experiences of unemployment and underemployment are associated with elevated psychological distress, ordinary least squares (OLS) regression[2]

---

2 Standard errors for all of the following regression analyses were adjusted for clustering within marital relationships. Of the 815 respondents, there were a total of 611 clusters (204 couples, and 203 married respondents whose spouse was not included in the analysis).

analyses were computed to test for a cross-sectional relationship between current underemployment, unemployment, and CES-D scores at both Time 1 and Time 2, controlling for gender, age and years of education. In Table 3.2, we can see that the unemployed respondents at Time 1 have a significantly higher level of psychological distress, and this effect persists even after controlling for gender, age and education. A significant effect of gender on psychological distress is also seen with males having lower CES-D scores at both time points. In model 1, underemployment has no effect on unadjusted levels of psychological distress, however, once education is controlled for (see Model 3), the effect of underemployment increases and becomes statistically significant. This persists after controlling for age. A post-hoc analysis of the mean years of education between the underemployed versus adequately employed revealed that the underemployed have significantly higher mean years of education (15.07 versus 14.25) (ANOVA, Bonferroni adjustment, $F = 12.53$, $p<.001$), which would explain the suppressor relationship between education, underemployment and psychological distress in the model. Two and three way interactions between gender and a series of variables including age, education, underemployment and unemployment were tested and none were found to be significant.

Table 3.3 displays the results of the cross-sectional analysis at Time 2. Again, unemployment has a significant effect on psychological distress, and gender has a protective effect, where males have lower psychological distress. More years of education are also significantly associated with lower levels of psychological distress, however at Time 2, education no longer acts as a suppressor of the effects of underemployment (see Model 2). At Time 2, underemployment does not have a

statistically significant effect on psychological distress. The two and three-way interactions between gender and age, and gender and underemployment or unemployment were not significant (results not shown). The only significant interaction effect was between gender and education (see model 4). Males with higher levels of education have higher levels of psychological distress than females.

To identify possible social causation effects an OLS regression was computed using only those who were adequately employed at Time 1 to determine whether the transition from adequate employment to underemployment or unemployment at Time 2 increases psychological distress (Table 3.4). Psychological distress at Time 1, along with gender, age and education were controlled. Losing an adequate position and becoming unemployed was a significant predictor of elevated psychological distress at Time 2, however the loss of an adequate position and subsequent re-employment in a position of underemployment was not a significant predictor of elevated psychological distress (see Model 1). The effect of becoming unemployed persists after controlling for gender, age, and education (see Model 2). Interaction effects of gender and age, education, underemployment, or unemployment were tested and were not significant (results not shown). Overall, no social causation effect of increased psychological distress from becoming underemployed was found for the adequately employed at Time 1.

In contrast, to identify possible social causation effects of losing a job where the individual was underemployed on psychological distress, an OLS regression was computed using only those who were underemployed at Time 1, to determine whether the transition out of underemployment into an adequate position or unemployment at Time 2 would improve psychological distress (see Table 3.5). Model 1 shows that losing a

position of underemployment and becoming unemployed is a significant predictor of increased psychological distress, even after controlling for psychological distress at Time 1. Controlling for gender, age and education did not change this relationship (Model 4). Becoming adequately employed was not a significant predictor of lowered psychological distress in any of these analyses. Interactions between gender and age or education were tested and were not found to be significant (results not shown).

To test whether selection effects are operating, where elevated psychological distress at Time 1 selects adequately employed individuals into underemployment or unemployment by Time 2, multinomial logistic regression comparing the unemployed and underemployed to the adequately employed at Time 2 was performed, controlling for gender, age and education. The results in Table 3.6 show that elevated psychological distress among the adequately employed at Time 1 did not increase the odds of becoming underemployed or unemployed by Time 2. Age was a significant predictor of subsequent underemployment for the adequately employed at Time 1, however it did not increase the odds of unemployment by Time 2.

To examine whether lowered psychological distress at Time 1 selects underemployed individuals into a change in employment status by Time 2, whether it be a positive transition to adequate employment or a negative transition to unemployment in comparison to remaining underemployed (in the same or a new position) at Time 2, a multinomial logistic regression was performed, controlling for gender, age, and education (Table 3.7). Psychological distress at Time 1 does not significantly increase the odds of moving from underemployment at Time 1 to either adequate employment or

unemployment at Time 2. However, underemployed respondents at Time 1 with higher education had higher odds of becoming adequately employed by Time 2.

When looking at all employed individuals at Time 1 (both adequately and underemployed, n=734), elevated psychological distress was a highly significant predictor of job loss between interviews (Table 3.8). In addition, a gender difference was seen, where males have an increased risk of job loss, which persisted after controlling for age and education. A post-hoc analysis of differences of means revealed that those who experienced job loss had significantly higher mean psychological distress at Time 1. (10.83 versus 9.08) (ANOVA, Bonferroni adjustment, $F = 6.13$, $p<.05$). Among those who experienced job loss, elevated psychological distress at Time 1 was not shown to be a predictor of subsequent re-employment between interviews, or whether they became underemployed or adequately employed (results not shown).

In summary, the experience of being unemployed was found to have a significant effect on psychological distress at Time 1 and Time 2. Underemployment was a significant predictor of psychological distress only when education was controlled for at Time 1. This effect is presumably a function of the significantly higher level of education of the underemployed, as opposed to the adequately employed. Education was also one of the variables used to measure underemployment and the majority of the underemployed at both Time 1 and Time 2 were underemployed through over-education (78.4 and 62.4% respectively). In addition, respondents with lower levels of education were not able to be categorized as underemployed through over-education, and could only be underemployed by income, loss of benefits, or involuntary part-time work.

No evidence of social causation effects were found for those moving from adequate employment to underemployment, or underemployment to adequate employment on psychological distress at Time 2. Only the effect of losing employment and becoming unemployed was found to increase psychological distress, regardless of the adequacy of the job that was lost.

Some evidence of selection into job loss after the first interview was found, whereby respondents with elevated psychological distress at Time 1 were more likely to experience job loss. Elevated psychological distress did not however predict subsequent re-employment, or whether job seekers obtained adequate employment.

3.6 Discussion

Strong effects of being or becoming unemployed on psychological distress were found in this study. These findings are in contrast to the reciprocal process of social causation and selection found between depressive symptoms and negative employment experiences by Dooley and Prause (2004). Similar to other studies, evidence of selection into later underemployment was not found (Dooley et al. 2000). However, some evidence of selection into later unemployment was found among those with high depressive symptoms as was found in other research (Dooley and Prause 2004; Dooley et al. 2000; Prause and Dooley 2001).

No gender differences were found between males and females in their reactions to underemployment or unemployment in this study, except for the finding that males experience lower symptoms of psychological distress overall. The exception is that males

with higher levels of education were found to experience higher levels of psychological distress after becoming unemployed, in contrast to females with higher education.

3.7 Limitations and Future Research

Having two waves of survey data allowed for the control of previous mental health status and at least a partial check for selection effects, but this is still a correlational design (Dooley and Prause 2004). In order to fully measure selection and causation, more sensitive data would be required. For example, a design that follows respondents through each week of the unemployment or re-employment experience would be relevant because the CES-D measure only asks respondents to report symptoms from the last 7 days. By having two years between interviews, depression or some other intervening event could have occurred before the adverse employment change. Burgard, Brand, and House (2007) also argue that we still need to clarify and identify the ordering of employment changes and health effects that occur between interviews and survey waves. It may be that involuntary job loss was the catalyst for health decline, or that the worsening of an existing health problem may have precipitated job loss.

We need to understand the mechanisms by which these processes of selection and causation are operating (Dooley and Prause 2004). What are the mediators that transmit the influence of employment status or job change on mental health? What are the moderators that can help us identify who is most vulnerable to their operation?

3.8 Conclusion

This study tested for the social causation and selection effects of unemployment and underemployment on psychological distress in a large community–based two wave

survey in London, Ontario, Canada. At the time of the survey data collection in the mid 1990s, Canadians were experiencing an economic recession with a lack of full-time job creation (Picot and Heisz 2000), and the highest unemployment rates (approximately 10 percent) were seen since 1983 (Statistics Canada 2009). The risk of unemployment and underemployment was high among these respondents, as is the risk in the present economy, since the recession in 2007 (National Bureau of Economics Research 2010). Current unemployment rates are at 10 percent (Bureau of Labor Statistics 2010; Miller and McKee 2009), warranting a social policy focus on the mental health and well-being among underemployed Canadians.

Unemployment was a highly significant predictor of elevated psychological distress in this study. Despite how jobs after re-employment are likely to be of reduced quality (Brand 2004) with lower wages (Brand 2004) putting individuals at higher risk of underemployment, moving from an adequate position to one of underemployment did not increase psychological distress. In an economic climate such as the one in the recession of the 1990s, individuals may have welcomed any employment, regardless of whether it used their education, provided fewer benefits, or lower hours or income. Additionally, in this study initial elevated psychological distress selected individuals into unemployment, but not underemployment. Males with higher levels of education were more likely to experience higher psychological distress when unemployed or underemployed than females with higher education. Social causation and selection effects were found between unemployment and psychological distress, while underemployment did not show the same relationship. More research is needed identify the mechanisms through which underemployment and unemployment affect psychological distress.

3.9 References

Avison, William R. 2001. "Unemployment And Its Consequences For Mental Health." Pp. 177-200 in Restructuring Work and the Life Course, edited by V. W. Marshall, W.R. Heinz, H. Kruger, and A. Verma. Toronto, Ontario, Canada: University of Toronto Press.

Benach, Joan. and Charles Muntaner. 2007. "Precarious Employment and Health: Developing a Research Agenda." British Medical Journal 61(4). Retrieved March 7 2012 (http://jech.bmj.com/content/61/4/276.full.pdf+html).

Brand, Jennie. E. 2004. Enduring Effects of Job Displacement on Career Outcomes. Unpublished Manuscript. Department of Sociology. University of Wisconsin, Madison, Wisconsin. Retrieved March 7 2012 (http://www.wjh.harvard.edu/~cwinship/cfa_papers/displace_jbrand.pdf).

Brown, Giorgina. and Federica Pintaldi. 2006. "A Multidimensional Approach in the Measurement of Underemployment." Statistical Journal of the United Nations Economic Commission for Europe 23(1). Retrieved March 7 2012 (http://iospress.metapress.com/content/4qhyw7mbf6v433xm/fulltext.pdf).

Bureau of Labor Statistics, United States Department of Labor. 2010. Employment Situation Summary. Released January 08, 2010, for December 2009. Retrieved March 7 2012 (http://www.bls.gov/news.release/empsit.nr0.htm).

Burgard, Sarah., A. Jennie. E. Brand, and James S. House. 2007. “Toward a Better Estimation of the Effect of Job Loss on Health.” Journal of Health and Social Behavior 48. Retrieved March 7 2012 (http://hsb.sagepub.com/content/48/4/369.full.pdf+html).

Cassidy, Gail. L. and Lorraine Davies. 2003. "Explaining Gender Differences in Mastery among Married Parents." Social Psychology Quarterly 66(1). Retrieved March 7 2012 (http://www.jstor.org/stable/pdfplus/3090140.pdf).

Clogg, Clifford C. 1979. Measuring Underemployment :Demographic Indicators for the United States. New York; Toronto: Academic Press.

Dooley, David, JoAnn Prause, and Kathleen A. Ham-Rowbottom. 2000. "Underemployment and Depression: Longitudinal Relationships." Journal of Health and Social Behavior 41(4). Retrieved March 7 2012 (http://www.jstor.org/stable/pdfplus/2676295.pdf).

Dooley, David, Ralph Catalano, and Georjeanna Wilson. 1994. "Depression and Unemployment: Panel Findings from the Epidemiologic Catchment Area Study." American Journal of Community Psychology 22(6). Retrieved March 7 2012 (http://www.springerlink.com/content/x04051272852219g/fulltext.pdf).

Dooley, David and JoAnn Prause. 2004. The Social Costs of Underemployment :Inadequate Employment as Disguised Unemployment. New York: Cambridge University Press.

Farber, Henry S. 2003. Job Loss in the United States, 1981-2001. National Bureau of Economic Research Working Paper 9707. Retrieved March 7 2012 (http://www.nber.org/papers/w9707.pdf).

Feldman, Daniel C. 1996. "The Nature, Antecedents and Consequences of Underemployment." Journal of Management 22(3). Retrieved March 7 2012 (http://journals1.scholarsportal.info/tmp/17543244007352185903.pdf).

Ferrie, Jane E., Martin J. Shipley, Michael G. Marmot, Stephen A. Stansfeld, and George D. Smith. 1998. "An Uncertain Future: The Health Effects of Threats to Employment Security in White-Collar Men and Women." American Journal of Public Health 88(7). Retrieved March 7 2012 (http://ajph.aphapublications.org/doi/pdf/10.2105/AJPH.88.7.1030).

Friedland, Daniel S. and Richard H. Price. 2003. "Underemployment: Consequences for the Health and Well-being of Workers." American Journal of Community Psychology 32(1). Retrieved March 7 2012 (http://journals1.scholarsportal.info/details-sfx.xqy?uri=/00910562/v32i1-2/33_ucfthawow.xml).

Fryer, David. 1986. "Employment Deprivation and Personal Agency during Unemployment: A Critical Discussion of Jahoda's Explanation of the Psychological Effects of Unemployment." Social Behaviour 1(1):3-23.

Gallo, William T., Elizabeth. H. Bradley, Michele. Siegel, and Stanislav V. Kasl. 2000. "Health Effects of Involuntary Job Loss among Older Workers." The Journals of Gerontology Series B: Psychological Sciences and Social Sciences 55(3). Retrieved March 7 2012 (http://psychsocgerontology.oxfordjournals.org/content/55/3/S131).

Grzywacz, Joseph G. and David Dooley. 2003. "“Good Jobs” to “Bad Jobs”: Replicated Evidence of an Employment Continuum from Two Large Surveys." Social Science & Medicine 56(8). Retrieved March 7 2012 (http://pdn.sciencedirect.com/science?_ob=MiamiImageURL&_cid=271821&_user=940030&_pii=S0277953602001703&_check=y&_origin=article&_zone=toolbar&_coverDate=30-Apr-2003&view=c&originContentFamily=serial&wchp=dGLzVlV-zSkzS&md5=1c3a414a7647655de25a90a8e853eebe/1-s2.0-S0277953602001703-main.pdf).

Hauser, P. M. 1974. "The Measurement of Labour Utilization." Malayan Economic Review 19(1):1-15.

Heckhausen, Jutta and Richard Schulz. 1995. "A Life-Span Theory of Control." Psychological Review 102(2). Retrieved March 7 2012 (http://journals2.scholarsportal.info/tmp/7971226107516150819.pdf).

HRDC (Human Resources Development Canada). 1993. 1991 National Occupational Classification: Occupational Descriptions. Ottawa: Ministry of Supply and Services, Cat. MP53–25/1–1993E.

Jacobson, Louis S., Robert J. LaLonde, and Daniel G. Sullivan. 1993. "Earnings Losses of Displaced Workers." The American Economic Review 83(4). Retrieved March 7 2012 (http://www.jstor.org/stable/pdfplus/2117574.pdf).

Jahoda, Marie. 1982. Employment and Unemployment :A Social psychological Analysis. New York: Cambridge University Press.

Johnson, Gloria Jones and W. Roy Johnson. 1997. "Perceived Overqualification, Emotional Support, and Health." Journal of Applied Social Psychology 27(21). Retrieved March 7 2012 (http://journals1.scholarsportal.info/tmp/12530455784709877163.pdf).

Kessler, Ronald C., J. Blake Turner and James S. House. 1988. "Effects of Unemployment on Health in a Community Survey: Main, Modifying, and Mediating Effects." Journal of Social Issues 44(4).

Kessler, Ronald C., J. Blake Turner and James S. House. 1989. "Unemployment, Re-employment, and Emotional Functioning in a Community Sample." American Sociological Review 54(4). Retrieved March 7 2012 (http://www.jstor.org/stable/pdfplus/2095885.pdf).

Liem, Ramsay and Joan H. Liem. 1988. "Psychological Effects of Unemployment on Workers and their Families." Journal of Social Issues 44(4). DOI: 10.1111/j.1540-4560.1988.tb02093.x.

Mascaro, Nathan, Natalie C. Arnette, M. Carmen Santana and Nadine J. Kaslow. 2007. "Longitudinal Relations between Employment and Depressive Symptoms in Low-Income, Suicidal African American Women." Journal of Clinical Psychology 63(6). Retrieved March 7 2012 (http://journals1.scholarsportal.info/tmp/13605942388957588613.pdf).

Maynard, Douglas C., Todd A. Joseph, and Amanda M. Maynard. 2006. "Underemployment, Job Attitudes, and Turnover Intentions." Journal of Organizational Behavior 27(4). Retrieved March 7 2012 (http://www.jstor.org/stable/pdfplus/4093914.pdf).

Miller, Rich and Michael McKee. 2009. "Experts: Economy will Rebound, Job Growth Won't." Bloomberg Business Week December 14. Retrieved March 7 2012 (http://www.businessweek.com/investor/content/dec2009/pi20091214_791251.htm).

National Bureau of Economic Research. 2010. Business Cycle Dating Committee. Report September 20. Retrieved March 7 2012 (http://www.nber.org/cycles/sept2010.html).

Pearlin, Leonard I. 1989. "The Sociological Study of Stress." Journal of Health and Social Behavior 30(3). Retrieved March 7 2012 (http://www.jstor.org/stable/pdfplus/2136956.pdf?acceptTC=true).

Pearlin, Leonard I., Elizabeth G. Menaghan, Morton A. Lieberman, and Joseph T. Mullan. 1981. "The Stress Process." Journal of Health and Social Behavior 22(4). Retrieved March 7 2012 (http://www.jstor.org/stable/pdfplus/2136676.pdf).

Perrucci, Carolyn C., Robert Perrucci, Dena Targ, and Harry Targ. 1988. Plant Closings. Hawthorne, NY.: Aldine de Gruyter.

Picot, Garnett and Andrew Heisz. 2000. "The Performance of the 1990s Canadian Labour Market." Canadian Public Policy. XXVI Supplement:1. Retrieved March 7 2012 (http://www.jstor.org/stable/pdfplus/3552501.pdf).

Podgursky, Michael and Paul Swaim. 1987. "Job Displacement and Earnings Loss: Evidence from the Displaced Worker Survey." Industrial and Labor Relations

Review 41(1) . Retrieved March 7 2012 (http://www.jstor.org/stable/pdfplus/2523861.pdf).

Prause, JoAnn and David Dooley. 2001. "Favourable Employment Status Change and Psychological Depression: A Two□year Follow□up Analysis of the National Longitudinal Survey of Youth." Applied Psychology 50(2). Retrieved March 7 2012 (http://journals2.scholarsportal.info/tmp/3715643496692754747.pdf).

Radloff Lenore S. 1977. The CES-D Scale : A Self-Report Depression Scale for Research in the General Population. Applied Psychological Measurement 1(3). Retrieved March 7 2012 (http://apm.sagepub.com/content/1/3/385.full.pdf+html).

Scott-Marshall, Heather, Emile Tompa, and Scott Trevithick. 2007. "The Social Patterning of Underemployment and its Health Consequences." International Journal of Contemporary Sociology 44(1):7-34.

Statistics Canada. 2009. The Canadian Labour Market at a Glance. Catalogue 71-222-X, page 12. Retrieved March 7 2012 (http://www.statcan.gc.ca/pub/71-222-x/71-222-x2008001-eng.pdf).

Sullivan, Teresa A. 1978. Marginal Workers, Marginal Jobs: The Underutilization of American Workers. Texas: University of Texas Press.

Tausig, Mark. 1999. "Work and Mental Health." Pp. 255–274 in Handbook of the Sociology of Mental Health, edited by C.S. Aneshensal and J.C. Phelan. New York: Springer. Retrieved March 7 2012 (http://www.springerlink.com/content/j410531727074684/fulltext.pdf).

Turner, J. Blake 1995. "Economic Context and the Health Effects of Unemployment." Journal of Health and Social Behavior 36(3). Retrieved March 7 2012 (http://www.jstor.org/stable/pdfplus/2137339.pdf).

Warr, Peter. 1987. Work, Unemployment, and Mental Health. New York: Clarendon Press Oxford.

Warr, Peter and Paul Jackson. 1985. "Factors Influencing the Psychological Impact of Prolonged Unemployment and of Re-Employment." Psychological Medicine 15(04):795-807.

Westin, Steinar. 1990. "The Structure of a Factory Closure: Individual Responses to Job-Loss and Unemployment in a 10-Year Controlled Follow-Up Study." Social Science & Medicine 31(12):1301.

Appendix 3.1 Number of Cases Used in the Analysis

	Males	Females	Total
Interviewed at Time 1	672	823	1495
Interviewed at Time 1 and Time 2	571	811	1382
Not self-employed at either interview.	469	715	1184
Not on maternity/paternity/sick leave or temporary lay off at either interview.	451	652	1103
Not out of the labour force at either interview.	410	433	843
Have all necessary data to measure underemployment.	398	425	823
Removed CES-Depressive symptom outliers >=45.	398	417	815

Total Number of Cases Available for Analysis n=815

Table 3.1 CES-D Scores for Males and Females at Time 1 and Time 2, Employment Survey

	Males (N=398)			Females (N=417)		
Employment Status	N=	Mean	Standard Deviation	N=	Mean	Standard Deviation
Time 1						
Adequate Employment	256	7.84	6.68	270	10.44	9.05
Underemployed	99	9.58 **	8.40	109	11.10	9.04
Unemployed	43	13.62 ***	10.10	38	13.53 **	11.37
Time 2						
Adequate Employment	231	7.98	7.35	215	10.97	10.46
Underemployed	126	10.30	9.45	177	11.16	10.02
Unemployed	41	13.54 ***	10.32	25	16.60 **	12.74

*p<.1, **p<.05,***p<.001, ANOVA difference in means between groups, Bonferroni correction

Table 3.2 OLS Regression Models Predicting CES-D at Time 1, Employment Survey (Standard Error in Parentheses, Huber-White corrected for clustering in 611 households; n=815)

Variable	Model 1	Model 2	Model 3
Underemployed, Time 1	1.198	1.144	1.396*
	(0.712)	(0.707)	(0.709)
Unemployed, Time 1	4.868***	4.946***	4.755***
	(1.261)	(1.262)	(1.275)
Male = 1		-2.167***	-2.168***
		(0.577)	(0.576)
Age		-0.081	-0.067
		(0.042)	(0.043)
Years Education			-0.303**
			(0.102)
Constant	9.175	13.330	17.113

Note: Standard errors in parentheses
***p<=0.001;**p<=0.01;*p<=0.05, +p<=.10.

Table 3.3 OLS Regression Models Predicting CES-D at Time 2, Employment Survey (Standard Error in Parentheses, Huber-White corrected for clustering in 611 households; n=815)

Variable	Model 1	Model 2	Model 3	Model 4
Underemployed, Time 2	1.381	1.094	1.372	1.327
	(0.734)	(0.754)	(0.745)	(0.744)
Unemployed, Time 2	5.276***	5.491***	5.132***	5.336***
	(1.442)	(1.410)	(1.429)	(1.413)
Male = 1		-2.226***	-2.199***	-2.242***
		(0.646)	(0.643)	(0.643)
Age		-0.054	-0.034	-0.040
		(0.053)	(0.053)	(0.053)
Years Education			-0.406**	-0.705***
			(0.128)	(0.194)
Male*Years Education				0.569*
				(0.239)
Constant	9.423	12.778	17.799	22.424

Note: Standard errors in parentheses
***p<=0.001;**p<=0.01;*p<=0.05, +p<=.10.

Table 3.4 OLS Regression Models Predicting CES-D at Time 2 for Adequately Employed At Time 1, Employment Survey (Standard Error in Parentheses, Huber-White corrected for clustering in 439 households; n=526)

Variable	Model 1	Model 2	Model 3	Model 4
Underemployed, Time 2	0.938	0.837	0.766	0.822
	(0.997)	(1.007)	(1.014)	(1.020)
Unemployed, Time 2	3.738*	3.860*	3.871*	3.668*
	(1.830)	(1.822)	(1.815)	(1.833)
CES-D, Time 1	0.536***	0.522***	0.519***	0.505***
	(0.062)	(0.062)	(0.062)	(0.062)
Male = 1		-1.435*	-1.490*	-1.485*
		(0.721)	(0.730)	(0.731)
Age			-0.052	-0.040
			(0.057)	(0.057)
Years Education				-0.237
				(0.123)
Constant	4.592	5.434	7.627	10.651

Note: Standard errors in parentheses
***p<=0.001;**p<=0.01;*p<=0.05, +p<=.10.

Table 3.5 OLS Regression Models Predicting CES-D at Time 2 for Underemployed At Time 1, Employment Survey (Standard Error in Parentheses, Huber-White corrected for clustering in 196 households; n=208)

Variable	Model 1	Model 2	Model 3	Model 4
Adequately Employed, Time 2	-0.235	-0.205	-0.340	-0.302
	(1.177)	(1.237)	(1.255)	(1.261)
Unemployed, Time 2	4.975*	5.015*	4.904*	4.941*
	(2.267)	(2.274)	(2.282)	(2.269)
CES-D, Time 1	0.627***	0.626***	0.631***	0.631***
	(0.061)	(0.060)	(0.060)	(0.060)
Male = 1		-0.183	-0.363	-0.368
		(0.992)	(0.964)	(0.958)
Age			0.111	0.110
			(0.091)	(0.089)
Years Education				0.031
				(0.232)
Constant	3.845	3.934	-0.444	-0.894

Note: Standard errors in parentheses
***p<=0.001;**p<=0.01;*p<=0.05, +p<=.10.

Table 3.6 Multinomial Logistic Regression Models Predicting Odds of Employment Status at Time 2 for Adequately Employed At Time 1, Employment Survey (Odds Ratios, Standard Error in Parentheses, Huber-White corrected for clustering in 439 households; n=526)

Variable	Underemployed, Time 2	Unemployed, Time 2
CES-D, Time 1	1.022	1.006
	(0.0134)	(0.0227)
Male = 1	0.723	1.440
	(0.159)	(0.591)
Age	0.969*	1.013
	(0.0153)	(0.0317)
Years Education	1.007	0.905
	(0.0359)	(0.0567)

Note: Standard errors in parentheses

***p<=0.001;**p<=0.01;*p<=0.05, +p<=.10.

Table 3.7 Multinomial Logistic Regression Models Predicting Odds of Employment Status at Time 2 for Underemployed At Time 1, Employment Survey (Odds Ratios, Standard Error in Parentheses, Huber-White corrected for clustering in 196 households; n=208)

Variable	Adequately Employed, Time 2	Unemployed, Time 2
CES-D, Time 1	1.001	1.015
	(0.0209)	(0.0278)
Male = 1	1.823	2.285
	(0.697)	(1.281)
Age	1.037	1.038
	(0.0356)	(0.0421)
Years Education	0.783**	0.791
	(0.0738)	(0.125)

Note: Standard errors in parentheses

***p<=0.001;**p<=0.01;*p<=0.05, +p<=.10.

Table 3.8 Logistic Regression Model Predicting Odds of Job Loss For All Employed at Time 1, Employment Survey (Odds Ratios, Standard Error in Parentheses, Huber-White corrected for clustering in 563 households when n=734)

Variable	Job Loss
CES-D, Time 1	1.029**
	(0.0108)
Male = 1	1.682**
	(0.299)
Age	0.996
	(0.0135)
Years Education	0.987
	(0.0301)

Note: Standard errors in parentheses ***p<=0.001;**p<=0.01;*p<=0.05, +p<=.10.

CHAPTER FOUR: EDUCATIONAL MISMATCHES AND MENTAL HEALTH: MEASURING THE EFFECTS OF OVER-EDUCATION ON PSYCHOLOGICAL DISTRESS

4.0 Introduction

The percentage of university graduates in Canada has been steadily increasing over the past 25 years, while the proportion of skilled occupations has remained relatively stable (Smith and Frank 2005). Results from Statistics Canada's Survey of Labour and Income Dynamics have shown that 31 percent of men and 26 percent of women with a university degree were in an occupation requiring no more than a high school education (Li, Gervais and Duval 2006) and rates of over-education have been found to persist five to six years after graduation (Frenette 2004).

Over-qualification or over-education is a form of underemployment referring to an underutilization of a worker's acquired skills, training, or educational qualifications. Livingstone (1999) has identified several types of skill-based underemployment, including a credential gap between an individual's educational attainment and the requirements of the job; a subjective gap referring to perceived over-qualification; and a relevance gap from working outside one's field of training.

The investment in human capital in the form of education or training is expected to raise an individual's expectations about the types of employment and working conditions they can anticipate having in the future (Vaisey 2006). When individuals are unable to attain certain goals they may experience status deprivation, resulting in lower job satisfaction, frustration, and psychological distress. The relationship between over-qualification and psychological distress can be explained using a relative deprivation

framework (Feldman, Leana, and Bolino 2002; Johnson and Johnson 2000; Johnson, Morrow and Johnson 2002) recognizing that it is the subjective evaluation of an individual's situation as a discrepancy between what they want and what they feel entitled to that will produce negative reactions (Gurr 1970). Therefore when an individual is in a job beneath what they were expecting they may experience a sense of relative status deprivation, leading to lower job satisfaction (Erdogan and Bauer 2009).

Within Pearlin's (1989; Pearlin et al. 1981) stress process model, other resources such as mastery, self-esteem or social supports can act as mediators between stressors that arise as a consequence of over-education and adverse health outcomes. Previous studies have found support for the stress process model in understanding the relationship between over-qualification and psychological well-being (Johnson and Johnson 1996), where over-qualification increases personal frustration and reduces work satisfaction (Burris 1983; Johnson and Johnson 1992; Meir, Melamed and Abu-Freha 1990; Richards 1984; Tsang, Rumberger, and Levin 1991). Erdogan and Bauer (2009) argue that there is a need to theoretically identify mediators that operate between perceived (or objective) over-qualification and behaviors and attitudes. These mediators could include other stressors and strains that are associated with the experience of over-education. For example, the circumstances associated with an undesirable job, including inadequate hours or control over scheduling, the effects of workplace environment or job control and demands are expected to increase chronic strain. Financial strain is also expected to increase as a result of working in a lower than expected position, likely with lower pay as well. However a higher household income, possibly from a spouse working full-time, may alleviate the psychological distress associated with the experience of financial strain

from over-education. Likewise, higher levels of self-esteem and mastery may increase an individual's confidence about their ability to find more suitable employment, thus protecting them from increased psychological distress while being over-educated. High work satisfaction is also expected to negate the effects of over-education on psychological distress, because if an individual is highly satisfied with their work, they may have justified their inability to use their education as a trade-off for ongoing, satisfying work. From a benefits of work perspective (Dooley and Prause 2004; Jahoda 1982) high work satisfaction may be a result of having a job that supplies them with the benefits they desire, such as income, meaningful activity, social contacts, or purpose. Over-education is also expected to affect the above mediators, as the experience of underemployment through over-education may erode self-esteem and mastery, and decrease work satisfaction. Only three studies have identified significant moderators of over-qualification and found marital status (Dooley, Prause and Ham-Rowbottom 2000), gender, self-esteem (Prause and Dooley 1997) and social support (Johnson and Johnson 1997) can moderate the effect of over-qualification on outcomes such as depression.

4.1 Gender Differences in the Effects of Underemployment

Women's labour force participation in Canada and the United States has increased dramatically in the past 60 years (Fullerton 1999; Bureau of Labor Statistics 2010; Statistics Canada 2010) and despite the balancing of male to female enrollment in higher education (OECD 2009) women's labour market opportunities and expectations are structured by the gendered division of household labour and social expectations about their roles as caregivers. For example, women often step in and out of the labour force to accommodate childrearing and caregiving responsibilities and are often unable to attain

the same job tenure or promotional opportunities as men. This, combined with the lower pay associated with female dominated occupations (Bergman 2005) has typically left married women to be the secondary earner in relation to their husbands. Power relations based on the relative financial contribution of the spouses perpetuate a gendered division of labour and can constrain women's job searches to a limited geographic area based on proximity to the workplace of their husband, who is often the primary earner (McGoldrick and Robst 1996) which may expose them to differential vulnerability to over-qualification.

Both within families and the labour market, women's work roles are considered supplementary to men's roles as the primary earner, and women are assumed to have less commitment to the workforce (Moen and Chermack 2005). Although work is often seen as a source of identity and status attainment for men, some authors have argued that work does not have the same meaning for women (Rubin 1994; Simon 1995; Wiley 1991). Despite how women's occupational goals are becoming more similar to men's, their emphasis on valuing family has been argued to account for the different career decisions they make (Eccles 1987). In contrast, it is expected that men's fulfillment is achieved through their work role and as primary earner in their family (Moen and Roehlin 2005). Pugliesi (1995) argues that men and women's self concept is socially constructed, making the experience of work and other roles gendered.

Although male and female rates of over-education are similar (Frei and Sousa-Poza 2012; Kalleberg 2008), based on the literature reviewed above, it's expected that the experience of work and over-education varies between men and women. The experience of over-education is expected to be related to the relative meaning or value men and

women place on their work role. For example, men may place more emphasis on their work role as a source of self-esteem and mastery over their lives. Since men are often the primary earner and gain status and self-esteem through their work, it is expected that over-education would have a more detrimental effect on the health and well-being of men than women. In contrast, women's identity and experience of work is often associated with the need to balance caregiving roles and responsibilities, which may allow women to gain some satisfaction and meaning from their roles outside of work, making them less susceptible to the effects of over-education.

4.2 Purpose

This study will contribute to our understanding of the relationships between underemployment and mental health by measuring the effect of over-education on psychological distress in men and women. Potential mediators will be tested using a stress process framework to understand the association between over-education and chronic strain, financial distress, work satisfaction, self-esteem, and mastery, and how these relationships may vary by sex. The following research questions will be addressed:

1) Is the experience of over-education associated with elevated psychological distress?

2) Is over-education associated with chronic strain, financial strain, work satisfaction, self-esteem, or mastery?

3) Does chronic strain, financial strain, work satisfaction, self-esteem, or mastery mediate the relationship between over-education and psychological distress?

4) Do men and women experience the consequences of over-education differently?

4.3 Methods:

The data for this study are derived from a large community-based two wave survey of married couples with at least one child living at home under 18 years of age in London, Ontario, Canada. Interviews were conducted in 1994/5 (Time 1) and in 1996/7 (Time 2) (Avison 2001, Cassidy and Davies 2003). This survey focussed on the effects of recent or previous involuntary job loss and subsequent unemployment of at least four weeks on individuals and their spouses. These data were not collected specifically to study underemployment. Households who had experienced recent unemployment in the four years prior to the study were over-sampled. The period of unemployment experienced by these individuals coincided with the economic recession of the early 1990s in Canada. The remainder of the sample was made up of households who were stably employed without having experienced unemployment for more than four weeks in the past four years. First time job seekers, or those who voluntarily left their jobs were not included in the sample.

To obtain the sample, the Telephone Survey Unit at The University of Western Ontario conducted random digit dial screening survey of the greater London area to identify a geographically stratified random sampling pool of approximately 10,000 married or co-habiting couples with at least one child living at home and identify families where at least one spouse was currently or previously unemployed, or both spouses were stably employed in the past three years. From this pool, the three employment groups were disproportionately sampled with a response rate of 64%, to have an approximately equal number of currently unemployed, previously unemployed, and stably unemployed

families. Face to face interviews and self-report surveys were conducted to obtain detailed work histories and information on a variety of measures of mental health and well-being.

4.3.1 Sample

Of the 897 families (n=1495 males and females) who participated at Time 1, 848 families were re-interviewed at Time 2, representing a total of n=1382 males and females. Only respondents who were employed and working at both time points, and had complete data on educational attainment, occupation level, outcome and control variables were included (n=561). (See Appendix 1 for a description of how the cases were selected for this study.) Data from the second wave of interviews at Time 2 were used in the analysis.

4.3.2 Variables and Measurement:

To measure educational mismatch current jobs reported were coded using the 1993 National Occupational Classification (NOC) developed by Human Resources Canada (HRDC 1993). The NOC classifies occupations using a four digit code. The first digit indicates the skill type; the second digit indicates one of four skill levels according to educational attainment or training. The NOC does not assign a skill level to management occupations and for the purposes of this study, all these occupations are assigned the highest skill level, requiring a university degree. The second highest skill level in the NOC definition requires 2-3 years of post-secondary education, or some combination of apprenticeship training or secondary school and work experience. The

third NOC skill level requires some secondary and work experience, and the lowest skill level requires up to two years of secondary school.

Educational attainment was measured in the survey using years of education and whether they had a high school diploma and a university or college degree. Respondents with at least 16 years of education and a university or college degree were qualified to work at the highest NOC skill level. Respondents with 13 to 15 years of education were qualified to work at the second highest NOC skill level. Individuals in skill level two have between 13-15 years of education. Having between 9 and 12 years of education and a high school diploma qualified respondents for the third NOC skill level. Respondents with less than 13 years of education and no high school diploma were qualified for the lowest NOC skill level. The educational attainment of each respondent was compared to the NOC skill level of their current occupation. Respondents with a higher level of educational attainment than required for their current occupation were considered over-educated for their position. The remaining cases were matched on their educational attainment and NOC skill level. Respondents with a lower level of education than required for their position were excluded from the analysis for the purposes of this study.

4.3.3 Outcome Variable

The mental health outcome was a measure of psychological distress from the Center for Epidemiologic Studies-Depression Scale (CES-D) (Radloff 1977). This is a 20 item self-report scale of depressive symptomatology with possible range of scores from 0-60. Among the questions asked in this scale, respondents indicated whether they experienced any of the following feelings or behaviours in the past 7 days. These

included questions about feeling unusually bothered, could not shake off the blues, experienced a loss of appetite, and hopefulness about the future. scores ranged from 0 for rarely or none of the time, to 3 = most or all of the time.[3] The Cronbach's Alpha for items included in the CES-D scale at Time 1 was .91 for males, and .93 for females; and at Time 2, .88 for males, and .89 for females.

4.3.4 Mediators

Chronic strains were measured using Wheaton's 39 item scale of chronic strains, with possible scores ranging from 39 to 117. Questions included examples of financial strain, problems with children, spouses, care giving, health problems, and work with responses ranging from 1 = not true, to 3 = very true. The Cronbach's Alpha for items included in the scale for chronic strain at Time 1 was .79 for males, and .81 for females; and at Time 2, .79 for males, and .81 for females.

Financial strain was measured using Avison's (1990) 10 item scale of financial difficulties, with a possible score ranging from 10 to 40. Respondents were asked to rate their difficulty providing for housing, food, and other expenditures, ranging from 1 = not at all difficult, to 4 = very difficult. The Cronbach's Alpha for items included in the scale for financial strain at Time 1 was .88 for males, and .87 for females; and at Time 2, .88 for males, and .87 for females.

---

3 Empirical analysis revealed that respondents with a CES-D score greater than or equal to 45 were outliers, and these cases were removed from the analysis (males n=1, females n=1).

Work satisfaction was measured using a nine-item scale of global work satisfaction studied by Avison et al. (1999). The possible range of scores was 9 to 45, and questions were asked about whether work provided them with a satisfactory income, friendships, respect from others, interesting and challenging tasks, and security about the future. Possible responses ranged from 1 = a great deal, to 5 = not at all. The Cronbach's Alpha for items included in the scale for work satisfaction at Time 1 was .86 for males, and .86 for females; and at Time 2, .84 for males, and .86 for females.

Self-esteem was measured using Rosenberg's (1979) 10 item scale, with a possible score ranging from 10 to 50. On this scale, questions were asked about whether the respondent had much to be proud of, had respect for themselves, or were a failure. Responses ranged from 1 = strongly agree to 5 = strongly disagree. The Cronbach's Alpha for items included in the scale for self-esteem at Time 1 was .85 for males, and .87 for females; and at Time 2, .87 for males, and .88 for females.

Mastery was measured using Pearlin and Schooler's (1978) 7 item scale with scores ranging from 7 to 50. Among the questions asked, respondents indicated whether they had the ability to solve the problems they have, or can do anything they set their mind to. Answers to these questions ranged from 1 = strongly agree, to 5 = strongly disagree. The Cronbach's Alpha for items included in the scale for mastery at Time 1 was .72 for males, and .75 for females; and at Time 2, .75 for males, and .76 for females.

4.3.5 Control Variables

Control variables included gender, age, household income in the past year (on a scale from 1 = under $5,000, to 18 = $90,000 or more before tax), whether their spouse was working full-time, and number of children under 18 living in the household.

4.3.6 Analysis

Ordinary least squares (OLS) regression was used to estimate the effect of education-job match on psychological distress, and possible mediators. A dummy variable was constructed to compare over-educated to educationally matched respondents. The reference group used were matched on education-job requirements. Results were computed first for the full sample, and then separately for males and females. Standard error terms in the analyses for the full sample were adjusted for clustering within 456 households, as this was a sample of married individuals. In all analyses, the following demographic and household variables were controlled for, including age, household income, whether the respondent's spouse was employed full-time, and number of children under 18 years living in the household. Interactions were tested between gender, over-education and each of the five mediators. When an interaction was tested between a continuous and discrete variable, the continuous variable was centered using the mean.

4.4 Results

4.4.1 Descriptive Results

Table 4.1 provides the descriptive statistics for the full sample (n=561), and is also presented separately for males (n=252) and females (n=309). A higher proportion of

females in this sample are over-educated than males (38.2% vs. 31.0%). Mean scores for the outcome and each of the mediators are also presented in this table. When looking at both genders together, over-educated respondents have significantly higher mean CES-D, chronic strain, financial strain than matched respondents. Over-educated respondents also have significantly lower mean scores for work satisfaction, self-esteem, and mastery. When looking at each gender separately, over-educated males have higher mean CES-D, and lower mean work satisfaction and self-esteem scores than the matched group. Over-educated females have lower mean work satisfaction, but otherwise, the differences between over-educated and matched females are not significant.

4.4.2 Predictors of CES-D

Over-education increases CES-D in the full sample with an unadjusted slope of 1.73 ($p<.05$) (results not shown). However, once gender was controlled the effect of over-education on CES-D is no longer significant, and the unadjusted slope drops to 1.55. Household income is a highly significant predictor of CES-D ($p<.001$), and when it is added to the model including age, spouse working full-time, and number of children, the unadjusted slope for over-education drops even further to 0.63. Additionally, the effect of each of the possible mediators on CES-D was analyzed, while controlling for demographic and household variables, and they act as expected in a stress process model. Chronic strain and financial strain are highly significant predictors of increased CES-D ($p<.001$), and self-esteem, mastery and work satisfaction were all highly significant predictors of decreased CES-D. The interaction between over-education and gender was tested on the full sample, and was not found to be significant until controls for mastery

and chronic strain were added to the model. Given that males and females differ on their levels of mastery and chronic strain, the remaining analyses were conducted separately for each gender.

Table 4.2 presents the OLS regression results separately for females and males, showing the effects of over-education, demographic and household controls, and a series of stress process constructs on CES-D. First, among females, no relationship is seen between over-education and CES-D (Females Model 1). Age is not a significant predictor of CES-D. Household income is a significant predictor of lowered CES-D among females (Females Model 2), but becomes non-significant when other stress process constructs are controlled. Household income does remain a significant predictor of CES-D however once work satisfaction is controlled for (Females model 5). Having a spouse working full-time is also a significant predictor of lower CES-D among females when controlling for either financial strain, work satisfaction or self-esteem (Females Models 4-6). The number of children among females is also not a significant predictor of CES-D, until chronic strain is controlled for (Females Model 3).

Despite the non-significant effect of over-education on CES-D among females, the stress process constructs operate as expected where chronic strain and financial strain increase CES-D and self-esteem, mastery and work satisfaction decrease CES-D (Females Models 2-7). For females, there is an interaction between over-education and mastery (see Figure 3.1), where over-educated females with higher mastery still experience a significant increase in CES-D ($p<.05$) (Females Model 8). The final model (Females Model 9) includes the effects of all of the demographic and household variables, stress process variables and their interactions with over-education. Over-educated

females with high self-esteem have increased CES-D, compared to educationally matched females. In summary, for females, having a spouse working full-time, self-esteem, and the interaction between self-esteem and over-education, and the interaction between mastery and over-education are all significant predictors of CES-D.

In contrast, when looking at males, over-education has a significant effect on CES-D ($p<.05$) with an unadjusted slope of 3.16 (Males Model 1). After adding the demographic and household variables (Males Model 2), the effect of over-education on CES-D remains significant with an unadjusted slope of 2.58 ($p<.05$). In this model, household income is a significant predictor of reduced CES-D, with an unadjusted slope of -.40 ($p<.01$). Once any of the stress process variables are added to the models, the effect of household income on CES-D is no longer significant and the unadjusted slope decreases (Males Models 3-9). For males, age does not have a significant effect on CES-D and the unadjusted slopes across all models presented are very low, ranging from (-.03 to .05). Having a spouse working full-time is also non- significant across all of the models, however the unadjusted slope for males are positive, indicating a small but non-significant increase in CES-D when males have a spouse working full-time. Number of children also does not have a significant effect on CES-D among males, although the unadjusted slopes are all negative, indicating that CES-D is reduced by children in the home.

When looking at the effect of the stress process constructs, chronic strain reduces the effect of over-education on CES-D among males, decreasing the slope to 2.02 ($p<.05$) (Males Model 3). When financial strain is included in the model, the effect of over-education on CES-D remains significant at the $p<.05$ level, with an unadjusted slope of

2.41 (Males Model 4). Controlling for work satisfaction eliminates the significant effect of over-education on CES-D among males and decreases the unadjusted slope of over-education to 1.40 (Males Model 5). Self-esteem is also a mediator in the relationship between over-education and CES-D among males, and reduces the unadjusted slope even more than when controlling for work satisfaction, to 0.30 (Males Model 6).

Controlling for mastery does not decrease the significant effect of over-education on CES-D among males (Males Model 7); however, there is an interaction (see Figure 3.2) of over-education with mastery on distress (Males Model 8), which is in the opposite direction from the over-education and mastery interaction seen in the female sample. For over-educated males, higher mastery reduces CES-D, and in this model the unadjusted slope of over-education is 1.93, and is no longer significant ($p<.1$).

Figure 3.1 Plot of the Interaction between Over-education and Mastery as a predictor of CES-D values: Female Respondents (n=309)

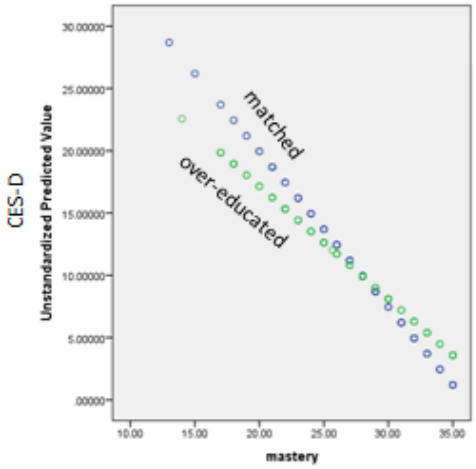
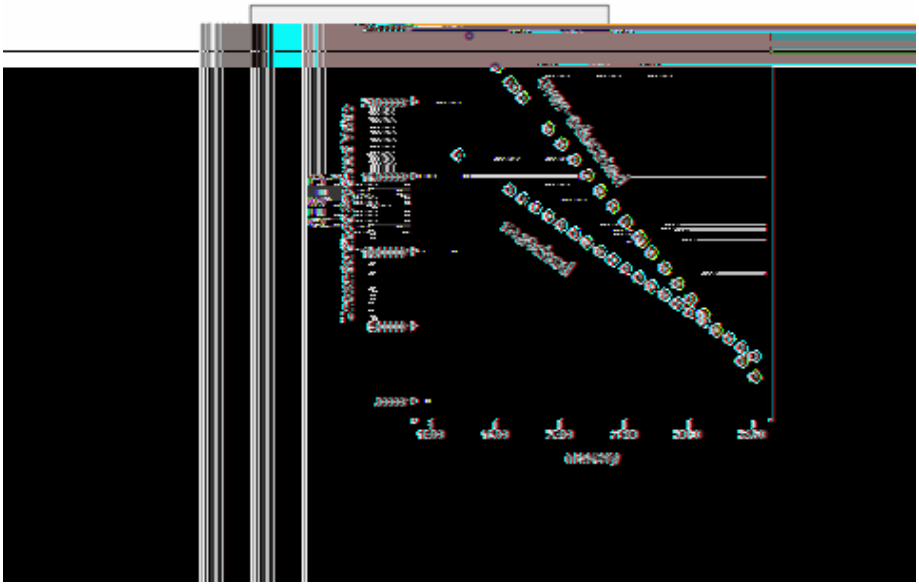


Figure 3.2 Plot of the Interaction between Over-education and Mastery as a predictor of CES-D values: Male Respondents (n=252)



The final model for males presents the effect of each of the stress process constructs and their interactions with over-education, while controlling for demographic and household variables among males (Males Model 9). In this model, over-education does not have a significant effect on CES-D, with an unadjusted slope that has been reduced to 0.60, and self-esteem is the only significant predictor of lower CES-D among males ($p<.01$).

4.4.3 Social Influences on Mediators

To understand the mechanisms operating between the stresses associated with over-education and psychological distress in a stress process framework, the effect of over-education and each of the potential mediators was tested on the full sample using OLS regression (results not shown). Over-education is a significant predictor of increased chronic strain and financial strain, and decreased mastery, even after controlling for gender and age (results not shown). However, household income is also a highly significant predictor of the above outcomes, and once this variable is controlled for their relationship with over-education is no longer significant. When looking at males and females separately, no relationship is found between over-education and the above outcomes (results not shown).

Table 4.3 shows the results from an OLS regression estimating the effect of over-education on self-esteem for females, and then for males. Over-education is not a significant predictor of self-esteem for females with an unadjusted slope of -.36 (Females Model 1). Household income is a highly significant predictor of self-esteem among

females (p<.001) and changes the direction of the slope for over-education to 0.04, indicating that over-educated females with higher household incomes have increased CES-D. Age, having a spouse working full-time, and number of children are all non-significant predictors of self-esteem among females (Females Model 3). Among males however, over-education is a highly significant predictor of lower self-esteem (Males Model 1), with an unadjusted slope of -2.78 (p<.001), even after controlling for the null effect of age. Household income is also a predictor of increased self-esteem among males, and controlling for this in the model decreases the effect of over-education to a less significant unadjusted slope of -2.42 (p<.01) (Males Model 2). Controlling for having a spouse working full-time and number of children in the household does not influence the effect of over-education on self-esteem among males, and the unadjusted slope remains the same at -2.42 (Males Model 3).

Table 4.4 presents the results of an OLS regression predicting the effect of over-education on work satisfaction. Over-educated females have significantly lower work satisfaction than educationally matched respondents even after controlling for the null effect of age (Females Model 1). The unadjusted slope for over-educated females is -1.81 (p<.05). Once household income is entered into the model, the effect of over-education on work satisfaction is no longer significant for females and the unadjusted slope decreases to -1.38 (Females Model 2) and the unadjusted slope further decreases to -1.22 when controlling for the non-significant effects of having a spouse working full-time and number of children in the household (Females Model 3). Over-educated males also have significantly lower work satisfaction (p<.000) with an unadjusted slope of -3.93, even after controlling for the null effect of age in the model (Males Model 1). Among males

however, household income is a significant predictor of work satisfaction, but this does not decrease the significant effect of over-education on work satisfaction as evidenced by only a slightly lower unadjusted slope of -3.43 ($p<.000$) after adding household income to the model (Males Model 2). Controlling for the null effects of having a spouse working full-time and the number of children in the household does not change the effect of over-education on work satisfaction among males, and the unadjusted slope for over-education remains the same at -.343 ($p<.000$) (Males Model 3).

4.5 Discussion

Gender differences in the effect of over-education on psychological distress are highlighted in this study. The males in this sample are most likely to suffer the ill effects of education-job mismatch, while females show no relationship between over-education and psychological distress. This suggests that men and women experience different reactions to the same occupational experiences, and the increased salience of status attainment among highly educated males.

For example, an interesting interaction between over-education, mastery, and CES-D is seen in this study (see Figures 3.1 and 3.2), and it is in an opposite direction for males and females. Low levels of mastery are linked to higher levels of psychological distress. In this study, the relationship between mastery and psychological distress is different for the over-educated and the educationally matched groups, and also varies by gender. For females, over-education combined with low levels of mastery is not associated with the same rise in psychological distress as the educationally matched respondents with low levels of mastery. In contrast, if males are over-educated and are also compromised by lower levels of mastery, this will increase their psychological

distress much more than the males who are educationally matched and are also experiencing low levels of mastery.

For males, underemployment through an inadequate education-job match is a threat to self-esteem. Thus, the self-esteem of the males in this sample is highly linked to their occupational attainment. Decreased self-esteem (Caplan et al. 1975) and diminished self-image (Harvey 1989) were also found in previous studies to explain the link between skill underutilization and psychological well-being.

In contrast, over-education is not a predictor of self-esteem among females and their psychological well-being is not affected by underemployment or the inability to use their education at work. Rather, household income is a highly significant predictor of self-esteem among the females in this sample. Previous research has also found support for the finding that household income is a predictor of self-esteem (Jan and Ashraf 2008; Salsali and Silverstone 2003). Socialization by parents and society teaches individuals indicators of success, and these vary by gender. For the women in this sample, employment status was not a significant predictor of psychological distress.

The lack of association found between over-education and self-esteem or psychological well-being for the women in this sample may be explained by the balancing of multiple roles and the relative meaning of work for women. For example, Pratt and Hanson (1991) argue that women choose part-time work or jobs closer to home to balance their domestic responsibilities. This results in a narrower range of job choices that tend to be in female dominated occupations exhibiting greater pay inequality (Weststar 2011). However, we must question the concept of voluntariness and choice in

the context of employment decisions with an awareness that women are making these choices within the socio-institutional constraints that reinforce a gendered division of labour (Barker 2005; Bergman 2005; Blair-Loy 2003; Spain and Bianchi 1996; Weisberg and Buckler 1994; Vosko and Zukewich 2006).

Erdogan, Bauer, Peiro and Truxillo (2011) state that no studies have examined whether over-education was intentional. However, they argue that there may be many reasons for choosing jobs with low cognitive demands, particularly among college students, new parents and older workers. These employees may be making a choice to increase their satisfaction and time spent in family, marital and leisure domains which may increase their well-being and life satisfaction, offsetting a drop in work satisfaction (Culbertson, Mills and Huffman 2011). This may explain why the over-educated women in this study do not experience an increase in psychological distress, and how once household income was controlled for, over-education no longer has an effect on job satisfaction. Less investment in their occupations may be allowing them to put more effort into other domains where they can gain satisfaction. While for men, work has more meaning attached to it, as it is their primary outlet to sustain their identity and self-esteem.

This study supports previous research identifying the effects of over-education or skill underutilization on negative emotions (Grant and Nadin 2007) mental health (Bolino and Feldman 2000) and depression (Caplan et al. 1975). In addition, the importance of mastery (Crohan, Antonucci and Adelman 1989), self-esteem, and work satisfaction (Pugliesi 1995) as intervening variables between over-education and psychological distress was also found in this study.

4.6 Future Research

Since this study used data collected in the mid 1990s, it is essential that we evaluate whether the results are specific to their historical context, and if this study was conducted today we would find more similar effects of work roles and educational mismatch on mental health and well-being outcomes between men and women. Future research could examine the individual's perceptions of their underemployment, to view them as a person in context, to see where experiences vary (Scott-Marshall, Tompa and Trevthick 2007). In addition, future research could examine the directionality between over-education and psychological distress, to test for social selection effects. Higher levels of psychological distress or lower levels of mastery and self-esteem may make individuals more willing to accept jobs where they are over-educated.

4.7 Conclusion

This study tested for an association between over-education and psychological distress using a stress process framework, to identify mediators in the relationship between underemployment and mental health, including chronic strain, financial distress, work satisfaction, self-esteem and mastery. The data for this research came from a large community-based survey in London, Ontario, Canada collected during the economic recession of the mid 1990s, a time of high unemployment rates (Statistics Canada 2009) and a lack of full-time job creation (Picot and Heisz 2000).

Gender differences were found in the effect of over-education on psychological distress. Over-educated males exhibited increased psychological distress, a relationship which was mediated by self-esteem and work satisfaction. No relationship was found between over-education and psychological distress among the females in this sample.

The results of this study demonstrate how the mechanisms connecting the employment experiences such as over-education to mental health are not universal, and they vary by gender.

4.8 References

Barker, Drucilla K. 2005. "Beyond Women and Economics: Rereading Women's Work". *Signs* 30(4). Retrieved March 6 2012 (http://scholarcommons.sc.edu/cgi/viewcontent.cgi?article=1000&context=wost_facpub&sei-redir=1&referer=http%3A%2F%2Fscholar.google.ca%2Fscholar%3Fhl%3Den%26q%3Dallintitle%253A%2BBeyond%2BWomen%2Band%2BEconomics%26btnG%3DSearch%26as_sdt%3D0%252C5#search=%22allintitle%3A%20Beyond%20Women%20Economics%22).

Bergman, B. 2005. *The Economic Emergence of Women*. New York: Palgrave MacMillan.

Blair-Loy, Mary. 2003. *Competing Devotions: Career and Family among Executive Women*. Cambridge, Mass.: Harvard University Press.

Bolino, Mark. C. and Daniel. C. Feldman. 2000. "The Antecedents and Consequences of Underemployment among Expatriates." *Journal of Organizational Behavior* 21(8). Retrieved March 7 2012 (http://helios.acomp.usf.edu/~tajoseph/article12.pdf).

Bureau of Labor Statistics, United States Department of Labor. 2010. *Employment Situation Summary*. Released January 08, 2010, for December 2009. Retrieved March 7 2012 (http://www.bls.gov/news.release/empsit.nr0.htm).

Burris, Beverly H. 1983. "The Human Effects of Underemployment." *Social Problems* 31(1). Retrieved March 7 2012 (http://www.jstor.org/stable/pdfplus/800412.pdf?acceptTC=true).

Caplan, Robert D., S. Cobb, John R.P. French Jr, R. Van Harrison and S.R. Pinneau Jr. 1975. *Job Demands and Worker Health*: Department of Health, Education and Welfare Publication no. 75-160. Washington, DC: US Department of Health Education and Welfare.

Crohan, Susan. E., Tony C. Antonucci, Pamela K. Adelmann, and Lerita M. Coleman. 1989. "Job Characteristics and Well-being at Midlife: Ethnic and Gender Comparisons." *Psychology of Women Quarterly* 13(2). DOI: 10.1111/j.1471-6402.1989.tb00998.x.

Culbertson, Satoris. S., Maura. J. Mills, and Ann H. Huffman. 2011. "Implications of Overqualification for Work–Family Conflict: Bringing Too Much to the Table?"

Industrial and Organizational Psychology 4(2). Retrieved March 7 2012 (http://onlinelibrary.wiley.com/doi/10.1111/j.1754-9434.2011.01337.x/pdf).

Dooley, David and JoAnn Prause. 2004. *The Social Costs of Underemployment :Inadequate Employment as Disguised Unemployment*. New York: Cambridge University Press.

Dooley, David, JoAnn Prause, and Kathleen A. Ham-Rowbottom. 2000. "Underemployment and Depression: Longitudinal Relationships." *Journal of Health and Social Behavior* 41(4). Retrieved March 7 2012 (http://www.jstor.org/stable/pdfplus/2676295.pdf).

Eccles, Jacquelynne S. 1987. "Gender Roles and Women's Achievement-Related Decisions." *Psychology of Women Quarterly* 11(2). Retrieved March 7 2012 (http://web.ebscohost.com/ehost/pdfviewer/pdfviewer?sid=cbb0018b-b353-47d7-b96a-c834030a37b6%40sessionmgr15&vid=2&hid=126).

Erdogan, Berrin and Talya N. Bauer. 2009. "Perceived Overqualification and its Outcomes: The Moderating Role of Empowerment." *Journal of Applied Psychology* 94(2). Retrieved March 7 2012 (http://journals2.scholarsportal.info/tmp/14632504666709327733.pdf).

Erdogan, Berrin., Tayla N. Bauer, Jose Maria Peiro, and Donald M. Truxillo. 2011. "Overqualified Employees: Making the Best of a Potentially Bad Situation for Individuals and Organizations." *Industrial and Organizational Psychology* 4(2). Retrieved March 9 2012 (http://onlinelibrary.wiley.com/doi/10.1111/j.1754-9434.2011.01330.x/pdf).

Feldman, Daniel .C., Carrie .R. Leana, and Mark C. Bolino. 2002. "Underemployment and relative deprivation among re-employed executives." *Journal of Occupational and Organizational Psychology* 75(4). Retrieved March 8 2012 (http://onlinelibrary.wiley.com/doi/10.1348/096317902321119682/pdf).

Frei, Crista and Alfred Sousa-Poza. 2011. "Overqualification: Permanent Or Transitory?" *Applied Economics* 44(14). Retrieved March 7 2012 (http://www.tandfonline.com/doi/pdf/10.1080/00036846.2011.554380).

Frenette, Marc. 2004. "The Overqualified Canadian Graduate: The Role of the Academic Program in the Incidence, Persistence, and Economic Returns to Over-qualification." *Economics of Education Review* 23(1). Retrieved March 7 2012 (http://journals1.scholarsportal.info/tmp/6656793170710268990.pdf).

Fullerton Jr., Howard N. 1999. "Labor Force Participation: 75 Years of Change, 1950-98 and 1998-2025." *Monthly Labour Review* 122:3. Retrieved March 7 2012

(http://web.ebscohost.com/ehost/pdfviewer/pdfviewer?sid=10d9fd4c-5514-487c-b776-0a75091c2af0%40sessionmgr4&vid=2&hid=126).

Grant, Peter R. and Shevaun Nadin. 2007. "The credentialing problems of foreign trained personnel from Asia and Africa intending to make their home in Canada: A social psychological perspective." *Journal of International Migration and Integration* 8(2). Retrieved March 9 2012 (http://www.metapress.com/content/e18x80g318534189/fulltext.pdf).

Gurr, Ted Robert. 1970. *Why Men Rebel.* New Jersey: Princeton University Press.

Harvey, Michael G. 1989. "Repatriation of Corporate Executives: An Empirical Study." *Journal of International Business Studies* 20(1). Retrieved March 7 2012 (http://www.jstor.org/stable/pdfplus/154796.pdf).

Jahoda, Marie. 1982. *Employment and Unemployment :A Social psychological Analysis*. New York: Cambridge University Press.

Jan, Muzamil and Afiya Ashraf. 2008. "An Assessment of Self-esteem among Women." *Studies of Home and Community* Science 2(2). Retrieved April 24 2012 (http://www.krepublishers.com/02-Journals/S-HCS/HCS-02-0-000-08-Web/HCS-02-2-087-08-Abst-Text/HCS-02-2-133-08-043-Jan-M/HCS-02-2-133-08-043-Jan-M-Tt.pdf).

Johnson, Gloria Jones and W. Roy Johnson. 1992. "Subjective Underemployment and Psychosocial Stress: The Role of Perceived Social and Supervisor Support." *The Journal of Social Psychology* 132(1). Retrieved March 7 2012 (http://web.ebscohost.com/ehost/pdfviewer/pdfviewer?sid=fad5f7ac-0179-4e49-a110-b0ed642aabe1%40sessionmgr10&vid=2&hid=126).

Johnson, Gloria Jones and W. Roy Johnson. 1996. "Perceived Overqualification and Psychological Well-being." *The Journal of Social Psychology* 136(4). Retrieved March 7 2012 (http://web.ebscohost.com/ehost/pdfviewer/pdfviewer?sid=24b46591-0cae-4e10-85bc-578698332bc4%40sessionmgr15&vid=2&hid=126).

Johnson, Gloria Jones and W. Roy Johnson. 1997. "Perceived Overqualification, Emotional Support, and Health." *Journal of Applied Social Psychology* 27(21). Retrieved March 7 2012 (http://journals1.scholarsportal.info/tmp/12530455784709877163.pdf).

Johnson, W. Roy, Paula C. Morrow, and Gloria Jones Johnson. 2002. "An Evaluation of Perceived Overqualification Across Work Settings." *The Journal of Psychology* 136(4). Retrieved March 8 2012

(http://web.ebscohost.com/ehost/pdfviewer/pdfviewer?sid=527d3b5e-6f5c-4487-b4af-e479f76bfe5a%40sessionmgr113&vid=2&hid=107).

Kalleberg, Arne L., 2008. "The Mismatched Worker: When People Don't Fit Their Jobs." *Academy of Management Perspectives* February. Retrieved March 10 2012 (http://web.ebscohost.com/ehost/pdfviewer/pdfviewer?sid=42c82a40-9a4e-4080-bd1b-5fd67fe1b847%40sessionmgr15&vid=2&hid=125).

Li, C., G. Gervais, A. Duval, Statistics Canada. 2006. *The Dynamics of Over-qualification: Canada's Underemployed University Graduates*. Catalogue No: 11-621-MIE. Statistics Canada, Income Statistics Division. Retrieved March 7 2012 (http://site.ebrary.com/lib/uwo/docDetail.action?docID=10119338).

Livingstone, David W. 1999. "Lifelong Learning and Underemployment in the Knowledge Society: A North American Perspective." *Comparative Education* 35(2). Retrieved March 7 2012 (http://www.tandfonline.com/doi/pdf/10.1080/03050069927955).

McGoldrick, KimMarie and John Robst. 1996. "Gender Differences in Over-education: A Test of the Theory of Differential Over-qualification." *The American Economic Review* 86(2). Retrieved March 7 2012 (http://www.jstor.org/stable/pdfplus/2118137.pdf).

Meir, Elchanan I., Samuel Melamed, and Ahmed Abu-Freha. 1990. "Vocational, Avocational, and Skill Utilization Congruences and their Relationship with Well-being in Two Cultures." *Journal of Vocational Behavior* 36(2). Retrieved March 7 2012 (http://pdn.sciencedirect.com/science?_ob=MiamiImageURL&_cid=272611&_user=940030&_pii=000187919090023U&_check=y&_origin=article&_zone=toolbar&_coverDate=30-Apr-1990&view=c&originContentFamily=serial&wchp=dGLbVBA-zSkWz&md5=0b0efc1e355fd8d3947cc42658962779/1-s2.0-000187919090023U-main.pdf).

Moen, Phyllis and Kelly Chermack. 2005. "Gender Disparities in Health: Strategic Selection, Careers, and Cycles of Control." *The Journals of Gerontology* Series B: Psychological Sciences and Social Sciences 60(Special Issue 2). Retrieved March 7 2012 (http://psychsocgerontology.oxfordjournals.org/content/60/Special_Issue_2/S99.full.pdf+html).

Moen, Phyllis and Patricia Roehling. 2005. *The Career Mystique: Cracks in the American Dream*. Lanham, Md.: Rowman & Littlefield.

OECD (Organisation for Economic Co-operation and Development). 2009. *C03-1: Educational attainment by gender and average years spent in formal education.* Paris, France: OECD Family Database. Retrieved March 7 2012 (http://www.oecd.org/dataoecd/56/9/37863998.pdf).

Pearlin, Leonard I. 1989. "The Sociological Study of Stress." *Journal of Health and Social Behavior* 30(3). Retrieved March 7 2012 (http://www.jstor.org/stable/pdfplus/2136956.pdf?acceptTC=true).

Pearlin Leonard I. and Carmi Schooler. 1978. "The structure of coping." *Journal of Health and Social Behavior* 18:2-21.

Pearlin, Leonard I., Elizabeth G. Menaghan, Morton A. Lieberman, and Joseph T. Mullan. 1981. "The Stress Process." *Journal of Health and Social Behavior* 22(4). Retrieved March 7 2012 (http://www.jstor.org/stable/pdfplus/2136676.pdf).

Picot, Garnett and Andrew Heisz. 2000. "The Performance of the 1990s Canadian Labour Market." *Canadian Public Policy*. XXVI Supplement:1. Retrieved March 7 2012 (http://www.jstor.org/stable/pdfplus/3552501.pdf).

Pratt, Geraldine and Susan Hanson. 1991. "Time, Space, and the Occupational Segregation of Women: A Critique of Human Capital Theory." *Geoforum* 22(2): 149-157.

Prause, J. A. and D. Dooley. 1997. "Effect of Underemployment on School-Leavers' Self-Esteem." *Journal of Adolescence* 20(3). Retrieved March 9 2012 (http://journals2.scholarsportal.info/tmp/13902595622522960076.pdf).

Pugliesi, Karen. 1995. "Work and Well-being: Gender Differences in the Psychological Consequences of Employment." *Journal of Health and Social Behavior* 36(1). Retrieved March 7 2012 (http://www.jstor.org/stable/pdfplus/2137287.pdf).

Richards, Ellen W. 1984. "Early Employment Situations and Work Role Satisfaction among Recent College Graduates." *Journal of Vocational Behavior* 24(3). Retrieved March 7 2012 (http://www.sciencedirect.com/science/article/pii/0001879184900149).

Rosenberg, Morris. 1979. *Conceiving the Self*. New York: Basic Books.

Rubin, Lillian B. 1994. *Families on the Fault Line: America's Working Class Speaks about the Family, the Economy, Race, and Ethnicity*. New York: Harper Collins Publishers.

Salsali, Mahnaz and Peter Silverstone. 2003. "Low Self-esteem and Psychiatric Patients: Part II – The Relationship Between Self-esteem and Demographic Factors and

Psychosocial Stressors in Psychiatric Patients." *Annals of General Hospital Psychiatry* 2(3). Retrieved April 24 2012 (http://www.general-hospital-psychiatry.com/content/2/1/3).

Scott-Marshall, Heather, Emile Tompa, and Scott Trevithick. 2007. "The Social Patterning of Underemployment and its Health Consequences." *International Journal of Contemporary Sociology* 44(1):7-34.

Simon, Robin W. 1995. "Gender, Multiple Roles, Role Meaning, and Mental Health." *Journal of Health and Social Behavior* 36(2). Retrieved March 7 2012 (http://www.jstor.org/stable/pdfplus/2137224.pdf).

Smith, Peter and John Frank. 2005. "When Aspirations and Achievements Don't Meet. A Longitudinal Examination of the Differential Effect of Education and Occupational Attainment on Declines in Self-Rated Health among Canadian Labour Force Participants." *International Journal of Epidemiology* 34(4). Retrieved March 7 2012 (http://journals2.scholarsportal.info/tmp/13647165458137580581.pdf).

Spain, Daphene and Suzanne M. Bianchi. 1996. *Balancing Act: Motherhood, Marriage, and Employment among American Women*. New York: Russell Sage Foundation Publications.

Statistics Canada. 2009. *The Canadian Labour Market at a Glance*. Catalogue 71-222-X, page 12. Retrieved March 7 2012 (http://www.statcan.gc.ca/pub/71-222-x/71-222-x2008001-eng.pdf).

Statistics Canada. 2010. *Labour Force and Participation Rate by Sex and Age Group* (CANSIM Table 282-0002). Ottawa, ON: Government of Canada. Retrieved March 7 2012 (http://www40.statcan.ca/101/cst01/labor05-eng.htm#cont).

Tsang, Mun C., Russell W. Rumberger, and Henry M. Levin. 1991. "The Impact of Surplus Schooling on Worker Productivity." *Industrial Relations: A Journal of Economy and Society* 30(2). Retrieved March 7 2012 (http://web.ebscohost.com/ehost/pdfviewer/pdfviewer?sid=e11f6577-a0b7-4ff2-ae37-baf5f8a790e4%40sessionmgr15&vid=2&hid=126).

Vaisey, Stephen. 2006. "Education and its Discontents: Overqualification in America, 1972-2002." *Social Forces* 85(2). Retrieved March 8 2012 (http://www.jstor.org/stable/pdfplus/4494941.pdf?acceptTC=true).

Vosko, Leah and Nancy Zukewich. 2006. "Precarious by choice: Gender and Self-Employment." Pp. 67-89 in *Precarious Employment: Understanding Labour*

Market Insecurity in Canada, edited by L. Vosko. Montreal, Canada: McGill Queen's University Press.

Weisberg, Anne C. and Carol A. Buckler. 1994. *Everything a Working Mother Needs to Know about Pregnancy Rights, Maternity Leave, and Making Her Career Work for Her*. New York: Doubleday.

Weststar, Johanna. 2011. "A Review of Women's Experiences of Three Dimensions of Underemployment." Pp. 105-126 in *Underemployment: Psychological, Economic, and Social Challenges*, edited by D.C. Maynard and D.C. Feldman. New York: Springer.

Wiley, Mary G. 1991. "Gender, Work, and Stress: The Potential Impact of role identity Salience and Commitment." *The Sociological Quarterly* 32(4). Retrieved March 7 2012 (http://www.jstor.org/openurl?volume=32&date=1991&spage=495&issn=00380253&issue=4).

Appendix 4.1 Number of Cases Used in the Analysis

	Both Sexes	Females	Males
Interviewed at Time 1	1495	823	672
Interviewed at Time 1 and Time 2	1382	811	571
Complete data for education and occupation level to allow measurement of education-job match	1350	796	554
Employed and working at both Time 1 and Time 2	850	437	413
Removed undereducated	596	320	276
Removed CES-D outliers	594	319	275
Removed cases missing on any of the control variables or potential mediators (household income, spouse working full-time, number of children, chronic strain, financial strain, work satisfaction, self-esteem, mastery)	561	309	252

Total Number of Cases Available for Analysis n=561

Table 4.1 Descriptive Statistics and Mean Scores, Employment Survey, Time 2

	Both Sexes (n=561)		Females (n=309)		Males (n=252)	
	Matched n=365 (65.1%)	Over-educated n=196 (34.9%)	Matched n=191 (61.8%)	Over-educated n=118 (38.2%)	Matched n=174 (69.0%)	Over educat n=78 (31.0%
CES-D	9.1	10.7*	10.6	10.8	7.5	10.7*
	(9.3)	*(9.2)*	*(10.3)*	*(9.6)*	*(7.6)*	*(8.7)*
Chronic Strain	50.2	51.7*	51.0	52.5	49.3	50.6
	(7.1)	*(8.4)*	*(7.4)*	*(9.0)*	*(6.6)*	*(7.3)*
Financial Strain	7.5	9.1**	8.0	9.5	7.0	8.4
	(6.1)	*(6.5)*	*(6.5)*	*(7.0)*	*(5.6)*	*(5.7)*
Work Satisfaction	35.9	33.2***	35.9	34.1*	36.0	32.0**
	(6.0)	*(7.7)*	*(6.7)*	*(7.6)*	*(5.2)*	*(7.7)*
Self-Esteem	44.0	42.6**	43.7	43.3	44.2	41.5**
	(5.7)	*(6.6)*	*(5.9)*	*(6.3)*	*(5.4)*	*(7.1)*
Mastery	27.4	26.5*	27.5	26.7	27.2	26.3
	(4.7)	*(5.1)*	*(4.9)*	*(5.3)*	*(4.4)*	*(4.8)*

Note: Standard Errors are in Parentheses.
***p<=0.001;**p<=0.01;*p<=0.05, +p<=.10.

Table 4.2 OLS Regression Models Predicting CES-D by Gender, Employment Survey, Time 2

Variable	Females (n=309)									Males (n=252)								
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
Over-educated	0.18	-0.31	-1.01	-0.39	-0.59	-0.22	-0.91	-0.90	-1.06	3.16**	2.58*	2.02*	2.41*	1.40	0.30	2.15*	1.93+	0.60
	(1.18)	(1.16)	(0.99)	(1.15)	(1.15)	(0.97)	(1.01)	(1.00)	(0.88)	(1.08)	(1.10)	(0.91)	(1.06)	(1.10)	(0.79)	(1.01)	(1.01)	(0.80)
Age		-0.04	-0.12	-0.05	-0.05	-0.04	-0.07	-0.08	-0.10		0.03	-0.01	0.03	0.05	-0.03	-0.03	-0.03	-0.05
		(0.09)	(0.08)	(0.09)	(0.09)	(0.08)	(0.08)	(0.08)	(0.07)		(0.08)	(0.07)	(0.08)	(0.08)	(0.06)	(0.07)	(0.07)	(0.05)
Household Income		-0.56***	-0.15	-0.35+	-0.43**	-0.09	-0.24+	-0.23+	0.00		-0.40**	-0.20	-0.12	-0.28+	-0.16	-0.24+	-0.25+	-0.13
		(0.16)	(0.14)	(0.18)	(0.16)	(0.14)	(0.14)	(0.14)	(0.14)		(0.15)	(0.12)	(0.16)	(0.15)	(0.11)	(0.14)	(0.14)	(0.11)
Spouse Working Full-time		-3.05+	-2.62+	-3.30*	-3.49*	-4.09**	-2.43+	-2.42+	-2.99*		0.84	0.87	0.77	0.64	0.23	0.63	0.58	0.30
		(1.59)	(1.36)	(1.59)	(1.59)	(1.33)	(1.38)	(1.37)	(1.21)		(1.04)	(0.86)	(1.00)	(1.01)	(0.73)	(0.95)	(0.95)	(0.70)
Number of Children		-0.78	-0.99*	-0.87	-0.78	-0.22	-0.59	-0.65	-0.57		-0.16	-0.12	-0.18	-0.12	-0.09	-0.00	-0.03	-0.04
		(0.54)	(0.46)	(0.54)	(0.54)	(0.46)	(0.47)	(0.47)	(0.41)		(0.46)	(0.38)	(0.44)	(0.44)	(0.32)	(0.42)	(0.42)	(0.30)
Chronic Strain			0.66***						0.15			0.66***						0.42
			(0.06)						(0.30)			(0.06)						(0.32)
Financial Strain				0.21*					-0.14				0.42***					0.01
				(0.10)					(0.34)				(0.10)					(0.35)
Work Satisfaction					-0.22**				0.24					-0.35***				-0.14
					(0.08)				(0.33)					(0.08)				(0.31)
Self-Esteem						-0.93***			-1.41**						-0.94***			-0.98**
						(0.08)			(0.46)						(0.06)			(0.37)
Mastery							-0.99***	-2.00***	-0.80							-0.71***	0.38	0.32
							(0.10)	(0.47)	(0.54)							(0.10)	(0.51)	(0.45)
Over-educated* Mastery								0.41*	0.15								-0.47*	-0.20
								(0.19)	(0.21)								(0.21)	(0.19)
Over-educated* Chronic Strain									0.12									-0.02
									(0.12)									(0.14)
Over-educated* Financial Strain									0.03									-0.04
									(0.14)									(0.15)
Over-educated* Work Satisfaction									-0.07									0.07
									(0.13)									(0.12)
Over-educated* Self-Esteem									0.38*									0.11
									(0.19)									(0.15)
Constant	10.62	23.42	-12.61	19.63	30.71	57.69	47.25	20.4	18.24	7.49	11.83	-22.08	4.77	21.83	52.77	31.06	12.17	12.4

Note: Standard errors in parentheses

***p<=0.001;**p<=0.01;*p<=0.05, +p<=0.1

Table 4.3 OLS Regression Models Predicting Self-Esteem by Gender, Employment Survey, Time 2

	Females (n=309)			Males (n=252)		
Variable	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Over-educated	-0.36	0.04	0.10	-2.78***	-2.42**	-2.42**
	(0.72)	(0.69)	(0.70)	(0.82)	(0.83)	(0.83)
Age	0.06	0.01	-0.00	-0.03	-0.07	-0.06
	(0.06)	(0.05)	(0.05)	(0.06)	(0.06)	(0.06)
Household Income		0.46***	0.50***		0.24*	0.26*
		(0.09)	(0.09)		(0.11)	(0.11)
Spouse Working Full-time			-1.12			-0.64
			(0.96)			(0.79)
Number of Children			0.61+			0.07
			(0.33)			(0.35)
Constant	41.36	37.28	37.01	45.53	43.6	43.39

Note: Standard errors in parentheses

***p<=0.001;**p<=0.01;*p<=0.05, +p<=0.1

Table 4.4 OLS Regression Models Predicting Work Satisfaction by Gender, Employment Survey, Time 2

	Females (n=309)			Males (n=252)		
Variable	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Over-educated	-1.81*	-1.38+	-1.22	-3.93***	-3.43***	-3.43***
	(0.84)	(0.81)	(0.82)	(0.83)	(0.83)	(0.84)
Age	-0.01	-0.06	-0.07	0.10+	0.05	0.05
	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
Household Income		0.49***	0.56***		0.33**	0.35**
		(0.10)	(0.11)		(0.11)	(0.11)
Spouse Working Full-time			-1.96+			-0.57
			(1.12)			(0.79)
Number of Children			-0.01			0.09
			(0.38)			(0.35)
Constant	36.09	31.77	32.61	31.86	29.16	28.94

Note: Standard errors in parentheses

***p<=0.001;**p<=0.01;*p<=0.05, +p<=0.1

CHAPTER FIVE: CONCLUSION

5.0 Summary of the Research

In this dissertation, three studies centred on the relationship between underemployment and mental health were presented. The first study reviewed the theories used to study the relationship between unemployment, underemployment and adverse health outcomes and critically examined the current measures of underemployment. In it, I proposed a set of ideal indicators of underemployment and the use of a stress process framework to understand the mechanisms linking underemployment to adverse health outcomes. The second and third studies in this dissertation were quantitative analyses of the relationship between underemployment and mental health using data from Avison's Employment Survey (Avison 2001; Cassidy and Davis 2003) a large community-based two wave survey in London, Ontario, Canada in the mid 1990s. The second study used a subset of the ideal indicators of underemployment proposed in the first study to identify a sample of underemployed, adequately employed and unemployed individuals at Time 1 and Time 2 in the Employment Survey. This study tested for social selection and social causation effects between employment status and psychological distress. The third study in this dissertation examined the effects of over-education on psychological distress within a stress process framework to test for the mediating effects of chronic strain, financial strain, work satisfaction, self-esteem, and mastery.

5.1 Summary of the First Study

I addressed two key limitations in underemployment research in the first study (see Chapter Two). First, the lack of an established definition and agreed upon measure of

underemployment within or across disciplines (Feldman 1996), and second, how much of the research on underemployment has been atheoretical and the need to provide theoretical explanations for the exposure to underemployment and subsequent adverse health outcomes . This study reviewed the theories that have been used to explain the relationship between unemployment, underemployment and adverse health outcomes, and critically examined the measures that have been used to study underemployment across the literature. Three broad dimensions of underemployment were identified and their ideal indicators to measure them were outlined. The stress process model was proposed in conjunction with a "benefits of employment" perspective (Dooley and Prause 2004) as a framework to study the stressors associated with various dimensions of underemployment and how they might operate through a series of mediators to influence the experience of adverse health outcomes.

The theories that have been used to explain the relationship between unemployment and adverse health outcomes can be extended to incorporate other forms of employment, including underemployment, providing a theoretical framework and empirical guidelines for studying other forms of employment stress, including that from underemployment. For example, a "benefits of employment" perspective proposed by Dooley and Prause (2004) emerged from Jahoda's functionalist deprivation theory and argues that there are latent and manifest functions of work that are lost when an individual experiences unemployment, including income, time structure, social contacts, purpose, status and activity (Jahoda 1982). Dooley and Prause (2004) argue that when individuals are underemployed in jobs that are economically inadequate they lack some of Jahoda's latent functions of work.

Studies of unemployment have traditionally used a dichotomy to examine differences between those who are employed and unemployed. Instead, we need to consider a range of employment statuses to determine whether the mental health effects of underemployment are similar to those of unemployment (Dooley and Prause 2004). Dooley and Prause (2004) proposed that the transition from adequate employment to underemployment may threaten some workers sense of control, which according to Fryer (1986) would create a sense of loss of primary control over their environment which would lead to frustration and psychological distress. The stress process paradigm (Pearlin 1989; Pearlin et al. 1981) has been the most widely used model to explain the link between unemployment and adverse health outcomes as it assumes that most people benefit from the latent and manifest functions of work (Dooley and Prause 2004). Becoming underemployed can also involve economic and psychosocial losses similar to unemployment, including financial strain and loss of time structure for involuntary part-time workers. Additional strains associated with the stress of unemployment or underemployment, and personal resources of the individual may mediate the effect of the stressors on health outcomes, including chronic strain, financial strain, self-esteem, mastery, and social support.

Social roles and statuses including age, sex, race, marital or socio-economic status can also influence exposure to stress and levels of mediating resources. As a result we can expect a social patterning of stress, including the stresses of underemployment. A life course perspective would allow the study of how the experience of underemployment will vary by age, and access to mediating resources to relieve financial strain, self-esteem, or mastery. Early adversities including underemployment could lead to more difficult work

lives with irregular employment histories and occupational stressors that negatively affect well-being (Pearlin et al. 2005).

After the review of these theories, current measures of underemployment were critically assessed, and three broad dimensions of underemployment were identified. The ideal indicators for the three dimensions of underemployment were outlined and a description of how they would operate within a stress process framework was provided. Financial strain, self-esteem and mastery were proposed as mediators of the effect of underemployment on adverse health outcomes.

The most influential model of underemployment processes has been Hauser's (1974) Labor Utilization Framework (LUF), which was originally comprised of six mutually exclusive categories in hierarchical order to represent a continuum of labour market hardship ranging from sub-employed or those dropping out of the labour force, unemployed, hours underemployed, income underemployed with pay less than the poverty level, mismatch between occupation and education, and adequately employed. Hauser's framework does not allow for the experience of multiple types of underemployment at once, and only measures the prevalence of underemployment, without regard to the extent experienced or perceived by the individual. This framework has been adapted by many other researchers as their basis for measuring underemployment (Clogg 1979; Clogg, Sullivan and Mutchler 1986; Sullivan 1978). Many researchers have used some combination of hours, income and mismatch to measure underemployment across disciplines, but they have not come to an agreement about which components are essential, or how they should be operationalized and

measured. As a result, underemployment has not been used as an official labour market indicator alongside measures of unemployment.

From my review of the literature on measures of underemployment and the theories used to explain the relationships between unemployment, underemployment and mental health, three broad dimensions of underemployment were identified. Each of these dimensions represents a form of mismatch. First, a resource mismatch is between the income, benefits and hours desired by the individual and those provided by the job. Occupational mismatch is between the requirements of the job, and the individual's educational attainment, skills, and field of training. Finally, social psychological mismatch is between the individual's obtained occupational status and opportunity to develop to their potential and their desired or expected occupational status. The ideal indicators to measure each of these dimensions and their components were described.

To understand the relationship between each of these dimensions of underemployment and adverse health outcomes, the stress process framework was proposed. Potential mechanisms linking the stressors associated with underemployment to adverse health outcomes were outlined, including financial strain, self-esteem, and mastery. Several hypotheses were made about the relationship between each of the dimensions of underemployment and the potential mechanisms. In this model, self-esteem and mastery would decrease when experiencing any one of the three types of mismatch. However, high self-esteem or mastery could protect against increased psychological distress from underemployment. Occupational mismatch would result in lower income and benefits also experienced during resource mismatch, leading to an increase in financial strain unless the individual had higher household income to mitigate

these effects. Finally, occupational mismatch would increase perceived over-qualification as a form of social psychological mismatch.

5.2 Summary of the Second Study

Few longitudinal studies have evaluated the social selection and social causation debate over employment status and mental health. Most of the research on change of employment has tested the social causation hypothesis that underemployment or unemployment cause mental health problems. This study (see Chapter Three) tested for an increase in psychological distress at Time 2 among those who experienced a negative employment transition by moving from adequate employment at Time 1 to either underemployment or unemployment at Time 2. It also determined whether increased psychological distress at Time 1 predicted job loss, or moving from adequate employment to underemployment by Time 2.

Three groups of individuals were identified among the respondents, including underemployed, adequately employed, and unemployed. The underemployed were identified with the indicators developed in the first study. These included those who were income underemployed with a lower income than in a previous job, benefits underemployed with fewer economic benefits provided by their employer than in a previous job, and hours underemployed, through involuntary part-time employment. In addition, occupational mismatch through over-education was measured by comparing educational attainment to the requirements of the job as indicated in the National Occupational Classification system (Statistics Canada 2001). Other measures of mismatch between skills or field of training or any of the elements of the social psychological mismatch dimension, including perceived underemployment, status

mismatch, or development of potential were not measurable using this data source and therefore were not included.

Future research could use data measuring aspects of social psychological mismatch, particularly perceived underemployment, and describe whether and how these types of underemployment are associated. For example, is perceived underemployment more prevalent than objective measures of resource or occupational mismatch? Does objective underemployment predict perceived underemployment? An examination of the correlation between over-education and perceived mismatch would help to validate the measure of over-education using the National Occupational Classification categories (HRDC 1993). In addition, qualitative research could examine what factors people use to evaluate their own underemployment.

In the second study (Chapter Three), high levels of psychological distress selected respondents into unemployment between interviews, but did not determine whether respondents became underemployed or adequately employed when they were re-employed. Social causation effects were only found with individuals became unemployed by Time 2 who exhibited an increase in psychological distress. Thus, support for a reciprocal process involving both social selection and social causation was found in the second study, where individuals with elevated psychological distress had higher odds of being selected into job loss between waves or unemployment by Time 2. Becoming or being unemployed was also associated with increased psychological distress, supporting the social causation hypothesis. However, no evidence of selection or causation was found between underemployment and psychological distress. Becoming underemployed by Time 2 did not increase psychological distress. Gender differences

were not found in this study, with the exception of the higher psychological distress found among higher educated males who became unemployed.

By using both waves of the Employment Survey, the second study was able to partially estimate social causation effects by controlling for baseline psychological distress at Time 1; however, the two year interval between survey waves also allowed room for other intervening events, preventing a clear picture of the ordering of employment changes and health effects. Future research could follow respondents through each week of their unemployment and re-employment period to determine whether the experience of becoming underemployed is a relief to unemployed individuals who are happy to be re-employed, or whether the negative experience of being underemployed decreases over time.

5.3 Summary of the Third Study

The third study in this dissertation focussed on the effect of over-education on psychological distress within a stress process model (see Chapter Four). Since the majority of respondents who were underemployed in the second study were underemployed through over-education, I chose to focus this study on the effects of over-education on psychological distress. Potential mediators in the relationship were tested, including those hypothesized in the first study to link the stresses of underemployment to adverse outcomes such as financial strain, self-esteem, and mastery. Two additional mediators were also included in this study, chronic strain and work satisfaction. This study evaluated whether the experience of over-education was associated with elevated psychological distress among respondents at Time 2, and whether over-education increased chronic strain, financial strain, and decreased work satisfaction, self-esteem,

and mastery. These variables were also tested as mediators of the relationship between over-education and psychological distress.

The third study (Chapter Four) found that over-education increased psychological distress in the overall sample, until gender was controlled for. The interaction between over-education and gender was tested, but was not significant unless chronic strain and mastery were added to the model. Given that males and females differ in their levels of chronic strain and mastery, the remaining analyses were conducted separately by gender. Gender differences in the effect of over-education were highlighted in this study. Among females, over-education was not a significant predictor of psychological distress or self-esteem nor was it a significant predictor of work satisfaction until household income was controlled for. Among males, over-education was a significant predictor of psychological distress, self-esteem and work satisfaction. In addition, for males, self-esteem, work satisfaction and mastery mediated the relationship between over-education and psychological distress. For both genders there was an interaction between over-education and mastery, although they operated in different directions. For females over-education and high mastery resulted in higher psychological distress, whereas over-educated males with high mastery acted as mediator serving to lower psychological distress and the effect of over-education.

Overall, the males in this study were most likely to suffer the ill effects of occupational mismatch through over-education, while there was no relationship between over-education and psychological distress among females. The self-esteem of males in this study was strongly linked to their occupational attainment, while the females in this study were not affected by underemployment or the inability to use their education at

work. These findings suggest that men and women experience different reactions to the same occupational experiences and may indicate the increased salience of status attainment among highly educated males. The lack of association between over-education and self-esteem or psychological well-being for women in this sample may be explained by the balancing of multiple roles and the relative meaning of work for women. For example, Pratt and Hanson (1991) have argued that women choose part-time work or jobs closer to home to balance their domestic responsibilities, and may result in greater pay inequality (Weststar 2011) and risk of underemployment through over-education. However, we must question the concept of choice in the decision to accept work where one is over-qualified, as women are making these decisions within the socio-institutional constraints that reinforce a gendered division of labour (Barker 2005; Bergman 2005; Blair-Loy 2003; Spain and Bianchi 1996; Weisberg and Buckler 1994; Vosko and Zukewich 2006). Despite the absence of studies that have measured whether over-education was intentional (Erdogan et al. 2011), there may be many reasons for choosing jobs with low cognitive demands, where employees may be making a choice to increase their satisfaction and time spent with family, marital and leisure domains, which may offset a decrease in work satisfaction (Culbertson, Mills and Huffman 2011). This may explain why the women in this sample who were over-educated did not experience an increase in psychological distress, and why their work satisfaction was no longer diminished once they controlled for household income.

Future research using a more recent data set may help to evaluate whether women's attitudes towards work have changed since the mid 1990s. For example, whether individuals choose jobs where they are over-educated, and why they might do so.

The Employment Survey data were also limited to married respondents in clusters of households. Future research could test for an effect of marital status on women's relationship between underemployment and psychological distress as it is hypothesized that unmarried females (particularly those with children) may place more importance on employment status and have greater psychological distress when faced with the stress associated with lower earnings, fewer benefits, involuntary part-time work, or the inability to use their education. There may be differences in the prevalence and effects of underemployment along other social status indicators, including age, and minority or immigrant status. In addition, a life course perspective applied to the stress process framework would identify how location in the life course affects exposure and reactions to underemployment, and how repeated experiences of underemployment over time may result in cumulative disadvantage over the life course.

5.4 Connections among the three studies

Contrary to my hypothesis in the first study, the effect of a transition from adequate employment to underemployment evaluated in the second study did not increase psychological distress among individuals. Rather, the transition to unemployment was associated with an increase in psychological distress. A reciprocal relationship was found in the second study between unemployment and psychological distress, where heightened distress selected individuals into job loss, and the loss of a job increased psychological distress. The same process was not found with underemployment, supporting the hypothesis that for these individuals having any job may be better than no job.

The third study focussed on the experience of over-education as a form of underemployment, and found over-education to be associated with elevated psychological

distress in a cross-sectional analysis at Time 2. Future research could use both Time 1 and Time 2 data to determine whether the transition to over-education increases psychological distress.

In the first study, I hypothesized the importance of mastery and self-esteem in mediating the relationship between occupational mismatch and psychological distress. This hypothesis was supported by the findings in the third paper, where an interaction between over-education and mastery was found for both males and females. In particular, over-educated males with high levels of mastery served a protective effect on their psychological distress, an effect that was not seen among matched males with high levels of mastery. Self-esteem was also found to be an important mediator in the relationship between over-education and psychological distress among males. For males, over-education greatly reduced self-esteem, and when self-esteem was controlled for, the relationship between over-education and psychological distress was eliminated. For the females in this sample, self-esteem was not affected by over-education, signalling the reduced importance of employment for these women's self-concept.

In the second study, males had lower predicted psychological distress than females; however, among the higher educated males greater psychological distress was experienced after becoming unemployed than was experienced for females. In the third study distinct gender differences were found in the reaction to over-education, where only males exhibited higher psychological distress and lower self-esteem while over-educated, and females did not show the same relationship. Over-education however decreased work satisfaction among males and females, however for females, this relationship disappeared once household income was controlled for.

These gender differences suggest that men and women demonstrate different reactions to the experience of over-education, and perhaps the increased salience of status attainment among highly educated males. Over-education did not affect the self-esteem or psychological distress of the women in this study, suggesting a gender difference in the relative meaning of work for women. The women in this study may have gained satisfaction and meaning from roles outside of the workplace including domestic and childbearing roles, whereas for men, work was their primary outlet to sustain their identity and self-esteem.

5.5 Support for a theoretical framework to study underemployment and mental health

The two major theoretical frameworks examined in this study included the "benefits of employment" perspective (Dooley and Prause 2004), and the stress process model (Pearlin 1989; Pearlin et al. 1981). Evidence for the "benefits of employment" perspective was mixed, however support was found for the use of the stress process model to study the relationship between underemployment and adverse health outcomes. To begin, Dooley and Prause (2004) proposed the use of a benefits of employment perspective to understand the increase in psychological distress exhibited after losing adequate employment and becoming unemployed or underemployed, arguing that this transition resulted in the loss of some or all of the latent and manifest benefits of work proposed by Jahoda's deprivation theory of unemployment (1982). Only partial support for this perspective was found in the second study where individuals who lost employment exhibited higher psychological distress. In contrast, when individuals lost adequate employment and became underemployed psychological distress was not

increased, despite how they were losing some of the benefits of work as measured through the multiple indicators of underemployment, including a drop in income or benefits in a new job, involuntary part-time work, and use of education. These findings can be explained by how the movement to a new job after a period of unemployment may reinstate some of the benefits of work such as income and time structure, and thus provide a cushion of time before the effects of underemployment or over-education are felt. Likewise, the losses expected with becoming unemployed may not be immediate because an individual still has savings or household income to rely on, and may initially find time structure and purpose through job searching, catching up on household tasks, or the extra time available to spend with their families. It would be interesting to investigate whether the experience of becoming unemployed or underemployed is felt immediately, or develops and changes over time. In addition, future research could measure the amount of underemployment experienced by individuals as measured by two or more components, and how this may increase psychological distress.

Support for the use of the stress process model was found in the third study demonstrating how it can be used as a framework for understanding the experience and psychological effects of employment on health outcomes. In the third study, over-education increased psychological distress in males, and operated through the mediators of self-esteem, mastery, chronic strain and work satisfaction.

5.6 Conclusion

This dissertation contributes to the literature on underemployment and mental health in three ways:

First, by providing a set of ideal indicators of underemployment that can be used across disciplines. These indicators fall under three dimensions of underemployment including resource mismatch, occupational mismatch and social psychological mismatch, and are all designed to measure underemployment as a condition experienced by the individual and not necessarily an inherent feature of the job itself.

Second, this dissertation tests the stress process model and benefits of employment perspective as a theoretical framework for understanding the relationship between underemployment and adverse health outcomes. In this framework, underemployment experienced through over-education is associated with increased psychological distress among males, and is mediated by mastery, self-esteem, and work satisfaction. Over-educated females do not experience the same adverse health consequences, suggesting the lower salience of work for women's identities and mental health.

Finally, by conducting a study using longitudinal data this dissertation contributes to the literature on social causation and social selection and finds a reciprocal relationship between unemployment and psychological distress. Social selection and social causation processes do not operate in the relationship between underemployment and psychological distress, suggesting the benefits of employment perspective only applies to the loss of

employment, and even underemployed individuals are benefiting from their employment, protecting them from increased psychological distress.

In summary, the above findings promote the use of a unified set of measures for underemployment across disciplines, and the use of the stress process model to study the relationship between underemployment, unemployment and adverse health outcomes.

5.7 References

Avison, William R. 2001. "Unemployment And Its Consequences For Mental Health." Pp. 177-200 in *Restructuring Work and the Life Course*, edited by V. W. Marshall, W.R. Heinz, H. Kruger, and A. Verma. Toronto, Ontario, Canada: University of Toronto Press.

Barker, Drucilla K. 2005. "Beyond Women and Economics: Rereading Women's Work". *Signs* 30(4). Retrieved March 6 2012 (http://scholarcommons.sc.edu/cgi/viewcontent.cgi?article=1000&context=wost_facpub&sei-redir=1&referer=http%3A%2F%2Fscholar.google.ca%2Fscholar%3Fhl%3Den%26q%3Dallintitle%253A%2BBeyond%2BWomen%2Band%2BEconomics%26btnG%3DSearch%26as_sdt%3D0%252C5#search=%22allintitle%3A%20Beyond%20Women%20Economics%22).

Bergman, B. 2005. *The Economic Emergence of Women*. New York: Palgrave MacMillan.

Blair-Loy, Mary. 2003. *Competing Devotions: Career and Family among Executive Women*. Cambridge, Mass.: Harvard University Press.

Cassidy, Gail. L. and Lorraine Davies. 2003. "Explaining Gender Differences in Mastery among Married Parents." *Social Psychology Quarterly* 66(1). Retrieved March 7 2012 (http://www.jstor.org/stable/pdfplus/3090140.pdf).

Clogg, Clifford C. 1979. *Measuring Underemployment :Demographic Indicators for the United States*. New York; Toronto: Academic Press.

Clogg, Clifford. C., Teresa A. Sullivan, and Jan E. Mutchler. 1986. "Measuring Underemployment and Inequality in the Work Force." *Social Indicators Research* 18(4). Retrieved March 7 2012 (http://www.springerlink.com/content/j7864052337k2245/fulltext.pdf).

Culbertson, Satoris. S., Maura. J. Mills, and Ann H. Huffman. 2011. "Implications of Overqualification for Work–Family Conflict: Bringing Too Much to the Table?" *Industrial and Organizational Psychology* 4(2). Retrieved March 7 2012 (http://onlinelibrary.wiley.com/doi/10.1111/j.1754-9434.2011.01337.x/pdf).

Dooley, David and JoAnn Prause. 2004. *The Social Costs of Underemployment :Inadequate Employment as Disguised Unemployment.* New York: Cambridge University Press.

Erdogan, Berrin., Tayla N. Bauer, Jose Maria Peiro, and Donald M. Truxillo. 2011. "Overqualified Employees: Making the Best of a Potentially Bad Situation for Individuals and Organizations." *Industrial and Organizational Psychology* 4(2). Retrieved March 9 2012 (http://onlinelibrary.wiley.com/doi/10.1111/j.1754-9434.2011.01330.x/pdf).

Feldman, Daniel C. 1996. "The Nature, Antecedents and Consequences of Underemployment." *Journal of Management* 22(3). Retrieved March 7 2012 (http://journals1.scholarsportal.info/tmp/17543244007352185903.pdf).

Fryer, David. 1986. "Employment Deprivation and Personal Agency during Unemployment: A Critical Discussion of Jahoda's Explanation of the Psychological Effects of Unemployment." *Social Behaviour* 1(1):3-23.

Hauser, P. M. 1974. "The Measurement of Labor Utilization." *Malayan Economic Review* 19(1):1-15.

HRDC (Human Resources Development Canada). 1993. *1991 National Occupational Classification: Occupational Descriptions*. Ottawa: Ministry of Supply and Services, Cat. MP53–25/1–1993E.

Jahoda, Marie. 1982. *Employment and Unemployment :A Social psychological Analysis*. New York: Cambridge University Press.

Pearlin, Leonard I. 1989. "The Sociological Study of Stress." *Journal of Health and Social Behavior* 30(3). Retrieved March 7 2012 (http://www.jstor.org/stable/pdfplus/2136956.pdf?acceptTC=true).

Pearlin, Leonard I., Elizabeth G. Menaghan, Morton A. Lieberman, and Joseph T. Mullan. 1981. "The Stress Process." *Journal of Health and Social Behavior* 22(4). Retrieved March 7 2012 (http://www.jstor.org/stable/pdfplus/2136676.pdf).

Pearlin, Leonard I., Scott Schieman, Elena M. Fazio, and Stephen C. Meersman. 2005. "Stress, Health, and the Life Course: Some Conceptual Perspectives." *Journal of Health and Social Behavior* 46(2). Retrieved March 7 2012 (http://www.jstor.org/stable/pdfplus/4150398.pdf).

Pratt, Geraldine and Susan Hanson. 1991. "Time, Space, and the Occupational Segregation of Women: A Critique of Human Capital Theory." *Geoforum* 22(2): 149-157.

Spain, Daphene and Suzanne M. Bianchi. 1996. *Balancing Act: Motherhood, Marriage, and Employment among American Women*. New York: Russell Sage Foundation Publications.

Sullivan, Teresa A. 1978. *Marginal Workers, Marginal Jobs: The Underutilization of American Workers*. Texas: University of Texas Press.

Vosko, Leah and Nancy Zukewich. 2006. “Precarious by choice: Gender and Self-Employment.” Pp. 67-89 in *Precarious Employment: Understanding Labour Market Insecurity in Canada,* edited by L.

Weisberg, Anne C. and Carol A. Buckler. 1994. *Everything a Working Mother Needs to Know about Pregnancy Rights, Maternity Leave, and Making Her Career Work for Her*. New York: Doubleday.

Weststar, Johanna. 2011. "A Review of Women’s Experiences of Three Dimensions of Underemployment." Pp. 105-126 in *Underemployment: Psychological, Economic, and Social Challenges*, edited by D.C. Maynard and D.C. Feldman. New York: Springer.

CURRICULUM VITAE

Name:	Heather Lorraine Maddocks
Post-secondary Education and Degrees:	The University of Western Ontario London, Ontario, Canada 1997-2001 B.A. University of Toronto Toronto, Ontario, Canada 2001-2003 M.A. The University of Western Ontario London, Ontario, Canada 2005-2012 Ph.D.
Honours and Awards:	Gold Medal, Department of Sociology The University of Western Ontario 2001 Sociology Undergraduate Award The University of Western Ontario 2001 Ontario Graduate Scholarship 2001-2001 and 2002-2003
Related Work Experience:	Graduate Research Assistant Centre for Studies in Family Medicine The University of Western Ontario 2007-2012 Teaching Assistant The University of Western Ontario 2005-2007 Teaching Assistant University of Toronto 2001-2003

Publications:

Maddocks, Heather, Moira Stewart, Amardeep Thind, Amanda Terry, Vijaya Chevendra, J. Neil Marshall, Louisa Bestard Denomme. 2012. "Feedback and Training Tool to Improve Provision of Preventive Care by Physicians using EMRs." *Informatics in Primary Care* (In Press).

Maddocks, Heather, J. Neil Marshall, Moira Stewart, Amanda Terry, Sonny Cejic, John Hammond, Jennifer Jordan, Vijaya Chevendra, Louisa Bestard Dennome, Amardeep Thind. 2010. "Quality of Congestive Heart Failure Care: Assessing a Measure Using Electronic Medical Records from Primary Care Practices." *Canadian Family Physician* 56(December).

Publications, Contributing Author:

Fortin M, Stewart M, Poitras M, Almirall J, Maddocks H. 2012. "A Systematic Review of Prevalence Studies on Multimorbidity in Primary Care and General Population Contexts: Towards a More Uniform Methodology." *Annals of Family Medicine* 10(2):141-151.

Shadd J, Ryan B, Maddocks H, Thind A, Stewart M. 2012. "Patterns of Specialty Medical Referral - What Can We Learn from a Primary Health Care Electronic Medical Record Database?" *Informatics in Primary Care* (In Press).

Thind A, Stewart M, Manuel D, Freeman T, Terry A, Chevendra V, Maddocks H, Marshall NL. 2012. What are wait times to see a specialist? An analysis of 16115 referrals in South□western Ontario. *Healthcare Policy* (In Press).

Zibrowski E, Singh I, Goldszmidt M, Watling C, Kenyon CF, Schulz V, Maddocks H, Lingard L. 2009. "The sum of the parts detracts from the intended whole: competencies and in-training assessments." *Medical Education* 43:741-748.

Watling C, Kenyon C, Zibrowski E, Schulz V, Goldszmidt M, Singh I, Maddocks H, Lingard L. 2008. "Rules of Engagement: Residents' Perceptions of the In-Training Evaluation Process." *Academic Medicine* 83(10):S97-100.