Involuntary Delayed Retirement and Mental Health of Older Adults Following the Great Recession

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Involuntary Delayed Retirement and Mental Health of Older Adults Following the Great Recession

by

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ABSTRACT

This thesis examines whether involuntary delayed retirement (IDR) is associated with multiple measures of mental health in working older adults (age 65+) in the United States following the Great Recession. In addition, two other related aims are also addressed in this thesis: 1) whether IDR is associated with multiple measures of mental health through a lower sense of control, and 2) whether a sense of control buffers the association between IDR and multiple mental health measures. Data were derived from the Health and Retirement Study, focusing on two combined waves of working older adults in 2010 and 2012 (N=947). IDR was measured as wanting to stop working but not being able to due to financial constraints. In addition, mental health outcomes included depression, anxiety, anger-in and anger-out, and life satisfaction. Using Stata 16.0, primary analyses were conducted with ordinary least squares (OLS) regression. The bootstrapping approach to testing mediation was followed for testing whether the sense of control mediated each association between IDR and the mental health outcomes. Interactions were tested to assess whether the sense of control moderated the relationship between IDR and the mental health outcomes. Results showed that older adults who worked after retirement age (age 65+) often experienced IDR. Furthermore, the results showed a lack of overall association between IDR and multiple mental health outcomes, but also demonstrated indirect relationships between IDR and depression, anxiety, anger-out, and life satisfaction through a sense of control. In addition, the sense of control did not act as a buffering agent in the relationship between IDR and mental health. While there is no overall association, there is an indirect deleterious effect, which suggests that IDR may have additional beneficial effects that should be investigated in future research. The findings also suggest that a sense of control is an essential mental health resource for older adults who work past retirement age. Mental health researchers, therefore, should pay more attention to a
sense of control because the sense of control will help older adults maintain positive mental health even if they are required to work past retirement age.

*Keywords: mental health, older adults, Great Recession, involuntary delayed retirement*
Preface

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Dedication

*By the grace of Almighty Allah. In memory of my parents, with grateful for all they provided.*
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Chapter One - Introduction

This study examines the relationship between involuntary delayed retirement (IDR) and mental health among working older adults by focusing on job lock. IDR creates job lock among older workers who would like to retire but cannot stop working because of insufficient financial resources (Benjamin, Pransky, and Savageau 2008). The long-term financial crisis created by the Great Recession in 2007-2008 impacted Americans of all ages, but the economic effect was more widespread on the older American population (Population Reference Bureau 2015). A survey conducted by the American Association of Retired Persons (2011) demonstrated that the Great Recession in 2007-2009 changed the retirement expectations of millions of older Americans, and they were planning to work longer because of not having sufficient savings. Collins and Casey (2017) show that many older Americans plan to continue their job beyond the retirement age due to insufficient post-retirement financial protection. That is, more senior workers today are facing unexpected economic barriers that prolong their working lives, which may contribute to poor health and mortality for many older workers (Taylor 2019). Therefore, given the evidence of the changing economic and retirement landscape, an important question arises regarding prolonged employment and its consequences on the working older population (Furunes et al. 2015).

Being locked in a job due to financial reasons may have deleterious effects on older adults' different dimensions of mental health. Prior research studied the association between working longer and older workers’ well-being and found that prolonged employment may not be suitable for many older workers' health and well-being because working beyond traditional retirement age accounts for health-related injuries and problems in personal life (Taylor 2019). Moreover, research on job lock, work, and the psychological well-being of older adults shows that IDR experiences have significant negative consequences on older
adults' well-being (Fisher et al. 2016). However, this research looked only at one aspect of mental health: life satisfaction in older adults between the ages of 62 and 65. Studies examining job lock have defined the phenomenon based on middle-aged employees' inability to move from their current job due to retaining employer benefits (Kapur 1998; Madrian 1994). The idea of job lock has also been applied to a sample of older employees with recent injuries who cannot decide about their retirement due to financial reasons, which is significantly linked to poor health and mental functioning (Benjamin, Pransky, and Savageau 2008). While there is evidence that job lock due to the need for money may be associated with older people's life satisfaction, how job lock is associated with multiple dimensions of mental health in older workers aged 65 and over has not been previously examined. Thus, examining the relationship between IDR and different dimensions of mental health outcomes is essential for a better understanding of the association between working beyond the retirement age and older adults' well-being.

In studying the association between IDR and mental health, an important issue is how best to frame mental health outcomes (Aneshensel 2002; Kessler 2002; Mirowsky and Ross 2002). Mental disorders can be categorized using either a diagnostic approach or a dimensional approach of measurement (Kraemer, Noda, and O'Hara 2004). Whereas a dimensional approach to mental health assesses both the type and the severity of the mental health problem along a continuum, a single-disorder approach analyzes people's mental health following discreet categories based only on clear-cut thresholds (Mirowsky and Ross 2002). The single-disorder measurement of mental health defines clear-cut thresholds by focusing on either the absence or presence of a single disorder, such as depressed versus not.

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1 Fisher et al. (2016) examined job lock and well-being in older workers aged 62-65 in the U.S. who would like to retire or stop working altogether but cannot retire due to needing the income and/or health insurance. Using data from the Health and Retirement Study (HRS), this study found that job lock due to money was significantly associated with lower life satisfaction in older workers.
depressed or anxious versus not anxious (Aneshensel 2005; Kessler 2002; Bjelland et al. 2009). In doing so, the categorical diagnosis may ignore people's feelings and cognitions and may categorize people as mentally healthy who do not have the specific mental disorder in the investigation (Aneshensel 2005; Potuzak et al. 2012). Thus, researchers suggest using a dimensional approach over the categorical approach to obtain a more valid gauge of the range of mental disturbance, especially in terms of gradients in the population (Andrews et al. 2007; Goldberg 2000; Kessler et al. 1994). This thesis will therefore look at dimensional measures of multiple mental health outcomes.

Mental health is a complex and multidimensional construct described differently by researchers using multi-item measures of well-being (Deci and Ryan 2008). The World Health Organization (WHO) considers mental health is an absence of mental illness and defines mental health as “... a state of well-being in which an individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and can make a contribution to his or her community” (WHO 2001:1). Keyes defines people’s mental health using emotional, psychological, and social well-being that highlights two important aspects of well-being including levels of positive emotions and effective functioning (Keyes 2013; Keyes 2006). However, defining mental health based only on levels of positive feelings and functioning raises important concerns because individuals may also experience negative emotions in their life (Galderisi et al. 2015; Horwitz 2002). According to Aneshensel "the mental health consequences of social organization are typically assumed to be nonspecific, not limited to one particular disorder" (Aneshensel 2005:223). Symptoms of mental health syndromes reflect related but distinct dimensions of positive feelings, absence of negative emotions, and life satisfaction in a continuum (Keyes 2002). Therefore, researchers should emphasize multiple mental health measures in addressing the mental health impacts of social arrangements.
Since the impact of stressful life events can have influences across different aspects of mental health, using multiple outcomes will generally be a favorable way to capture the broader impacts of social stresses on mental health (Mirowsky and Ross 2002). A single-disorder approach to mental health is insufficient for specifying the general mental health impacts of social structure because effects of stress are likely to be felt in multiple ways, such as depression and substance abuse and symptoms of nonspecific psychological distress, antisocial behavior, anger, anxiety, and personality disorder (Aneshensel 2005; Aneshensel, Rutter, and Lachenbruch 1991; Barrett 2000; Simon 2002). Research shows that the impact of social arrangements on mental health may also be reflected by individuals' life satisfaction, which is an indicator of overall subjective well-being (Lucas et al. 2004). Since social forces may exert a broad scope of effects on peoples' well-being, researchers will obtain a biased estimate of mental health impacts of social arrangements by ignoring the full ranges of relevant mental health symptoms (Aneshensel et al. 1991). Therefore, as a means of understanding the broad consequences of social stresses on mental health, this study will assess life satisfaction, depression, anxiety, and anger to present a fuller portrait of mental health impacts of IDR.

In examining multiple mental health outcomes, this study is guided by the Stress Process Perspective (SPP), developed by Pearlin (1999) as a sociological perspective on stress and mental health. This perspective can help to explain the relationship between IDR and multiple mental health outcomes by emphasizing how individuals' experiences of stressors may influence their mental well-being. One way the SPP explains the effects of stresses on mental health is by emphasising the role of psychological resources in explaining the effects (Pearlin and Bierman 2013; Pearlin 2010). When applied to IDR, the SPP suggests an indirect effect of IDR on mental health, where psychological resources act as key explanatory factors in this indirect process (Pearlin et al. 1981). Therefore, in this study, the
SPP will serve as a general framework to understand how IDR as a stressor may lead to different mental health outcomes in older adults through a focus on the psychological resources of individuals.

One way the SPP explains the effects of stress is by looking at indirect effects through the sense of control, where a lower sense of control acts as a mechanism for the effects of the stressor on mental health (Pearlin 1999). A sense of control is “a set of beliefs held by individuals regarding the amount of control they have over what happens in their lives” (Skaff 2006:188). Perceptions of a lack of sense of control are likely to be a mechanism for the association between IDR and mental health because an inability to achieve desired ends leads to a reduction in the sense of control (Ross and Mirowsky 2003). The sense of lack of control to achieve desired ends will, in turn, likely affect mental health because individuals’ inability to control their lives can be quite distressing (Ross and Mirowsky 2003; Stets and Burke 2005). Therefore, IDR is expected to generate stress among older adults that are likely to be associated with different dimensions of mental health outcomes through the reduction of older adults’ sense of control.

However, the stress process also identifies a sense of control as a powerful resource that lessens the adverse effect of stressors on psychological well-being (Pearlin and Bierman 2013). Stress buffering refers to the degree to which resources weaken the deleterious impact of stressors on mental health (Wheaton 1985). A sense of control buffers the effect of stressors on mental health because people with a high sense of control feel that they can effectively cope with the adverse effects of a stressor (Taylor and Stanton 2007). In addition, a sense of control will tend to buffer the harmful impact of that situation on mental health because people with higher levels of sense of control are more likely to use problem-focused coping strategies (Ben-Zur 2002; Pearlin and Schooler 1978). Thus, a sense of control may
function not only as a mechanism for the relationship between IDR and mental health but also buffer the relationship as well.

When both the indirect and buffering processes co-occur, it is referred to as structural amplification (Hill, Burdette, and Hale 2009; Mirowsky and Ross 2003). According to Mirowsky and Ross, structural amplification occurs when a "…mediator of an undesirable effect is also a magnifier of that effect (2003:438)." Thus, structural amplification exists when the stressor's adverse effect indirectly influences mental well-being by reducing psychological resources that otherwise act as buffering agents. Following the general form of the structural amplification model, this study proposes that IDR will strengthen its deleterious effect on multiple dimensions of mental health by reducing levels of sense of control of older workers.

This study will, therefore, examine whether IDR is associated with multiple dimensions of mental health outcomes through a lower sense of control and if a sense of control buffers the association between IDR and different aspects of mental health. The overall framework of this thesis is summarized in Figure 1. The figure shows that IDR is expected to be negatively associated with a sense of control, and a sense of control is expected to be positively related to mental health. It also shows that sense of control is expected to alter the association between IDR and mental health.

[FIGURE 1 ABOUT HERE]

To answer these questions, this thesis will use data from the Health and Retirement Study (HRS). The HRS is an ongoing nationally representative longitudinal study in the United States and is unique in measuring the IDR and mental health among older adults. This study will be specifically looking at working older adults (age 65 and older) to compare different dimensions of mental health outcomes between people who are and are not working.
due to IDR. The HRS asked half of the sample in 2010 and the rest half of the sample in 2012 about reasons for delaying the retirement of older adults. Therefore, this research will combine the two waves (2010 and 2012) just following the Great Recession, when IDR for financial reasons was likely to be especially prevalent.

As is described above, given the dearth of research that examines the multiple dimensions of mental health impacts of IDR in older adults, this study will show the association between IDR and various mental health domains, thus demonstrating whether IDR is an important work stressor for mental health in older adults who continue to engage in the work role beyond their retirement age. This study will also contribute to the existing literature by showing how the relationship between IDR and different dimensions of mental health outcomes is dependent on the role of a sense of control as both a mediator and a moderator. Therefore, an additional contribution of this research is to present the importance of the structural amplification process in the relationship between IDR and multiple aspects of mental health outcomes in older adults.

Summary of Aims

In summary, this study has three related aims. The first aim is to examine whether IDR is associated with the multiple measures of mental health in working older adults (age 65+) in the US in 2010 and 2012. The second aim is to examine whether IDR is associated with multiple measures of mental health through a lower sense of control. The third aim is to examine whether sense of control buffers the association between IDR and multiple mental health measures by looking at whether sense of control weakens the association between IDR and multiple measures of mental health.

Chapter Outline
This thesis is organized as follows: chapter two will describe the literature review; chapter three will outline the methodology of the study; chapter four will present data analyses; and finally, chapter five will describe the conclusions of the study.
Chapter Two - Review of the Literature

This chapter starts with a brief explanation of the stress process perspective (SPP) as a theoretical foundation directing this study, including the need to look at diverse mental health outcomes in sociological research to understand the broad consequences of social stresses on mental health. The next section summarizes the relevant literature examining the relationship between IDR and mental health in older adults. The following section describes mechanisms through which a sense of control may likely mediate and buffer the relationship between IDR and multiple dimensions of mental health. Next, a discussion will follow about structural amplification as a theoretical model that combines both the mediation and buffering process in the relationship between stresses and mental health. Lastly, this chapter will address some possible factors that may lead to spuriousness in the relationship between IDR and mental health outcomes, which will serve to explain why these factors will be taken into account in the analyses.

Guiding Theory

The SPP is a theoretical model that is focused on explaining the relationship between social inequality and the mental health outcomes of individuals (Pearlin and Bierman 2013). Sociological studies of mental health identify those features of social arrangements that have dysfunctional effects on people's psychological well-being (Wheaton 2001). Unlike other disciplines, such as medical fields, that study stress and its impacts on mental health, sociological investigations of mental health draw a connection between a set of social conditions and the different mental health outcomes of these conditions in people (Stockdale 2007; Busfield 2000; Pearlin 1989; Miech et al. 1999). I will first, therefore, discuss how
mental health should best be conceptualized and measured in sociological studies of mental health.

Mental health can be examined either diagnostically or dimensionally (Kraemer, Noda, and O’Hara 2004). Diagnostic measures refer to an approach whereby people’s psychological symptomology is assessed using perceived categories that signify whether or not they have certain mental illnesses (Bjelland et al. 2009). Dimensional measures refer to either single or diverse mental health outcomes in which individuals’ emotional well-being can be assessed on a symptom scale rather than perceived illness categories (Kessler 2002). Whereas the former operationalizes mental health using specific criteria for diagnosing mental illnesses, the latter considers mental health as a continuous phenomenon. The diagnostic classification of mental health sets clear-cut criteria between categories, such as depressed versus not depressed or anxious versus not anxious and other mental health outcomes (Bjelland et al. 2009). Goldberg (2000) suggests that in investigating the mental health impacts of social arrangements, the dimensional measures of mental health symptoms are more appropriate than the categorical approach because dimensional measures are more reliable than categorical measures (Brown and Barlow 2005). A dimensional approach is reliable over categorical outcomes in mental health studies based on the assumptions that levels and severity of mental health outcomes can be more accurately measured using indexes or scales rather than diagnostics categories (Kessler 2002). That is, diagnostic measures of mental health outcomes are not well suited to the sociological study of mental health because such measures lack the power to assess the severity of depressive symptoms (Mirowsky and Ross 1989). Overall, psychiatric problems are not discrete categories that are entirely present or absent in human being; thus, the uses of diagnostic categories will not reflect the actual range of feelings and emotions of people (Mirowsky and Ross 2002; Angst et al. 2000; Altman and Royston 2006; Bjelland et al. 2009). Therefore, rather than categorical approach,
the dimensional approach will help this research in operationalizing mental health outcomes on a continuum, which is more appropriate for a sociological study.

A second issue is the importance of examining diverse mental health outcomes in sociological research. As previously stated, sociological studies show a connection between social factors and various mental health outcomes; therefore, evaluating different aspects of mental health is essential for a complete understanding of the outcomes of the stress process (Aneshensel 2005). In sociological studies, examining diverse mental health outcomes is essential because stressors may evoke different effects in different individuals (Turner 2013;Thoits 2010; Samaan 2000; Turner and Avison 2003; Kessler, Price, and Wortman 1985; Turner and Lloyd 1999; Aneshensel, Rutter, and Lachenbruch 1991). That is, for a full depiction of the consequences of stressful life conditions, researchers should examine diverse mental health outcomes to reflect the complex nature of mental health itself (Fave 2011; Aneshensel 2005). Sociological inquiries of stresses show diverse mental health outcomes, such as anxiety, anger, fear or aggression, and depression (Barrett 2000; Simon 2002; Kessler et al. 1994; Widiger et al. 2005; Angst, Sellar, and Merikangas 2000; Wheaton et al. 2013), among which depression is the most commonly studied outcome of mental health (Turner and Lloyd 1999; Kessler et al. 1994). Psychological distress can be experienced as internalizing and externalizing symptoms (Woodman, Mailick, and Greenberg 2016). Internalizing symptoms of psychopathology may be experienced inwards, including anxiety, and depression, whereas externalizing symptoms of distress may be experienced as outwards and include drug abuse, aggression, anger, and behavioural problems (Carragher et al. 2015; Woodman et al. 2016). The comorbidity of internalizing and externalizing symptoms suggests that individuals can experience these two forms of syndromes simultaneously (McConaughy and Skiba 1993; Willner, Gatzke-Kopp, and Bray 2016). A second axis on which to consider mental health symptoms is that of active vs. passive dimensions of emotion
that fit with the internalizing and externalizing symptoms. Research shows that anxiety and anger are the active dimensions of emotion, whereas depression is the less active or passive form of emotion (Ross and Mirowsky 2008). Therefore, to fully comprehend the effects of stressors on mental health, sociological studies should consider a range of internalizing/externalizing and active/passive forms of emotions. For these reasons, the thesis will look at the specific outcomes of anger in/out, depression and anxiety. In addition to specific measures of mental health, this thesis will also look at life satisfaction, since life satisfaction has a negative correlation with depression and is a significant health indicator of people's overall subjective well-being (Gigantesco et al. 2019). In addition, life satisfaction and anxiety can coexist in individuals, implying that people who are satisfied with their lives may also be anxious (Headey, Kelley, and Wearing 1993). Furthermore, life satisfaction is a widely recognized measure of subjective well-being that represents a person's emotions and life experiences (Helliwell and Barrington-Leigh 2010). Thus, in order to give a complete understanding of individuals' well-being, life satisfaction, as a critical mental feature of subjective well-being, should be examined alongside depression, anxiety, and anger (Diener 2009). Therefore, to reflect a fuller range of specific mental health outcomes, this thesis will consider depression, anxiety, anger, and life satisfaction as dimensional measures of mental health.

The SPP positions stress exposure as a primary influence on multiple mental health outcomes. Stressors exist external to the individual and are linked with social contexts and produce an array of possible consequences that challenge the psychosocial functioning capacities of individuals (Wheaton et al. 2013). Wheaton defines stressors as “conditions of threat, challenge, demands, or structural constraints that, by the very fact of their occurrence or existence, call into question the operating integrity of the organism” (1999:281). Stress arises from inequalities of the larger social structure, which tend to evoke different mental
health circumstances in different individuals (Turner, Wheaton, Lloyd 1995). That is, stressors can impose deleterious effects on emotions, cognition, behaviour, physiological functioning, and well-being of individuals, and can vary from person to person (Pearlin and Bierman 2013). Thus, the SPP emphasizes the social origins of stress exposures that are linked to different aspects of psychological distress in people (Wheaton 1999).

To better understand the variety of risks and characteristics of stressors, researchers should distinguish between various forms of stressors (Pearlin 1999). Stressors can be categorized in multiple ways, among which two general forms are eventful experiences (or event stressors) and chronic strains (Wheaton et al. 2013; Pearlin et al. 1981; Pearlin 1999). Event stressors are discrete incidents, which occur in a particular lifetime, that have adverse psychological consequences on people’s mental health (Pearlin et al. 1981). The lists of stressful life conditions may include job loss, death of a loved one, getting a divorce, and all other negative events that adversely affect the mental health of individuals (Pearlin 1999). In contrast, chronic stressors are continuous and require an extended period of time to become stressful (Wheaton et al. 2013). That is, the wear of the chronic stressors develops over time rather than natural events that occur at a point in time. Experiencing IDR, for example, is a chronic stressor for older adults because IDR is a constant state of unwanted and continuing stress resulting from being stuck in the job from which they want to quit but cannot leave.

The SPP emphasizes that numerous functions connect the experience of stressful conditions with diverse mental health outcomes. One is a process in which stressors may indirectly affect individuals' mental health by reducing their psychological resources (Pearlin 1999). In the indirect relationship between stressors and mental health, individuals’ levels of personal resources act as linchpins, where stressors first lead to change in resources, and then resources lead to change in mental health outcomes (Aneshensel and Avison 2015). In the stress process, the sense of control is a personal resource that acts as an important mechanism
for the indirect effects of stress on mental health (Pearlin 1999). Sociological studies explain that stress often leads to a loss of perceptions of control, which can be distressing (Pearlin and Schooler 1978; Pearlin et al. 1981). For example, research demonstrates that financial strain leads to a lower sense of control, which leads to a higher level of psychological distress (Pudrovksa et al. 2005). Therefore, a sense of control is an essential personal resource in the stress process through which stressors may influence mental health (Ross and Mirowsky 2013).

Another process in the SPP is called “stress-buffering,” where resources are thought to protect or dampen the deleterious impact of stressors on depressive symptoms (Mirowsky and Ross 2003; Pearlin and Schooler 1978; Wheaton 1985; Aneshensel and Avison 2015). Research concerned with individual differences in response to social stressors shows that psychosocial resources are often capable of governing the impact of stressors on mental health (Wheaton 1983; Aneshensel 1992; Schieman and Meersman 2004; Wheaton 1985; Turner, Taylor, and Van Gundy 2004), thus safeguarding people from the deleterious effects of stressful conditions (Pearlin and Bierman 2013). This finding is consistent with the research showing that people with higher levels of sense of control are more likely to cope with stressful situations using more effective strategies (Ben-Zur 2002). That is, personal resources help to reduce or prevent the deleterious effect of stressors on mental health; thus, different levels of personal resources account for differences in responses to similar strains (Aneshensel and Avison 2015).

Taken together, a sense of control acts as both a mechanism and buffering agent in the relationship between stressors and mental health (Ross 2011). The combination of the indirect mechanism and buffering process create structural amplification, where resources amplify the adverse effect of stresses on mental health outcomes (Mirowsky and Ross 2003). Structural amplification occurs “when modifiers of the association between a social
condition and outcome result from the condition itself and magnify the effect of social condition on outcomes” (Ross, Mirowsky and Pribesh 2001:573). In the process of structural amplification, disadvantaged social conditions may weaken psychological resources that otherwise may buffer the undesirable consequences of that disadvantaged condition on psychological distress (Ross 2011; Wheaton 1985). That is when resources amplify the ill effects of stressors on outcomes is termed as structural amplification (Ross, Mirowsky and Pribesh 2001). In the following sections, the structural amplification model will be applied in explaining the study of IDR to multiple dimensions of mental health outcomes.

**IDR and Mental Health**

Over the past decades, older adults' labour force participation rates have increased (Coile 2018), and this trend will continue to rise in the future (Messacar and Kocourek 2019). In developed countries, such as the United Kingdom and the United States, an increasingly common phenomenon among older adults is that they are partially retiring rather than completely retiring (Maestas 2010; Platts et al. 2019). There are various reasons why many older people may choose to stay in the workforce, such as increased life expectancies, improved health capacity, more substantial work incentives for older workers, and changed policies of pension system and benefits (Coile 2018; Coile, Milligan, and Wise 2016; Messacar and Kocourek 2019). Also, sometimes older people may need to stay longer in the workforce to address their economic challenges and achieve long-term financial stability for the post-retirement period (Anxo, Ericson, and Miao 2019; Beehr et al. 2000; Pienta and Hayward 2002). After the Great Recession in 2007-2009, delayed retirement for money became common among older people due to the worldwide economic downturn (Collins and Casey 2017; Coile 2018; Zulkarnain and Rutledge 2018). That is, although delaying
retirement is a common occurrence among older adults, they may also be delaying their retirement involuntarily due to post-retirement financial needs.

When older people cannot retire at the age of retirement and must continue working due to financial constraints, this is referred to as IDR (Fisher et al. 2016). Prior research used the term job lock differently from IDR, as job lock refers to a lack of job mobility where employees feel stuck in their jobs due to the inability to change jobs (Huysse-Gaytandjieva, Groot, and Pavlova 2013). Studies investigate job lock in terms of job mobility among workers who cannot move from one job to another due to a need to retain health insurance or other financial benefits (Holtz-Eakin 1993; Stroupe, Kinney, and Kniesner 2001). However, there is a dearth of research that examines the impacts of job locks due to financial needs on older people’s mental health. As is described above, there is an increased number of older adults who delay their retirement due to financial needs; therefore, investigating the mental health impacts of IDR on older adults is essential because IDR is a growing issue for older adults (Benjamin, Pransky, and Savageau 2009).

Few studies have focused on how delayed retirement affects the mental health of older adults. However, one study which did examine this question using administrative data found that delayed retirement is associated with depression in older adults (Zulkarnain and Rutledge 2018). Similarly, Atalay and Barret examined the association between late retirement and health using the data from the 1993 Australian Age Pension reform and showed that Australian pension reform bound older people to stay longer in the workforce, which had a detrimental impact on their mental health (Atalay and Barrett 2014). Utilizing panel data from the Health and Retirement Study (HRS), additional research examined the impact of the retirement timing on emotional health and found that delayed retirement
deteriorated older people's emotional health (Calvo, Sarkisian, and Tamborini 2013). Moreover, recent research by Anxo et al. (2019) investigated the impacts of prolonged working life due to public pension reform on subjective well-being by comparing people who retired at the age of 65 and people who remain in the workforce after the age of 65. They combined longitudinal data and results from a postal survey in Sweden and found no statistically significant differences between the two groups under study in terms of depression or life satisfaction. Overall, studies that investigated the effect of delaying retirement on mental health yielded mixed results in terms of adverse and no consequences. Therefore, the mixed findings suggest a need for greater attention to the study of delayed retirement, especially since delayed retirement due to financial need may be a critical negative form of delayed retirement for mental health.

Despite the mixed evidence of mental health implications of delaying retirement in older people, research investigating the mental health impacts of IDR due to money is uncommon. To the best of my knowledge, only Fisher et al. (2016) studied job lock due to financial needs, and/or health insurance among older workers in the United States. Using data from the HRS, their study showed that job lock due to insufficient money is significantly associated with lower life satisfaction. However, their study is different from my thesis in three aspects. Firstly, along with financial needs, the previous study by Fisher et al. also considered health insurance needs that bound older workers to stay in their jobs. Secondly, their study on the relationship between IDR and psychological well-being only examined life

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2 Calvo et al. looked at the impact of “on-time” retirement, retiring earlier or later on self-reported physical and emotional wellbeing. Only depressive symptoms, one of several aspects of mental wellbeing, were used to describe individuals’ emotional health. However, my thesis considers dimensional mental health interventions and investigates the impacts of IDR on multiple mental health outcomes. Unlike the study of Calvo et al., which looked at people under and over 65 years old to compare retirement timing, my thesis focuses on older adults aged 65 and over. Also, Calvo et al. determine timing from when people retired, rather than asking people if they wanted to retire from their jobs but could not leave due to the need for money, which is how my thesis measures IDR.
satisfaction, one of the many possible mental health outcomes of social stresses like IDR. Thirdly, the study by Fisher et al. considered older workers aged between 62 and 65. However, my thesis will consider older adults aged 65 and over. Therefore, this thesis aims to fill the existing literature gap, as little is currently known about the general mental health impacts of involuntarily working longer, particularly beyond the retirement age due to insufficient finances.

The literature suggests that adverse mental health consequences of working longer for financial reasons should be investigated by researchers. Working beyond retirement age may likely to cause work-related strain and lead to detrimental effects on mental well-being (Taylor 2019). The lack of attention to different dimensions of well-being such as depression, anxiety and anger is surprising because these are useful indicators of subjective quality of life and likely to be expected outcomes in response to social problems (Ross and Mirowsky 2003). Therefore, the influences of IDR on depression, anxiety, anger, and life satisfaction are essential to examine among older adults, especially because affective dispositions have been identified as risk factors for many health outcomes relevant to later life, including hypertension and cardiovascular diseases (Gallo and Matthews 2003; Rugulies 2002; Everson et al. 1998; Gallacher et al. 1999).

**Sense of Control as Mediator**

The sense of control can be understood as a dimension of the self, and I will therefore first describe sociological understandings of the self before explaining how the sense of control fits in with these understandings. Symbolic interactionists define the self as a reflexive process in which people regard themselves as objects and evaluate themselves based on how others interact with them (Callero 2003). Mead defined reflexivity as "the turning-back of the experience of the individual upon himself- that the whole social process is thus
brought into the experience of the individuals involved in it (Mead 1934:134). That is, the meaning of the self develops from the viewpoint of others in interaction that individuals believe about themselves when looking at themselves as objects (Gecas 1982). Morris Rosenberg offers a holistic view of the self by combining the perspectives of the self as an entity and a process (Rosenberg 1979; Elliot 2001). As an entity, he defined the self as "the totality of an individual's thoughts and feelings having reference to himself [or herself] as an object (Rosenberg 1979:7)." That is, the self as an entity represents cognitive aspects of the self, which serves as a schema for integrating different pieces of self-information into a unified whole (Elliot 2001). Rosenberg also argues that the self is a social process through which people perceive and construct appropriate meaning through symbols in daily social interaction (Rosenberg 1984). Therefore, the self is a cognitive structure that includes people's attitudes and judgement, which enables them to take appropriate role performances according to the needs of the society (Rosenberg 1988).

As previously stated, the sense of self is formed by social interaction, implying that the self is socially constructed (Jun 2005). Social structure shapes people's experiences through which they evaluate themselves and act accordingly to adhere to the rules of society (Elliot 2001). That is, self-development is a social process whereby individuals' position in the social structure determines their experiences about life (Callero 2003). According to research that focuses on sociological factors in the self-construction process, people's selves vary across socio-economic contexts due to the unequal self-experiences relative to their social status in society (Frable 1997). For example, individuals will have a poorer sense of self if they know they are more vulnerable to socio-economic inequalities and feel that their social status in society is lower (Rosenberg and Pearlin 1978). In addition, individuals' social position in the social structure may determine their self-views based on their interaction with people who belong to higher social standing. For example, research shows that lower-status
individuals' self-view will be affected by higher-status people's perceptions of those of lower social status people (Cast, Stets, and Burke 1999). Therefore, the self is a social product that reflects the connection between the individual and social structure, which develops through social interactions.

The sense of personal control is "a set of beliefs held by individuals regarding the amount of control they have over what happens in their lives" (Skaff 2006:188). That is, perceived control refers to people’s self-awareness and beliefs about their ability to influence life events (Ajzen 2002). According to Ross and Mirowsky (2003:424), perceived control is the general belief of “oneself rather than others” about objective conditions of individuals’ life. Thus, perceived control reflects individuals' self-thoughts related to control over objective social situations in life (Leary and Price 2012). Furthermore, perceived control is linked to people's previous life experiences, which affect individuals' belief in their ability to handle current life circumstances successfully (Pearlin et al. 2007). According to Schieman and Plickert (2008:153), "objective social conditions shape experiences with successes and failures that, in turn, contribute to generalized expectancies about perceived control". For example, a study suggests that catastrophic experiences in life lead to a decreased sense of control in older adults (Wolinsky et al. 2003). Therefore, perceived control can be seen as a component of the self-concept because the sense of control is self-awareness and belief specifically about individual control over one's life and life-course outcomes, which is influenced by individuals’ life experiences.

IDR due to a lack of money is an unpleasant experience for older adults because they are unable to make retirement decisions, which may lead to a lower level of sense of control in older adults. Perceived control, as previously stated, is a component of self that is impacted by a person's external circumstances. Therefore, IDR as a result of financial needs is an objective social condition that may influence older adults’ beliefs about their own
competence. That is, IDR may erode older people's sense of self because they may be unable to overcome IDR, instead of remaining at work. In the context of IDR, older adults may come to believe that they are failing to control their lives, which is a very disempowering realization. Therefore, as an uncontrollable and unpleasant occurrence of life, IDR will likely deteriorate older people's sense of control, which will result in a greater sense of powerlessness in older adults.

The consequences of IDR for a sense of control are essential to take into account because the sense of control can have positive implications for individual well-being. Belief in control over one's own life is fundamental to mental health because having a higher level of control leads to positive mental well-being (Bosma 2005; Bruce and Thornton 2004; Chou and Chi 2001; Ellison and Burdette 2012; Jang et al. 2003; Jennifer and Adam 2008; Gadalla 2010; Keeton, Perry-Jenkins, and Sayer 2008; Kiecolt, Hughes, and Keith 2009; Mabry and Kiecolt 2005; Lachman and Weaver 1998; Poortinga, Dunstan, and Fone 2008; Pudrovska et al. 2005; Pearlin and Schooler 1978; Rodin 1986; Schieman 2001; Ward 2012). People who feel that they have control over their lives have higher levels of life satisfaction and psychological well-being, while the perception of lack of control causes anxiety, depression, distress, and stress (Perry, Chipperfield, and Stewart 2010; Ross and Sastry 1999). Perceived control is beneficial to mental health because self-control encourages people to take preventive actions in the face of adversities and to lead a healthy lifestyle (Mirowsky and Ross 1991; Pudrovska et al. 2005). In contrast, feeling as if people cannot create positive events in their lives or avoid negative events is in and of itself distressing (Ross and Mirowsky 2003). That is, a decreased sense of control leads to poor mental health in part because individuals feel powerless due to the inability to attain good outcomes in life (Pudrovska et al. 2005). Therefore, perceived control as a psychological resource has a favourable effect on the emotional health of people. In this thesis, perceived control is likely
to have a negative impact on anxiety, depression, and anger and a positive effect on life satisfaction.

Although there is little research on how a sense of control links IDR to mental health, previous research does show that other chronic stressors influence mental health through a sense of control (Cole et al. 2002; Rosenbaum, White, and Gervino 2012). Research suggests that work stressors reduce a sense of control, which in turn affects psychological distress (Cole et al. 2002). In addition, research finding shows that the relationship between stress and mood disorder is mediated through perceived control (Rosenbaum, White, and Gervino 2012). That is, evidence suggests that a perceived sense of control acts as a mediating mechanism in the relationship between stressors and mental health (Turner and Lloyd 1999). In this thesis, I will therefore examine whether IDR influences multiple mental health outcomes through a reduced sense of control.

**Sense of Control as Moderator**

This study also investigates the second aspect of structural amplification by examining how a sense of control buffers the mental health effects of IDR. There are several reasons why a sense of control may buffer the effects of stress on mental health. First, stressors are likely to be unusual and avoidable to people who have a strong sense of control (Bierman and Kelty 2014). A strong sense of control is likely to help people to take preventive actions to avoid stressful situations, thereby protecting them from the adverse effects of stressors (Pudrovsksa et al. 2005). Second, people with a strong sense of control are more likely to take problem-focused coping strategies in the face of stressors (Ben-Zur 2002). Problem-focused coping refers to “all the active efforts to manage stressful situations and alter a troubled person-environment relationship to modify or eliminate the sources of stress via individual behaviour” (Schoenmakers, Van Tilburg, and Fokkema 2015:154). Therefore,
enhanced problem-focused coping strategies can enable people to actively solve problems, which is likely to protect people from the adverse mental health effects of stressors (Ben-Zur 2002). People who believe they have control over life will engage in coping that directly addresses a problem because a strong sense of control strengthens people’s preparedness in managing adverse situations in life (Pudrovksa et al. 2005), which is likely to modify the stress of IDR experiences. Thus, people with a strong sense of control are more likely to face stressors in life as manageable incidents and overcome them by taking efficient strategies. Numerous studies have shown that a sense of control protects individuals from the harmful effects of life's struggles or traumatic situations (Assari 2017; Brown 2007; Jang et al. 2002; Kunzmann, Little, and Smith 2002; Mittal and Griskevicius 2014; Thoits 2010). That is, perceived control may help people to manage adverse situations and protect them from being mentally distressed, such as anxiety, mood disorders, and depression (Ross and Van Willigen 1997; Aneshensel 1992; Pearlin et al. 1981; Wheaton 1983).

Since people with a strong sense of control are more likely to engage in effective problem-focused coping strategies, the ability to employ enhanced problem-focused coping strategies increases resistance to stressors and, by extension, reduces the deleterious impacts of IDR on mental health. That is, perceived control will help people better adapt to IDR. Although there is no existing evidence of the buffering of a sense of control in the relationship between IDR and mental health outcomes, according to the findings of a longitudinal study, perceived control moderates the impacts of chronic daily stressors on depressive symptoms (Gadalla 2009). Daily stressors are “the irritating, frustrating, distressing demands that to some degree characterize everyday transactions with the environment” (Kanner, Coyne, Schaefer, & Lazarus, 1981, p. 3). IDR can be a source of daily stress for older people, since IDR experiences may be frustrating because of needing to engage in a work role in daily life that the individual would prefer to cease. Thus, the existing
research suggests that a sense of control is an essential psychological resource for mitigating the negative impact of stressors on mental health. This thesis will, therefore, investigate whether a sense of control buffers the effects of IDR on various aspects of mental health.

**Structural Amplification**

Ross, Mirowsky, and Pribesh (2001) developed a theoretical model of structural amplification that explains how social arrangements influence mental health outcomes through a combination of explanatory and buffering mechanisms. According to Ross and Mirowsky (2003:438), structural amplification occurs when “conditions undermine the personal attributes that otherwise would moderate their undesirable consequences.” In other words, structural amplification occurs when stressors impair the psychological resources that would either buffer or attenuate the negative impact of those factors on subjective beliefs (Ross et al. 2001). The explanatory and buffering mechanisms produce structural amplification because a mediator that is weakened by stressors also buffers the association between stressors and mental well-being (Ross and Mirowsky 2003).

While no research has specifically examined processes of structural amplification as they refer to IDR, an increasing body of literature has demonstrated how structural amplification occurs when unfavourable social circumstances trigger people's feelings of powerlessness and loss of control (Koltai and Stuckler 2020; Ross 2011; Ross, Nirowsky, and Pribesh 2001). For example, Koltai and Stuckler (2020) investigated whether recession-related difficulty as a stressor influences the perception of control, thus amplifying the impact of recession shocks on subjective well-being among older Americans under 75 years old. Using data from the Midlife in the United States report (MIDUS), results showed that recession-related difficulties erode people's coping skills, which would typically protect them from harmful psychological well-being. Similarly, Ross et al. (2001) investigated structural
amplification in the relationship between stressful social conditions and distrust when people of disadvantaged neighbourhoods feel powerless, amplifying the effect of disorder on mistrust. Furthermore, Bierman and Kelty (2014) investigated how reductions in mastery amplify the effects of stressors on mental well-being in a study on threat and psychological distress. These studies are relevant to my thesis since, according to the structural amplification theory and associated studies, IDR may lead to a poorer sense of control, and a lack of control may amplify the adverse impact of IDR on various mental health outcomes in older adults. Therefore, in the general framework of structural amplification, disadvantaged social arrangements exacerbate a feeling of powerlessness, which in turn amplifies its effects on individuals' emotional well-being.

In my thesis, the structural amplification framework will explain how perceived control acts as an explanatory and buffering agent in the relationship between IDR and multiple mental health outcomes. Thus, the relationship between IDR and various mental health outcomes is most likely to generate structural amplification through the mechanisms of the sense of control. IDR may exacerbate adverse effects on mental health in older adults by reducing perceived control, which will reflect the explanatory aspect of structural amplification. As a buffering component of structural amplification, the sense of control may reduce the effect of IDR on a variety of mental health outcomes. Yet, IDR may reduce the sense of control, amplifying IDR's negative impact on various mental health outcomes. Therefore, when negatively impacted by the IDR, a sense of control is likely to produce structural amplification in the relationship between the IDR and different mental health outcomes.

Sets of Control: Antecedent and Redundant Variables

[FIGURE 2 ABOUT HERE]
Many variables that occur before or concurrently with the independent variable and influence the dependent variable under study may provide spurious explanations. The antecedent variable is a third variable that acts as a confounder in the relationship between the independent and dependent variables under investigation (Aneshensel 2015). That is, the relationship between the focal independent and the dependent variable will be spurious when there is a correlation between the independent and dependent variables due to the presence of a third antecedent variable (Lewis-Beck, Bryman, and Futing Liao 2012). The antecedent variable and the relationship between IDR and anxiety are depicted in Figure 2. This figure describes how previous circumstances can lead to both IDR and anxiety in older adults, which in turn could lead to a spurious association between IDR and anxiety.

[FIGURE 3 ABOUT HERE]

Redundancy refers to the co-occurrence of another factor with the independent variable, whereby the co-occurring third variable, instead of the independent variable, influences the dependent variable under study (Aneshensel 2015). That is, a redundant variable is a rival independent variable that occurs along with the focal independent variable and affects the dependent variable (Aneshensel 2015). The redundant variable and the relationship between the IDR and anxiety are depicted in Figure 3. This figure shows how older adults who have IDR may also experience co-occurring factors, where the correlation between IDR and anxiety in older adults could actually be due to the co-occurring factors.

Statistical controls for antecedents and redundant variables help in generating non-spurious associations between independent and dependent variables (Spector and Brannick 2011). Therefore, to better rule out the effects of extraneous variables, this thesis will control for standard socio-demographic variables, such as age, gender, marital status, education and
race-ethnicity. Furthermore, as both antecedent and redundant variables, this thesis will control three sets of variables: health status variables, economic status variables, and work-related variables. The three sets of variables, the health and financial status and work-related variables, are antecedent variables, which may occur before IDR and are likely to affect both the IDR and the various mental health outcomes.

*Health status variables*

This study incorporates overall health conditions and work-limiting health problems of older adults into the health status variables. Previous research measures overall health conditions using summary counts of whether older people have chronic conditions, including diabetes, heart disease, cancer, high blood pressure, or stroke (Brown, O’Rand, and Adkins 2012). This self-reported count of severe conditions provides a valid summary measure of overall health because diagnosis of chronic health conditions by physicians have higher predictive validity for health status measures (Ferraro and Farmer 1999). In addition, work-limiting health condition refers to health impairment that affects older adults’ work performances (Hyde and Wu 2019). Research suggests that people with chronic health issues and employment health-limitations are more likely to retire early (Vanajan, Bültmann, and Henkens 2020). Therefore, people with chronic health conditions and health limitations are more likely to report IDR when they are unable to retire due to financial needs, especially since people with chronic conditions and health limitations are more willing to retire early. Furthermore, research shows that the physical health of older adults is associated with their mental health (Luo, Chui, and Li 2020; Shen et al. 2017; Weinberger et al. 2009). Therefore, people who have health conditions and health limitations are also likely to experience impaired mental health. In that case, overall health conditions and health-related work
limitations may confound the association between IDR and different mental health outcomes. Therefore, if health status variables are not controlled, there may appear to be a causal association between IDR and multiple mental health outcomes due to a failure to take health conditions into account.

Economic status variables

In this thesis, income and financial strain are used to measure the economic status of older adults. Financial strain refers to whether or not older persons are satisfied with their current financial condition and find it challenging to keep up with monthly bill payments (Wilkinson 2016). Research suggests that financial strain may force many people to postpone their retirement (Bai and Liu 2020; Gustman, Steinmeier, and Tabatabai 2011). Furthermore, research demonstrates that low income is more likely to lead to involuntary delayed retirement among older people (König, Lindwall, and Johansson 2019). Thus, people with a lower household income and higher financial strain may be more likely to report IDR due to financial needs. Studies also show that people with lower levels of household income and financial strain are more likely to have poorer mental health (Chiao, Weng, and Botticello 2012; Mendes de Leon, Rapp, and Kasl 1994; Sareen et al. 2011; Wilkinson 2016). In this case, income and financial strain may be antecedent factors in the association between the IDR and multiple mental health outcomes. Therefore, if the financial status is not controlled, there may appear to be a causal association between IDR and multiple mental health outcomes due to failure to take income and financial strain into account.

Work-related variables
Many factors in the workplace, such as working hours, the nature and types of occupations, and a lack of co-worker support may cause work-related stress among workers (Bhui et al. 2016; Johnson et al. 2005). In this thesis, working hours, occupational class, coworkers’ support, and job stress represent work-related factors that may constitute workplace strains in older adults, which may in turn influence both mental health and the desire to cease working.

Working hours may be a confounding factor in the relationship between IDR and multiple mental health outcomes in older workers because working hours are likely to influence both IDR and multiple mental health outcomes. Research indicates that full-time workers are more likely to fully retire from their jobs due to a lack of flexible part-time working opportunities after the retirement age (Gielen 2009; Hutchens and Grace-Martin 2006). Thus, full-time workers who are experiencing financial need will be more likely to experience IDR due to a want to retire but the inability to retire due to the need for money. In addition, research shows that working longer hours may negatively impact mental health (Park et al. 2020). That is, older workers who work full-time hours may also be more likely to express maladaptive emotions because working longer hours may likely to increase sleep disturbance, anxiety, and depression (Afonso, Fonseca, and Pires 2017; Kivimäki et al. 2011). Therefore, if working hours are not controlled, there may appear to be a causal association between IDR and multiple mental health outcomes due to failure to take working hours into account.

Occupational class is likely to influence IDR and maladaptive emotions in older adults, which may confound the relationship between IDR and different mental health outcomes. The occupational class can be defined based on occupational ranks, such as manager and non-management workers, which causes social disparities among different workers, including cultural, economic, and political inequalities (Muntaner et al. 1998).
Defining social class based on indicators of employment relations, including employer/worker or manager/non-management workers, provides a useful measure to explain health inequalities (Muntaner et al. 2010). Measuring social class based on rank indicators helps explain health inequalities because people in lower rank positions are at a higher risk of mental illness due to economic disparities related to occupational status (Muntaner et al. 2004). Therefore, in accordance with the above definition, the social class of older adults in this study is defined based on their occupational rank, in terms of management vs. non-management positions. Research shows that people who work in non-management positions tend to retire early to claim social security benefits due to having lower earnings from the labour market (Li, Hurd, and Loughran 2008). This finding suggests that people working in non-management positions may want to retire earlier, but are also likely to experience IDR due to financial needs, especially since non-management workers may have accrued less wealth. In addition, people’s lower status job is likely to exert deleterious influences on mental health (Lopes, Kamau, and Jaspal 2019). People in lower status jobs are more likely to suffer from elevated stress due to physically demanding jobs and are less likely to seek medical treatment due to scarcity of money, which in turn negatively impacts their psychological well-being (Lundberg 1999). Therefore, if an occupational class is not controlled, there may appear to be a spurious association between IDR and multiple mental health outcomes due to failure to take occupational class into account.

Support by coworkers may also explain the association between IDR and numerous mental health outcomes because IDR and older workers’ maladaptive emotions may be influenced by coworkers’ support. Research suggests that less support from coworkers is more likely to increase workers’ intention to retire early due to stress-related disorders caused by a lack of support (Henkens and Tazelaar 1997; Norling and Chopik 2020). Research also shows that support from coworkers significantly influence the job satisfaction of individuals
(Ducharme and Martin 2016). Therefore, people with a lack of support by coworkers at work are more likely to report IDR when they are unable to retire due to financial needs, especially since people having little support from coworkers at work are more willing to retire early. In addition, previous research demonstrates that low levels of support from coworkers are negatively associated with mental health (Johnson et al. 2005). Thus, older workers who do not have support from coworkers may also be more likely to express maladaptive emotions. Therefore, if support from coworkers is not controlled, there may appear to be a causal association between IDR and multiple mental health outcomes due to failure to take coworkers’ support into account.

Job stress may be a confounding factor in the relationship between IDR and maladaptive emotions in older adults. The World Health Organization (WHO) defines job stress as “the response people may have when presented with work demands and pressures that are not matched to their knowledge and abilities and which challenge their ability to cope” (WHO 2020). Thus, job stress can be measured using the demand/control model of stress (Attell, Kummerow Brown, and Treiber 2017). That is, people are more likely to experience job stress when they are unable to control and/or cope with the degree of job demand in the workplace (Mezuk et al. 2011). Research demonstrates that work stress influences workers’ intension to retire early (Lin 2001; Turcotte and Schellenberg 2005), because people with work stress are more likely to face job challenges and suffer from lower adoptability to various working conditions (Mäcken 2019; Blekesaune and Solem 2016). Therefore, people experiencing work-related stress are more likely to report IDR when they are unable to retire due to financial needs, especially since people with work-related stress are more willing to retire early. Previous research also demonstrates that people with job-related stress may also be more likely to express maladaptive emotions (Ajayi 2018; Schonfeld, Bianchi, and Luehring-Jones 2017). Therefore, if job stress is not controlled, there may
appear to be a spurious causal association between IDR and multiple mental health outcomes due to failure to take job stress into account.

**Summary**

In summary, this thesis examines the relationship between IDR and multiple mental health outcomes, such as anxiety, depression, anger, and life satisfaction in older adults. Guided by the SPP, this thesis will specifically assess whether a sense of control explains or buffers the harmful effects of IDR in older adults' multiple mental health outcomes. Furthermore, this thesis will also examine whether the explanatory and buffering mechanisms produce structural amplification in the relationship between IDR and numerous mental health outcomes. According to the explanatory mechanism, IDR will be indirectly associated with multiple mental health outcomes. In contrast, the buffering mechanism suggests that perceived control will buffer the harmful effects of IDR on mental health. Therefore, this thesis expects that IDR can reduce the sense of control, amplifying IDR's negative impact on various mental health outcomes.
Chapter Three- Data and Methods

This chapter summarizes the sample, measures, and statistical methods used to examine the relationship between IDR and mental health in this thesis. In the first section, the data source for this study is discussed. Next, the measures are reviewed in detail. Finally, the statistical methods being applied to test the relationship between IDR and mental health outcomes are discussed.

Data

This study utilized data from the Health and Retirement Study (HRS), an ongoing longitudinal study conducted every two years on more than 43,000 older American adults aged 50 years and more since 1992 (Fisher and Ryan 2018). In the HRS, the sample was selected through a multistage probability sampling design where African Americans, Hispanics, and Florida residents were oversampled (Sonnega et al. 2014). Following the Great Recession, a random half-sample of the entire HRS was given the psychosocial measures in 2010, and the other half was given the measures in 2012. This study only used the psychosocial sample because IDR, perceived control, anxiety, anger, and life satisfaction were only asked in the psychosocial sample. The response rate of the overall HRS in the 2010 and 2012 waves was 88.6 percent and 88.9 percent, respectively (HRS 2017). In this study, first, the two waves from 2010 and 2012 were combined. Then, a dichotomous variable was created and used as a control to account for variation in the time period and other unobserved differences between survey waves.

The number of respondents from the target age group of 51+ in the 2010 and 2012 psychosocial surveys was 7,828 and 6,963, respectively. That is, without overlapping, after combining the 2010 and 2012 survey waves, the total sample size was 14,791. This study looked at older people aged 65 and over who said yes to their current working status in both
waves between 2010 and 2012, indicated that they were employed full-time, part-time, or partially retired. The reason for choosing older adults who are working is that this study investigates the experiences of IDR of older people working at the time of data collection. Therefore, based on the inclusion criteria- working adults aged 65 and over- this study selected a final specific sample size of 1,119. Of the 1,119 total respondents, 947 were retained in the analytic sample, a retention rate of about 85%, suggesting 15% missing cases due to listwise deletion. Although the number of missing cases is notable, the bias in the results of this study should be minimal because the overwhelming majority of cases are retained in the final analytical sample.

The HRS used a complex survey sampling design that involved clustering. Then, after the survey, a weight was created that considered differential probabilities of selection. This study took into account the complex sampling design in the analyses for appropriate variance estimation. In addition, this study also applies sampling weights. Separate weights were created for the psychosocial samples in 2010 and 2012 waves to ensure the representativeness of the samples. In this study, both 2010 and 2012 waves were combined to create a new weight for the combined 2010/2012 dataset, which was then used in all analyses.

**Focal Measures**

**Involuntary Delayed Retirement.** In the HRS, involuntary delayed retirement was measured using the following question: “Right now, would you like to leave work altogether, but plan to keep working because you need the money? (Yes/No).” Using this question, this study was created a dichotomous variable in which 0= no and 1= yes.

**Sense of Control.** Measures of sense of control was adapted from Lachman and Weaver’s (1998) scales developed to operationalize powerlessness and individual sense of control. The ten items are: “I often feel helpless in dealing with the problems of life,” “other
people determine most of what I can and cannot do,” “what happens in my life is often beyond my control,” “I have little control over the things that happen to me,” and “there is really no way I can solve the problems I have,” “I can do just about anything I really set my mind to,” when I really want to do something, I usually find a way to succeed at it,” whether or not I am able to get what I want is in my own hands,” “what happens to me in the future mostly depends on me,” and “I can do the things that I want to do.” In this study, the ten items were combined together to measure the sense of control in a scale. Respondents indicated how they agreed or disagreed with the statements, with response on a scale of strongly agree (1), somewhat agree (2), slightly agree (3), slightly disagree (4), somewhat disagree (5), and strongly disagree (6). All responses were coded so that higher values indicated a stronger sense of control. Sense of control was measured as the mean of responses to these ten questions (Cronbach’s α = .883).

**Depression.** The scale of depression was measured using the 8- item CES-D (Center for Epidemiological Studies–Depression) Scale: felt depressed, everything an effort, sleep was restless, was happy (reverse coded), felt lonely, enjoyed life (reverse coded), felt sad, and could not get going. This scale is validated in measuring depression among older adults (Karim et al. 2015). Respondents were asked about their feelings in the past week. Responses were dichotomous in which 0= no and 1= yes. As a common practice in depression studies using the HRS, all responses were summed to obtain a depressive symptomology score ranging from 0 to 8 (Cronbach’s α = .80-.81).

**Anxiety.** The anxiety measure was adapted from the Beck Anxiety Inventory using five items (Beck et al. 1988): “I had a fear of the worst happening,” “I was nervous,” “I felt my hands trembling,” “I had a fear of dying,” and “I felt faint.” Respondents indicated the frequency they experienced each events in the past week described in statements on a scale of never (1), hardly ever (2), some of the time (3), and most of the time (4). According to Smith
et al., the Beck Anxiety Inventory “has been shown to distinguish symptoms of anxiety from
depression and to be valid for use in older populations” (Smith et al. 2013:46). Anxiety was
measured as the mean of responses to these five items (Cronbach’s $\alpha = .822$).

**Maladaptive Anger Response Styles.** People express the emotional state of anger in
various ways, which "differs in intensity from mild irritation or annoyance to intense fury and
rage" (Spielberger, Reheiser, and Sydeman, 1995:213). Anger is a multidimensional
construct where people sometimes suppress the feeling of anger by holding the grudges or
boiling inside (anger-in) and sometimes express anger by enacting aggressive behaviour
towards other people or the environment (anger-out) (Forgays et al. 1988; Lee and Bierman
2018). Since people express anger both in terms of internal and external reactions, it is
important to examine both in relation to IDR.

Anger-in and anger-out measures were adapted from the State-Trait Anger Expression
Inventory (Forgays et al. 1998), where respondents were asked to indicate typical responses
when feeling angry or mad (Bierman and Lee 2018). The following three items were used to
measure anger-in: “I withdraw from people,” “I am irritated more than people are aware,” “I
am angrier than I am willing to admit.” Anger-out was measured using the following three
items: “I argue with others,” “I strike out at what infuriates me,” “I say nasty things.”

Respondents indicated the frequency of experiencing each symptom with response on a scale
of almost never (1), sometimes (2), often (3), and almost always (4). In this study, the items
were combined separately to measure the anger-in and anger-out in two distinct scales.

Anger-in was measured as the mean of responses to the three items (Cronbach’s $\alpha = .787$).

Also, anger-out was measured as the mean of responses to the three items that measure anger-
out (Cronbach’s $\alpha = .747$).

**Life satisfaction.** Diener et al.’s (1985) scale of life satisfaction was used to measure
life satisfaction. The following five items were used to measure life satisfaction: “In most
ways my life is close to ideal,” “The conditions of my life are excellent,” “I am satisfied with my life,” “So far, I have gotten the important things I want in life,” and “If I could live my life again, I would change almost nothing.” Respondents indicated how they agree or disagree each of the statements on a scale of strongly disagree (1), somewhat disagree (2), slightly disagree (3), neither agree or disagree (4), slightly agree (5), somewhat agree (6), and strongly agree (7). All responses were coded so that higher values indicated a higher level of life satisfaction. Life satisfaction was measured as the mean of responses to these five items (Cronbach’s α = .883).

**Control Measures**

Race and ethnicity, age, gender, marital status, and education, were controlled to rule out the effects of background social statuses. In the analytic sample there were not enough racial and ethnic minorities to create detailed indicators of racial and ethnic status. Therefore, race and ethnicity were coded as a dichotomous variable in which 0=white, non-Hispanic, and 1=minority race or ethnicity. Gender was coded as a dichotomous variable so that 0=men and 1=women. Marital status was measured as a dichotomous variable. The first category was single older adults. The second category was older adults who lived with a spouse, including a legally married partner, or lived with someone in a “marriage-like” relationship. The marital status variable was coded so that 0=not married or partnered and 1=married or partnered. Finally, education was coded using three categories in which 1= no high school degree, 2= high school, GED, and some college, and 3= college or more degrees. These categories were used as a set of dichotomous indicators, where the reference group was 1= no high school degree.

**Health status measures.** Overall health conditions and work-limiting health problems were used to measure the health status of older adults. Overall health conditions were
measured through a summative index of five chronic health conditions, including diabetes, heart disease, cancer, high blood pressure, and stroke (Brown, O’Rand, and Adkins 2012). Based on the summative index scores, three contrasting categories, including no conditions, one condition, and two or more conditions were derived to indicate the overall health conditions of the respondents, where no conditions category was the reference group (Bierman 2021). In addition, work-limiting health conditions refer to health impairments that affect older adults’ work performances (Hyde and Wu 2019). Respondents were asked a survey question on work-limiting health conditions: “Now I want to ask how your health affects paid work activities. Do you have any impairment or health problem that limits the kind or amount of paid work you can do?” The response categories were dichotomous, in which 0= no and 1= yes.

*Economic status measures.* The economic status of older adults was measured based on their income and financial strain. Income was measured using the following question: “how much total income a household received last calendar year?” The natural log of income was used to dealing with the dispersion of the income variable. Before taking the natural log, 1 was added to everyone’s score. When 1 is added to everyone’s score, the natural log returns to 0 for those who have no income. Financial Strain was measured using a two-item scale based on Wilkinson (2016). Survey questions that measured the financial strain were: “How satisfied are you with (your/your family’s) present financial situation?” and “How difficult is it for (you/your family) to meet monthly payments on (your/your family’s) bills?” For the first question, respondents were asked to give their responses on a scale of completely satisfied (1), very satisfied (2), somewhat satisfied (3), not very satisfied (4), and not at all satisfied (5). For the second question, respondents were asked to give their responses on a scale of not at all difficult (1), not very difficult (2), somewhat difficult (3), very difficult (4), and completely difficult (5). All responses were coded so that a higher value indicates a
higher financial strain among older adults. Financial strain was measured as the mean of responses to these two questions (Cronbach’s $\alpha = .799$).

*Work-related measures.* Work-related variables were measured using working hours, occupational class, coworkers’ support, and job stress. Respondents were asked about the hours of work per week at the current job: “How many hours a week do you usually work on your current main job?” A dichotomous variable was constructed in the analyses for less than 35 hours: part-time (0) and 35-50+: Full-time (1). For occupational class, respondents were asked about their occupation on their current job. Occupational class can be operationalized based on occupational ranks, such as manager and non-management workers, which causes social disparities among different workers, including cultural, economic, and political inequalities (Muntaner et al. 1998). Based on the occupational rank of the older adults, this study created a dichotomous variable of occupational class: management occupation (1) and non-managerial occupation (0).

In addition, coworkers’ support was measured using a three-item scale: “My coworkers listen to me when I need to talk about work-related problems,” “My coworkers help me with difficult tasks,” and “My coworkers help me in crisis situations at work” (Smith et al. 2017). In this study, the three items were combined together to measure the coworkers’ support in a scale. Each item was rated on a scale of strongly disagree (1), disagree (2), does not apply (3), agree (4), and strongly agree (5). Coworkers’ support was measured as the mean of responses to these three questions (Cronbach's $\alpha = .878$).

Furthermore, job stress was measured using a scale of job stress, as in the previous analyses of job stress in the HRS (Mezuk et al. 2011). The HRS adapted this scale from Karasek’s job strain scale (Karasek 1998). Mezuk et al. (2011:4) indicated that the job stress scale is intended to measure “job effort and degree of control over workflow.” Other studies also measured the job stress using this scale based on the demand/control model of stress.
(Attell, Kummerow Brown, and Treiber 2017). Respondents were asked to agree or disagree with the statements about their current job: “My job is physically demanding,” “I am under constant time pressure due to a heavy workload,” “I have very little freedom to decide how to do work,” “Considering the things I have to do at work, I have to work very fast,” “The demands of job interfere with personal life,” and “I often feel bothered or upset in my work.” Each item was rated on a scale of strongly disagree (1), disagree (2), agree (3), and strongly agree (4). Previous studies from the HRS have also combined these six items to create job stress scale (Attell et al. 2017; Mezuk et al. 2011). Therefore, in this study, these six items were combined together in a scale to measure job stress. Job stress was measured as the mean of responses to these six items (Cronbach's $\alpha = .734$).

**Plan of Analysis**

In this study, using Stata 16.0 all analyses were conducted with ordinary least squares (OLS) regression. Analyses were performed in four stages. In the first stage, descriptive results were produced for each of the variables under this study. In the second stage, this study examined how each study variable differed by the dichotomous focal predictor, IDR. The third stage examined the association between IDR and anger-in and anger-out, depression, anxiety, and life satisfaction using sets of models. Each set is composed of five models: (a) the bivariate association between IDR and the focal dependent variable, without including control variables, (b) the main effects model controlling for the background sociodemographic measures, (c) the main effects model controlling for the background sociodemographic and health status measures, (d) the main effects model with controlling for all the background sociodemographic, health status, and economic status measures, and (e) the main effects model with controlling for all background sociodemographic, health status, economic status, and work-related measures. Building models systematically will help to
parse out the independent effects of the stress of IDR. That is, the sets of variables were controlled in this order to explain most distal to most proximal to the stress of IDR due to financial needs. Therefore, sets of control will help to identify the unique associations between IDR and the dependent variables, independent of the effects of the sets of control variables in the models.

[FIGURE 4 ABOUT HERE]

Lastly, in the fourth stage, mediation and moderation were tested using two sets of analyses. Mediation is a process that can go beyond the descriptive understanding of a relationship and can explain why a relationship occurs (Preacher and Hayes 2004). The mediation analysis assesses indirect ways through which a predictor influences the outcome variable through the mediator variable (Baron and Kenny 1986). When a dependent variable (Y) is regressed against an independent (X) variable without controlling a mediator (M) variable, the coefficient for the association between X and Y is referred to as \( c \) (total effect). According to Baron and Kenny (1986), a variable M may be called a mediator when the variable M meets the following conditions (Figure 4): (1) the independent variable (X) must affect the mediator variable (M) (i.e., Path a), (2) the Mediator variable (M) must impact the dependent variable (Y) (i.e., Path b), and (3) when Paths a and b are controlled, a previously significant relation between the independent (X) and dependent (Y) variables (Path \( c' \) - the direct effect) is no longer significant, which demonstrate the strongest mediation occurring when Path c is zero (p. 1176). Total or complete mediation happens when \( c' \) is not significant, whereas a partial mediation occurs when just \( c' < c \). Thus, the mediation analysis explains a mechanism through which the independent variable indirectly affects the dependent variable.

Preacher and Hayes’s (2004) process of mediation was followed for testing whether the sense of control mediates each association between IDR and mental health outcomes,
including a Sobel test. The Sobel test is a statistical procedure that tests the indirect effect of $X$ on $Y$. The Sobel test is based on multiplying the coefficients for $a$ and $b$ together ($ab$-the indirect effect), which gives a coefficient for the indirect path between $X$ and $Y$ through $M$. The Sobel test is accurate when the sample size is larger (N=1000). However, when the sample size is below 1000, a recommended alternative is to use bootstrapping (Preacher and Hayes 2004). In the regression models of this thesis, the analytic sample size was 947; therefore, a bootstrapping method was used for significance testing. “Bootstrapping, a nonparametric resampling procedure, is an additional method advocated for testing mediation that does not impose the assumption of normality of the sampling distribution” (Preacher and Hayes 2008:880). Bootstrapping treats the original sample as a population and creates a certain number of bootstrap sub-samples by taking re-samples from the original sample (Preacher and Hayes 2008). This study used 5,000 bootstrap sub-samples that were obtained from the bootstrapping re-sample strategy. In bootstrapped methods, significance is determined based on whether the confidence intervals of the $ab$ contain zero or not. The indirect association is significant if the confidence interval does not contain zero, whereas a confidence interval with zero indicates that the association is not significant. The significance of the bootstrapping results was tested in phases, starting with the test at an alpha of .05. Second, test at .01 level if the result at .05 level is significant. Finally, if the test at .01 level is significant, then test at .001 level of significance. A bias-corrected (BC) confidence interval was employed in this study due to the normality problems in smaller samples. The BC confidence interval corrects for bias and skewness of the estimates (Jung et al. 2019).

Then, using a set of interaction models, buffering by the sense of control was tested by interacting the sense of control with IDR. Testing of interaction for moderation indicates
that a third variable (M) modifies the relationship between the independent (X) and dependent (Y) variables. The third variable is called a moderator that “affects the direction and/or strength of the relationship between an independent variable and a dependent variable.” (Baron and Kenny 1986:1174). The moderator variable is represented in Figure 5 using a path diagram, which is adapted from Baron and Kenny (Baron and Kenny 1986). There are three paths in Figure 5, which shows that the predictor impacts the outcome variable (path a), the mediator impacts the outcome variable (path b), and the interaction between the independent and the mediator variables impact the outcome (path c). A significant interaction term indicates that the sense of control modifies the relationship between IDR and mental health outcomes; in other words, the relationship between IDR and mental health outcomes varies significantly across levels of sense of control. The sense of control variable will be centered on the mean to create a new interaction term by multiplying the mean-centered sense of control with IDR. The interaction term will be tested by putting the multiplicative term into the regression model with other predictors. When the interaction term is significant, the relationship between IDR and the outcome at different levels of sense of control will be indicated.
Chapter Four- Results

The results of all descriptive and multivariate statistical analyses performed in this study are presented in this chapter. The findings of the descriptive analyses are presented in the first section. The second section presents the results of the multivariate analyses.

Descriptive Statistics

[TABLE 1 ABOUT HERE]

Table 1 provides sample means and proportions for the study’s continuous measures and categorical measures, respectively. As can be seen in Table 1, working older adults’ mean age is 69.95 years old. Among working seniors, more than half (56.89%) have a medium level of education. Overall analyses show that more than half (55.85%) of the working older adults are men, and a majority (68.53%) of them are married or partnered. A majority (89.33%) of employed seniors are white, non-Hispanic, and on average, they have 67, 476 dollars of household income. Although a majority (72.36%) of working adults have one or more chronic health conditions and most (86.07%) of them have no work-limiting health problems. Part-time work is common for more than half of adult working seniors (52.65%), and they are mainly involved in managerial positions in their jobs.

Table 1 also displays the distribution of IDR and other study variables across the two IDR categories. Table 1 shows that while working beyond retirement age, the majority (63.46 percent) of older adults experience IDR. Respondents reporting IDR have a significantly ($p<0.001$) higher mean level of depression than respondents who do not report IDR.³ For

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³ I will address strength of differences when controls variables are added because initial differences could be due to spuriousness.
anxiety in working older adults, findings show that the mean level of anxiety is lower for the group who do not report IDR than respondents reporting IDR and this difference between IDR and non IDR groups is statistically significant at $p<0.001$ level. In addition, the mean level of anger-in is significantly ($p<0.001$) higher for respondents with IDR than respondents without IDR. Conversely, the mean difference in anger-out for respondents between IDR and non-IDR groups is not statistically significant. Furthermore, working older people who experience IDR report lower levels of life satisfaction than people who do not experience IDR ($p<0.001$). Overall, among multiple outcomes of mental health, the mean level of depression, anxiety, and anger-in are significantly higher and significantly lower for life satisfaction, among older people with IDR.

In addition, Table 1 shows levels of sense of control in working older adults who experience IDR and who do not experience IDR. For the group who do not report IDR, the mean level of sense of control is higher than the mean level of sense of control among respondents who report IDR. The difference is statistically significant ($p<0.001$), showing that older working adults who experience IDR tended to report a lower level of sense of control than people who do not experience IDR.

Table 1 displays the differences in experiencing IDR across background control measures. Table 1 shows that the gender difference between the IDR and non-IDR groups is not statistically significant. Table 1 also shows that there is not a significant difference in mean age between the IDR and non-IDR groups. A higher percentage of IDR is not married than non-IDR. This difference is statistically significant ($p<0.01$). In addition, Table 1 indicates that a higher percentage of people with low education and medium education tended to report IDR than non-IDR ($p<0.001$). Also, a statistically significant ($p<0.01$) race difference is found between the IDR and non-IDR groups, in which minority race or ethnicity is more common in IDR than non-IDR groups.
Table 1 displays results for health-related controls. The difference between the IDR and non-IDR groups is not statistically significant for overall health conditions. In addition, a work-limiting condition is more common in the IDR than in the non-IDR group. The difference between the IDR and non-IDR groups is statistically significant \((p<0.05)\), showing that a higher percentage of older working people who suffer from health problems that limit their work were in the IDR than the non-IDR groups.

Table 1 also shows that people reporting IDR have a significantly lower mean level of income compared to people who do not report IDR \((p<0.001)\). The mean level of financial strain in older adults who report IDR and who do not report IDR indicates that for the group without IDR, the mean financial strain level is lower than working seniors reporting IDR. This difference is statistically significant \((p<0.001)\), indicating that older people who experience IDR tended to report higher financial strain than people who do not experience IDR.

Furthermore, Table 1 shows findings for work-related controls. Full-time work is more common in the IDR than in the non-IDR group \((p<0.05)\). Older workers in non-management positions are more common in the IDR than the non-IDR group and this difference is statistically significant \((p<0.05)\). Table 1 also shows that mean support is lower in the IDR than in the non-IDR group. The difference in support by coworkers between the IDR and non-IDR groups is statistically significant \((p<0.001)\), showing that older people who experience IDR tended to report a lower level of support by coworkers than people who do not experience IDR. Furthermore, a statistically significant \((p<0.001)\) difference is found between the IDR and non-IDR group for the mean level of job stress, which shows that older people who experience IDR tended to report a higher level of job stress than people who do not experience the IDR.
In sum, descriptive analyses demonstrated that IDR is associated with different mental health outcomes. However, the bivariate analyses do not include the possible sources of spuriousness identified in the literature review of this study. Furthermore, the descriptive analysis also shows differences between IDR and non-IDR groups in these sources of spuriousness. Therefore, multiple regression analyses will be used in the next section of analyses. OLS regression models will examine the associations between the multiple independent variables and the mental health outcomes, while taking these sources of spuriousness into account.

**Multivariate Analyses**

The set of models shown in Table 2 examines predictors of depression. Model 1 shows that IDR is positively and significantly \( p<0.01 \) associated with levels of depression, independent of survey wave, indicating that people who report IDR have higher mean levels of depression than people who do not report IDR. Similarly, Model 2 shows that IDR is positively and significantly \( p<0.05 \) associated with depression when background sociodemographic variables are controlled. Model 2 indicates that the background sociodemographic variables are not significant; however, about 16% of the association between IDR and levels of depression is eliminated through the introduction of background controls. Model 3 introduces health statuses as an additional set of controls. Model 3 shows that one chronic health condition, and health problems that limit work are significant predictors of depression. Health problems that limit work and having one chronic health

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4 IDR is likely reduced because this set of controls may act as proxies for additional background variables that do influence mental health.
condition are positively associated with levels of depression, indicating that people with work-limiting health conditions and one chronic health problem report higher levels of depression. Further, ancillary analyses were conducted to explain why one but not two or more health conditions were associated with depression. In the ancillary analysis, Model 3 was tested again after dropping the work-limiting health problem variable to show whether work-limiting health problems explain the relationship between IDR and chronic health conditions. Even in the ancillary analyses, though having one but not two or more chronic health conditions was associated with levels of depression, which will be addressed further in the discussion chapter. This model also shows that the coefficient for the association between IDR and depression is reduced by about 15% due to the introduction of health status variables and the coefficient for the relationship between IDR and levels of depression is no longer significant. After controlling for financial status variables in Model 4, the association between the IDR and levels of depression continues to be non-significant, but the financial strain is significantly associated with levels of depression. Model 4 indicates that financial strain is positively associated with depression levels, showing that people with greater financial strain report higher levels of depression. Model 5 adds work-related controls, and the association between IDR and levels of depression continues to be non-significant. Model 5 shows that among work-related controls, support by coworkers is significantly associated with levels of depression. Model 5 also specifies that support by coworkers is negatively associated with depression levels, indicating that people with higher levels of support from coworkers report lower levels of depression. Overall, analyses show that the relationship between the IDR and levels of depression is biased due to the background sociodemographic variables, health statuses, financial statuses, and work-related control variables, indicating that the confounders entirely explain the relationship between IDR and levels of depression. Also note that, although the association between IDR and depression is not significant with
all controls, it is notable that the coefficient changes direction and becomes negative. This negative coefficient will become important in the mediation analyses.

[TABLE 3 ABOUT HERE]

The next set of regression models shown in Table 3 examines predictors of anxiety. Model 1 of Table 3 shows that, the relationship between IDR and levels of anxiety is positive and significant \((p<0.001)\), controlling for survey wave. Thus, in a model with survey wave controlled, people who report IDR have higher levels of anxiety. Model 2 controls for background sociodemographic variables and this model shows that IDR is still positively and significantly \((p<0.001)\) associated with levels of anxiety, but the coefficients for the association is reduced by about 15%. Model 2 shows that, among background sociodemographic controls, medium and high levels of education are significant and mean levels of anxiety are higher for low education. Model 3 controls for background sociodemographic and health status variables in estimating the relationships IDR and levels of anxiety. The model indicates that approximately 5% of the association between IDR and levels of anxiety is eliminated from Model 2 to Model 3, but IDR is still positively and significantly \((p<0.001)\) associated with anxiety. Among health-related variables, having a health problem that limits work is significantly associated with levels of anxiety. The association between having a health problem and anxiety is positive, indicating that people who have a work-limiting health problem have higher levels of anxiety than people who do not have health problem that limits work. Model 4 adds controls for economic status variables. Model 4 indicates that the relationship between IDR and levels of anxiety is reduced about 85% from Model 3 to Model 4 thorough the introduction of economic controls. The association between the IDR and anxiety levels is reduced to non-significance. Model 4
shows that, among financial controls, financial strain is significantly associated with levels of anxiety. The association between financial strain and anxiety levels is positive, indicating that people who have greater financial strain report higher levels of anxiety. Model 5 controls for work-related variables. The model indicates that approximately 87% of the association between IDR and anxiety levels is eliminated from Model 4 to Model 5 through the introduction of controls. The relationship between the IDR and anxiety levels also continues to be non-significant. Model 5 shows that among work-related controls, job stress and coworkers’ support are significant predictors of anxiety in older adults. Support by coworkers is negatively associated with anxiety, indicating that people with higher levels of support by coworkers have lower levels of anxiety. The coefficient for job stress is positive, indicating that people report higher anxiety levels who have higher levels of job stress. Overall, analyses show that education, financial strain, job stress, and support by coworkers may be especially crucial in biasing the relationship between IDR and anxiety levels.

[TABLE 4 ABOUT HERE]

Table 4 presents the results for the main effects regression models for anger-in. The relationship between IDR and anger-in is positive and significant ($p<0.001$) in Model 1, which indicates that people who report IDR have greater internally directed anger. When background sociodemographic variables are controlled in Model 2 of Table 4, the coefficient for the relationship between IDR and anger-in shows that IDR is still positively and significantly ($p<0.001$) associated with anger-in and the coefficient increased in size by about 9% from Model 1. This suppression effect is unexpected and will be addressed in the discussion section. This is likely due to the issue that the background controls are acting as proxies for other unobserved factors. Model 2 shows that, among background sociodemographic variables, age is significantly and negatively associated with anger-in,
indicating that older people have lower anger-in compared to people who are younger.

Background sociodemographic and health status variables are controlled in Model 3, which shows that IDR continues to be positively and significantly \((p<0.001)\) associated with anger-in, but the coefficient for the association is reduced by about 3% from Model 2. Model 3 shows that having a work-limiting health problem is significantly associated with anger-in among older adults. The coefficient for the association between health problems and anger-in is positive, indicating that people with health problems report higher levels of anger-in than people who do not have a work-limiting health problem. Model 4 shows that, through the inclusion of economic statuses, about 44% of the association between the IDR and anger-in is reduced from Model 3, but the coefficient remains significant. The relationship between the IDR and anger-in is therefore substantially biased due to economic statuses, specifically financial strain. Model 5 adds controls for work-related variables, and the association between support by coworkers and anger-in is negative and significant \((p<0.05)\), indicating that people report lower levels of anger-in if they have coworkers’ support in the workplace. The association between IDR and anger-in is reduced by about 12% from Model 4. Overall, about half (48%) of the relationship between IDR and anger-in is reduced through the inclusion of all sets of control variables. Still, the relationship between IDR and anger-in remains positive and significant. In ancillary analyses, IDR was dropped from Model 5 and the coefficient of determination was 0.1036. Compared to Model 5 shown in Table 4, the coefficient of determination is 0.1109. This indicates that IDR explains about 1% of the variance in anger-in, over and above all controls. That is, although significant, the association is not strong. The implications of the strength of this association will be further addressed in the discussion chapter. Overall, this set of analyses shows that IDR is significantly associated with higher levels of anger-in, even with an extensive set of controls;
however, the association is substantially overestimated without controlling for background sociodemographic and health status, economic, and work-related variables.

[TABLE 5 ABOUT HERE]

The regression models for anger-out are presented in Table 5. Model 1 of Table 5 shows that people who report IDR have a greater level of negatively expressing anger to others than people who do not report IDR. However, the association is non-significant ($p>0.05$). Background sociodemographic variables are controlled in Model 2, showing that the coefficient of the relationship between IDR and anger-out continues to be non-significant. Results in Model 2 show that age, gender, and marital status are significantly associated with anger-out. The positive relationship between marital status and anger-out indicates that married people have higher levels of anger-out than non-married people. In addition, the coefficients for age and gender are negative, indicating that older working seniors and men have higher levels of anger-out than women and younger working adults. Model 3 shows that the coefficient for the relationship between IDR and anger-out is still non-significant after controlling the background sociodemographic and health status variables. Model 3 also shows that health-related controls are not significant. Model 4 shows the association between the IDR and anger-out is not significant after controlling for the economic status variables. Among economic controls, income is positively and significantly associated with anger-out, showing that working older adults who have higher levels of income report higher levels of anger-out than people who have lower levels of income. The association between IDR and anger-out remains non-significant with work-related controls in Model 5. This model also shows that work-related controls are not significantly associated with anger-out. Overall, these analyses show that independent of all background controls, the relationship between
IDR and anger-out is not significant; therefore, IDR is not associated with working older people's anger-out.

Regression models for life satisfaction with all sets of controls are presented in Table 6. The coefficient in Model 1 demonstrates that the relationship between IDR and levels of life satisfaction is negative and significant ($p<0.001$). This result indicates that people who report IDR have lower levels of life satisfaction than people who do not report IDR. Model 2 estimates the relationships between IDR and life satisfaction while controlling for background sociodemographic variables. This model shows that the relationship between IDR and life satisfaction continues to be negative and significant ($p<0.001$), but the introduction of background control decreases the coefficient of the relationships between IDR and levels of life satisfaction by about 7% from Model 1. Model 2 shows that the positive relationship between marital status and life satisfaction is significant ($p<0.01$), indicating that married people have higher levels of life satisfaction than non-married people. Model 3 shows that IDR continues to be negatively and significantly ($p<0.001$) associated with levels of life satisfaction. However, in this model, the introduction of health measures decreases the coefficient for the relationships between IDR and life satisfaction by about 3%. Among health status variables in Model 3, results show that the negative relationship between a work-limiting health problem and life satisfaction is significant, indicating that people with work-limiting health problems have lower levels of life satisfaction than people who do not have a health problem that limits work. When controlling for economic status variables in Model 4, people who report IDR remain significantly ($p<0.05$) lower levels in life satisfaction, but a majority (about 76%) of the association between IDR and life satisfaction is reduced from Model 3. Also, Model 4 shows that the negative relationship between
financial strain and life satisfaction is significant; therefore, people who have higher levels of financial strain have lower levels of life satisfaction in life. When work-related controls are included in Model 5, the coefficient indicating the relationship between IDR and life satisfaction reduces by about 23% and becomes non-significant. Model 5 of Table 6 also shows that the positive relationship between support by coworkers and life satisfaction is significant, indicating that people who have higher levels of support by coworkers have higher levels of life satisfaction. From Model 1 through Model 5, all controls reduce the majority (83%) of the relationship between IDR and life satisfaction. Also, the association between IDR and life satisfaction is reduced to non-significance in Model 5. These analyses show that IDR is significantly associated with lower life satisfaction levels when background sociodemographic, health status, and economic statuses are controlled; however, the association is substantially overestimated without controlling the work-related variables.

Tests of Mediation

In this section, the relationship between IDR and sense of control will be tested first, before testing the indirect associations between IDR and mental health outcomes through the sense of control. Results for the main effects regression models of sense of control are presented in Table 7. Model 1 shows that IDR has a negative association with a sense of control and the coefficient for IDR is significant ($p<0.001$) independent of survey waves. This result demonstrates that people who report IDR have lower levels of sense of control than people who do not report IDR. Model 2 shows that the relationship between IDR and sense of control continues to be significant when background sociodemographic variables are controlled. Furthermore, the coefficient for the association between IDR and the level of sense of control is slightly increased (about 1%) from Model 1. Model 2 shows that, among
background controls, the race and ethnicity measure is significantly and positively associated with the sense of control. These results indicate that people who are of a minority race or ethnicity have higher levels of sense of control than white and non-Hispanic people. Model 3 controls for background sociodemographic and health status variables, where the coefficient for the association between IDR and sense of control is slightly decreased (about 2%) from Model 2, but the coefficient continues to be significant. Model 3 shows that the health-related variables are not significant. Model 4 controls for financial status variables, which shows that the relationship between IDR and sense of control is reduced by about 48% from Model 3 to Model 4, but the relationship between IDR and sense of control continues to be negative and significantly associated with the sense of control. Thus, financial statuses confound the relationship between IDR and sense of control levels. Among financial controls, financial strain is negatively and significantly associated with the sense of control. These results indicate that people having higher levels of financial strain report lower levels of sense of control. Model 5 adds controls for work-related variables, but the association between IDR and sense of control is still significant at \( p<0.001 \) and decreased by about 20% from Model 4. Overall, more than half (about 58%) of the relationship between IDR and sense of control levels is reduced by including background sociodemographic and health status, economic, and work-related control variables; however, the relationship remains negative and significant. In ancillary analyses, IDR was dropped from Model 5 and the coefficient of determination was 0.2149. Compared to Model 5 shown in Table 7, the coefficient of determination is 0.2258. This indicates that IDR explains about 1% of the variance in sense of control, over and above all controls. That is, although significant, the association is not strong. The implications of the strength of this association will be further addressed in the discussion chapter. Overall, analyses show that IDR is significantly associated with a lower sense of control levels; however, the association may likely be substantially overestimated.
without controlling for the background sociodemographic and health status, economic, and work-related variables. As IDR is associated with lower levels of sense of control, these analyses support the $a$ path in the mediating relationship, and I will turn to testing the $b$ path in the next set of models.

This thesis also tests the relationships between the sense of control and depression, anxiety, anger-in and out, and life satisfaction. Table 8 presents the regression models for mental health outcomes with all sets of control variables. The results in Table 8 show that the sense of control is negatively and significantly ($p<0.001$) associated with depression and anxiety. Also, the coefficients for the association between the level of sense of control and anger-in, and anger-out are negative and significant at $p<0.05$. That is, the results indicate that, among older workers, higher levels of sense of control are associated with lower levels of depression, anxiety, anger-in, and anger-out. Furthermore, the relationship between the sense of control and life satisfaction shows a positive and significant coefficient ($p<0.001$), showing that working older adults’ life satisfaction increases as their sense of control increases. Ancillary analyses show that a sense of control accounted for a 3% variance in depression, 5% variance in anxiety, 2% variance in anger-in, 2% variance in anger-out, and 6% variance in life satisfaction, over and above all controls. The implications of the strength of this association will be further addressed in the discussion chapter. Overall, the findings reveal that the $b$ path is significant across mental health outcomes; therefore, I will test $ab$ in the next section. The next set of analyses tests the sense of control as a mediator of the relationship between IDR and depression, anxiety, anger-in, anger-out, and life satisfaction.
Table 9 summarizes the results for the tests of mediation. Model 1 indicates whether a sense of control explains the relationship between IDR and depression by modeling depression as an IDR outcome through the sense of control, independent of all control variables. The analysis shows that the 99.9% bootstrapped confidence interval for depression does not contain zero, indicating that the indirect effect is significant ($ab=0.061; p<0.001$) at an alpha of 0.001. Therefore, there is a significant indirect association between IDR and depression through a lower sense of control. In Model 2, the 99.9% bootstrapped confidence interval does not contain zero, showing that, the indirect effect for the relationship between IDR and anxiety through the sense of control is significant ($ab=0.032; p<0.001$) at an alpha of 0.001. Thus, IDR is significantly associated with anxiety through the sense of control. The bootstrapped confidence interval for anger-in does not contain zero at an alpha of 0.01, showing that the indirect relationship between IDR and anger-in through the sense of control is significant ($ab=0.024; p<0.01$). That is, IDR is significantly associated with anger-in through the sense of control. Also, note that IDR's total effect for anger-in is 0.154, while the indirect effect shown in Table 8 is 0.024, indicating that 15% of the total effects are explained and 85% of the association IDR and anger-in is not explained. Model 4 facilitates a similar mediation test of the bootstrapped confidence interval, which shows that the indirect association between IDR and anger-out through a sense of control is significant at the $p<0.01$ level. Model 5 shows that the lower and upper bounds of the 99.9% bootstrapped confidence interval are both negative, indicating that the indirect relationship between IDR and life satisfaction through the sense of control is significant at an alpha of $p<0.001$. Therefore, mediation analyses show that there is a significant indirect association between IDR and life satisfaction through the lower sense of control.

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5 This is the coefficient for the association between IDR and anger-in in Model 5 of Table 4.
These analyses show that several indirect effects are significant when the overall associations between IDR and mental health outcomes are not significant. The results in Table 8 explain why there are multiple significant indirect effects without significant total impact. The results in Table 8 show a negative association between IDR and depression, anxiety, anger-in, and anger-out. That is, when the sense of control is held constant, the associations between IDR and mental health outcomes are in the direction of better mental health, indicating lower levels of these outcomes for people with IDR than for people without IDR. Although these associations are not significant, they provide a counterforce against the adverse indirect effect through the sense of control, leading to overall non-significant findings. These results suggest that IDR may have some beneficial effects on mental health that could be examined in additional tests of mediation, and this issue will be addressed further in the discussion chapter.

Tests of Moderation

The final sets of models shown in Table 10 test for moderation by the sense of control. Model 1 tests an interaction between IDR and levels of sense of control for levels of depression, and this interaction is not significant, showing that the relationship between IDR and depression does not differ by the sense of control. Model 2 shows that the interaction between IDR and sense of control is not significant for anxiety. Therefore, the relationship between IDR and anxiety does not differ by the sense of control. Models 3 and 4 test the extent to which the relationship between IDR and anger-in and anger-out differ by the sense of control by testing interactions between the IDR and sense of control. However, the interaction is not significant for both anger-in and anger-out, indicating that the relationship between IDR and maladaptive expressions of anger does not differ by the sense of control of
working older people. Model 5 shows that the interaction between IDR and sense of control is not significant for the life of satisfaction. Overall, these analyses demonstrate that no interaction is significant; therefore, the associations between IDR and various mental health outcomes are not significantly buffered by the sense of control.
Chapter Five- Discussion

After the Great Recession, greater numbers of older adults worked past retirement age and these increasing trends did not subsequently decline (Collins and Casey 2017; Fisher et al. 2016). Therefore, studying the consequences of working past retirement for workers’ well-being is critical. The central objective of this thesis was to examine whether IDR is associated with multiple measures of mental health in working older adults (age 65+) in the US in 2010 and 2012. In addition, two other related aims were addressed in this study: 1) whether IDR is associated with multiple measures of mental health through a lower sense of control, and 2) whether a sense of control buffers the association between IDR and multiple mental health measures.

To guide this study, a stress process perspective (SPP), developed by Pearlin (1999), was followed as a general framework to explain the relationship between IDR and multiple mental health outcomes. The SPP considers stress as a primary factor that influences multiple mental health outcomes of individuals. Stressors are external factors to the individual that are connected to social context and produce an array of consequences on individuals’ mental well-being (Wheaton et al., 2013). IDR fits into the characteristics of stress because experiencing IDR due to the need for money is unwanted for older adults who work past retirement age. The SPP suggests that psychological resources may mediate and moderate the relationship between stresses and mental health (Pearlin et al., 1981). Furthermore, the SPP emphasizes a sense of control as a key psychological resource (Pearlin and Bierman 2013). Thus, this thesis also investigated whether a sense of control mediates and/or moderates the relationship between IDR and different mental health outcomes in older adults. This chapter discusses how the findings of the current study relate to these research objectives, and then it presents the conclusions in relation to the work and mental health literature.
Prevalence of IDR in Older Adults

The results of the current study indicated that older adults who worked after retirement age (age 65+) often experienced IDR, as the majority of working older adults examined in this study reported IDR. As previously stated, the Great Recession in 2007-2009 changed the retirement plan of millions of older Americans, who were planning to stay longer in the workforce (American Association of Retired Person 2011). Following the recession, poor economic conditions and insufficient financial resources forced an increasing number of older Americans to remain in the labor force (Collins and Casey 2017), indicating that IDR among older adults may be a consistent and essential issue to investigate. According to Fisher et al. (2016), when older adults aged 62-65 postpone retirement for financial reasons, they experienced IDR. Therefore, this thesis extends previous research by looking at people beyond age 65 and showing that IDR is a common stressor in older adults who work past retirement age.

The economic downturn caused by the COVID-19 pandemic and subsequent social distancing measures likely created adverse economic effects on older Americans (Morrow-Howell, Natalie, and Emma 2020). The pandemic may have accentuated economic pressures on older workers, which is likely to have forced more older workers to stay longer in the workforce due to reductions in earnings and retirement savings (Coughlin 2020; Pit et al. 2021). The findings of the 2021 International Health Policy Survey of Older Adults revealed that compared to other countries, older adults in the United States were most likely to suffer economically due to the COVID-19 pandemic (Williams II et a. 2021). In addition, poor economic conditions caused by the COVID-19 pandemic forced more older workers to take bridge employment, such as clerical jobs (Bui, Button, and Picciotti 2020). In other words, the COVID-19 pandemic has caused economic suffering among older adults, suggesting that
more older adults will stay longer in the workforce to mitigate the adverse economic impacts on their life. Therefore, in the wave of the COVID-19 pandemic, it is important to give more attention to IDR and the mental health effects of IDR in older adults.

**IDR and Multiple Measures of Mental Health**

The first research question of this thesis was whether experiences of IDR are related to multiple mental health outcomes in older adults. In response to the first research question, this thesis tested the relationship between IDR and different mental health outcomes in older adults. The results of my thesis found a significant association between IDR and depression, anxiety, anger-in, and life satisfaction when confounders were not taken into account. The relationship between IDR and depression, anxiety, and life satisfaction then became non-significant when multiple contributors to spuriousness were taken into account. In particular, the pattern of results indicated that socio-demographic variables, health status, economic status, and work-related factors were correlated with IDR and contributed to spuriousness. Therefore, this thesis found a lack of overall association between IDR and depression, anxiety, or life satisfaction once potential confounding factors were taken into account.

This thesis showed that health status, economic status, and work-related factors did not equally contribute to spuriousness. The findings showed that the relationship between IDR and depression was greatly reduced when financial and work-related factors were taken into account. Thus, financial and work-related factors appeared to contribute more to confounding the relationship between IDR and depression. Similarly, financial strain and work-related confounders appeared to substantially reduce the coefficient for the relationship between IDR and anxiety compared to other sets of confounders under this thesis.

Furthermore, among health status, economic status, and work-related factors, several factors did contribute to spuriousness in the relationship between IDR and life satisfaction. These
confounding factors include financial status and work-related factors that appeared to reduce the IDR-life satisfaction association substantially. Therefore, among all confounding factors examined in this thesis, financial strain and work-related factors are the clearest sources of spuriousness across mental health outcomes.

This thesis suggests that confounding factors, including financial strain, work-limiting health problems, job stress, and coworkers' support, are essential to take into account in studying the association between IDR and mental health. According to research on the impact of the working environment on workers' mental well-being, workers are more likely to experience stress due to working in an unfavorable psychosocial working environment (Fleischmann, Xue, and Head 2020). Research has also shown that work stress may be associated with various health outcomes in older adults, including increased depression, anxiety disorder, and occupational injuries (Bhui et al. 2016; Mezuk et al. 2011; Chandola 2010). According to the Person-Environment (P-E) fit approach, “person and environment work as joint determinants of employees’ well-being, with the misfit between person and environment as the cause of strains (Yang et al. 2008: 567-568).” The P-E fit approach suggests that the fit between the workplace environment and workers' preferences influences their mental well-being or strain (Hecht and Allen 2005). This thesis suggests that while IDR may appear to be stressful, it seems that specific stressful financial and work-related factors are associated with IDR and affect mental health. Therefore, if we can modify financial stress, job stress and a lack of coworker support, and also accommodate health problems in required work, we can determine whether or not IDR experience is a critical issue for working older adults. Working past retirement, even when one may not want to, is likely not harmful if one can work in an environment that fits workers’ preferences and physical conditions.
There are possible explanations for the lack of overall association between IDR and multiple mental health outcomes in older adults once confounders are taken into account. Although IDR is stressful, there may be positive impacts of working longer that balance out the harmful effects of IDR, which suggests a lack of overall association between IDR and mental health. Studies show that a job provides people with personal identity in life, which may help older workers to maintain meaning and goals in life (Kim and Moen 2002; Menec 2003). Research has also found that continuing to work past the retirement age positively impacts older adults' emotional health and overall well-being (Collins et al. 2017; Esteban 2006; Will 2010). In addition, staying in the labor force may increase older adults' opportunities for social participation, which is an essential determinant of successful and healthy ageing (Levasseur et al. 2010). Furthermore, extended working life may increase chances for social participation and social support, which leads to better mental health in older adults (Kim and Moen 2002; Duncan and Whitney 1990; Forbes et al. 2015). Thus, the benefits of work counter-balance the disadvantages of working past retirement age, and the result is that there is little overall association between IDR and mental health.

One exception to the lack of significant overall association between IDR and mental health outcomes was the significant relationship between IDR and anger-in over and above the socio-demographic, economic, health, or work-related controls. However, no significant association between IDR and anger-out was found in this thesis. Previous research has shown that people can express their anger in a variety of ways, including suppressing the feeling of anger by boiling inside (anger-in) and expressing anger by acting aggressively toward others (anger-out) (Lee and Bierman 2018). This thesis showed that, when confronted with IDR, older adults who work past retirement age only expressed internalized anger. The significant relationship between IDR and anger-in and a non-significant relationship between IDR and anger-out can be explained based on the social-emotional selectivity theory (Carstensen
According to social-emotional selectivity theory, older adults are more likely to show greater self-control toward emotions in managing unexpected events in life (Carstensen and Joseph 2005), suggesting that older adults will more carefully choose their future challenges in life. The frustration of working past retirement age when older adults want to retire does generate anger. However, working older adults tend to only express work-related anger inwardly because expressing anger outwardly in a work setting is likely to cause more problems.

Implications of the Indirect Association Between IDR and Mental Health Outcomes

The second research question addressed in this thesis was whether IDR is associated with various mental health outcomes indirectly through the sense of control. This thesis tested the relationship between IDR and a sense of control before testing the indirect association between IDR and mental health outcomes through the sense of control. Although more than half of the association was reduced, the findings showed a significant negative relationship between IDR and sense of control when confounders were taken into account. The significant negative relationship between IDR and sense of control indicates that working older adults with IDR have lower levels of sense of control. It should be noted that a measure of strength cannot be determined based on significance level (Wasserstein and Lazar 2016). Ancillary analyses demonstrated that, although significant, IDR explained only a sight amount of (about 1%) variance in the sense of control in working older adults, suggesting that the negative relationship between IDR and sense of control is not substantial.

Even though the relationship between IDR and a sense of control appears weak, I argue that ageing and mental health researchers should give greater attention to the IDR-sense of control relationship. The reason I argue for the importance of this association is because individuals may face adverse life outcomes if their sense of control is depleted due to
IDR. People's belief in control over life outcomes promotes proactive behavior that facilitates active life decisions and goal attainment (Chipperfield, Perry, and Stewart 2012; Gerstorf, Röcke, and Lachman 2011). Furthermore, a sense of control acts as a protective factor in the face of adverse health conditions that reduce an individual's overall state of happiness (Chipperfield, Perry, and Stewart 2012). However, a sense of powerlessness or perceived uncontrollability over life outcomes is detrimental for individuals (Gallagher, Bentley, and Barlow 2014). People with a low sense of control will lack the motivation to actively solve problems in their lives (Ross and Mirowsky 2003), which may degrade their quality of life and happiness. Even if the negative association between IDR and sense of control is not strong, the strong consequences of a sense of control imply that even moderate declines in the sense of control will have substantial impacts on individuals' lives.

At the same time, this thesis tested the relationship between a sense of control and depression, anxiety, anger-in and out, and life satisfaction in working older adults. The findings revealed a negative and significant relationship between the sense of control and depression, anxiety, and anger-in and out and a positive relationship between the sense of control and life satisfaction. The results indicated that working older adults with a stronger sense of control had lower levels of depression, anxiety, outward and internalized anger, and higher levels of life satisfaction. The pattern of findings of this thesis demonstrates the importance of the sense of control for the mental health of older workers who work past retirement age. Previous research has shown the importance of a sense of control to mental health in the general population of older adults, most of whom were not working (Krause and Shaw 2003; Ward 2013). However, my thesis focuses on the importance of a sense of control for working older adults because, following the Great Recession, a greater number of older adults are involuntarily working for money past the retirement age, which tends to be stressful. This thesis, therefore, suggests that a sense of control will help older adults in
maintaining positive mental health even when needing to work past retirement age. In this context, mental health researchers should pay more attention to the sense of control as an important mental health resource for people who continue to work past retirement age.

The findings of this thesis may also point to the association between social stratification and mental health. Studies demonstrate that people of lower socioeconomic statuses tend to have a lower sense of control than people of higher socioeconomic statuses (Kraus et al. 2012; Manstead 2018). Furthermore, research has shown that socioeconomic statuses influence working past retirement age (Leinonen et al. 2020), and descriptive analyses of this thesis showed that people with lower socioeconomic statuses are more likely to experience IDR. This thesis suggests that people at lower socioeconomic statuses are more likely to work past retirement, and older adults remaining in the workforce may have a lower level of sense of control that negatively influences their mental health.

The significant associations between IDR, sense of control, and mental health also suggest that there may be an indirect relationship between IDR and mental health through the sense of control. Mediation analyses showed that the significant indirect association through the sense of control is positive for depression, anxiety, anger-in and out, and also negative for life satisfaction. Therefore, IDR appears to result in worse mental health through a lower sense of control. The pattern of findings of this thesis implies that one way to mitigate the effects of IDR on mental health in older adults is to prevent losses of control, possibly through helping older people to increase their self-efficacy.

The mediation findings of this thesis are consistent with larger perspectives on the stress process. Previous research on the stress process perspective has shown the pattern of mediation mechanisms in the relationship between stress and mental health. For example, existing research emphasized that neighborhood disorder is associated with higher levels of distress through powerlessness (Ross 2011). However, studies also indicated a similar pattern
of findings beyond neighborhood disorder, which showed that a sense of control and related constructs function as a primary mechanism for the effects of stressors on mental health (Cole et al. 2002; Rosenbaum et al. 2012). Therefore, consistent with the previous findings, this thesis suggests that the sense of control, as a primary mechanism, explains the relationship between IDR and various mental health outcomes.

The findings of the current thesis also highlight the importance of considering significant indirect effects when there is no significant total effect. As is shown in this thesis, in the absence of a significant total effect, the results demonstrated indirect relationships between IDR and depression, anxiety, anger-out, and life satisfaction through a sense of control. The findings are consistent with those of Chang et al. (2020), who found that while there was no statistically significant total effect of objective poverty on mental health, the relationship between objective poverty and mental health was mediated by adverse life events and social support. In a simulation study, Rucker et al. (2011) show that the absence of a significant total or direct effect does not rule out the possibility of detecting indirect effects. According to Rucker et al. (2011:364), “one potential reason an indirect effect might be detected even when the total or direct effect is not significant is differential power for detecting these effects.” When the relationship between an independent and a mediator variable is more precise than the relationship between the independent and dependent variables, the reliability of this association will increase the power of the indirect effect relative to the total effect. Additionally, when the relationship between the independent and mediator variables is stronger than the independent-dependent relationship, the indirect effect is more likely to occur, even if the total effect is not significant (Rucker et al. 2011). Also, a similar situation can occur with the association between the mediator-dependent variable, in which a stronger or more reliable association between mediator and outcome (than the independent-dependent variable) may lead to a significant indirect effect. Rucker et al. (2011)
argue that researchers should drop the assumption of significant total effects when investigating indirect effects. Similarly, a recent study suggests that, if researchers want to test the underlying mechanisms, they should test indirect effects even if the total effects are not significant (Loeys, Moerkerke, and Vansteelandt 2015). Testing the indirect effects is therefore essential even if there are no significant total effects. The indirect effect of IDR on mental health even when there is no total effect is likely due to the strong consequences of the sense of control for mental health, indicating that IDR leads to less control, which in turn leads to reduced mental health. Therefore, the results of the current thesis will help research progress by providing evidence of indirect effect for mental health researchers to investigate the theorized relationships presented in the data, even without a significant total effect.

An additional reason for the non-significant total effects in the presence of significant indirect effects may be additional mechanisms that counter the adverse effects of IDR on mental health. As is described in detail above, working past retirement age may be beneficial for the mental health of working older adults. Extended working life is likely beneficially related to personal identity, as well as greater chances for social participation, and social support, resulting in positive mental well-being in working older adults. The benefits of prolonged working life may counterbalance the harmful consequences of working past retirement age, and therefore there is little overall association between IDR and mental health. Therefore, future research should pay attention to these additional mechanisms through which an indirect relationship between IDR and mental health may appear without a significant total effect.

**Implications of the Buffering Effect of Sense of Control**

This thesis examined whether the sense of control buffers the association between IDR and mental health. The SPP posits that moderating resources have the capacity in
protecting individuals against the detrimental effect of stress on mental health (Pearlin 1999). Previous research shows that a perceived sense of control as a psychological resource reduces the deleterious impacts of daily chronic stressors on depressive symptoms (Gadalla 2009). Moderating resources, particularly the sense of control, help people to take problem-focused strategies to cope with adverse situations in life (Ben-Zur 2002). Mental health consequences of stressors on individuals will be determined, in particular, by how people deal with adversity rather than by the stressor itself (Dijkstra and Homan 2016). People who can effectively cope with stressful encounters in life may enjoy better mental health than people who lack the capacity to cope with such stressful situations (Taylor and Shanton 2007). Therefore, coping resources are essential for individuals because, according to existing studies, these resources can play essential moderating functions to prevent the adverse consequences of stress (Pearlin 1991; Thoits 1995).

Although previous coping research suggests that a sense of control buffers the deleterious impacts of stressors on mental health, the sense of control does not act as a buffering agent in the relationship between IDR and mental health. There are possible explanations for a lack of moderation by the sense of control in the relationship between IDR and different mental health outcomes. The non-significant interaction effect in this thesis is most likely due to the overall non-significant association between IDR and various mental health outcomes. The findings imply that additional benefits of IDR may also offset the harmful effects of IDR itself. By extension, the results indicate that a sense of control may not function as a buffer because the additional benefits of IDR mean that the sense of control is not required as a coping resource for IDR. The benefits of IDR may include a greater opportunity for older adults to engage in community activities and maintain social networks and social support. In gerontology research, extrinsic factors such as social ties, social networks, and social support have been shown to protect older adults by increasing their
resilience, helping them to overcome adversities in life (Wells 2010; Hildon et al. 2010; McClain 2018). IDR may enhance these positive extrinsic factors, which in turn may contribute to creating a non-significant moderating function of a sense of control in the relationship between IDR and mental health outcomes in working older adults. Therefore, researchers should focus on how additional beneficial factors may jointly mitigate the adverse effects of IDR, rendering the sense of control irrelevant as a buffering resource in the relationship between IDR and mental health.

**Process of Structural Amplification**

This thesis hypothesized that a structural amplification process may help to explain how IDR is associated with mental health outcomes in older adults. When a resource mediates and moderates the impacts of a stressor, structural amplification occurs. In this process of structural amplification, the stressor depletes a resource that would otherwise offset its effects (Ross and Mirowsky 2006). The findings of this thesis reveal that IDR is associated with lower levels of a sense of control, explaining the association between IDR and mental health outcomes, thereby fulfilling the mediation component of structural amplification. The results also showed that a sense of control does not buffer the adverse effects of IDR on mental health, indicating that the moderation component of structural amplification is not satisfied in this thesis. The results of this thesis imply that the sense of control, although reduced by IDR, will not amplify the adverse impacts of IDR on various mental health outcomes in working older adults.

It should be noted that the non-existence of the structural amplification results in this thesis does not invalidate the importance of a sense of control for mental health because the sense of control explains the relationship between IDR and multiple mental health outcomes. Pearlin and Bierman (2013) argue that resources can mediate or moderate the relationship
between stress and mental health and the sense of control was found to help explain the relationship between IDR and various mental health outcomes. The crucial point in the results of this is that, while the sense of control did not buffer the relationship between IDR and mental health, it did affect mental health. As previously stated, a sense of control appears to be beneficial to older adults and thus likely to be a valuable resource for mental health. This thesis suggests that the lack of evidence of structural amplification does not rule out the beneficial impacts of a sense of control and as a mechanism for the effect of IDR. Therefore, future research should look into the structural amplification of other commonly studied stressors to better understand the extent to which a sense of control tends to mediate, moderate, or both.

Limitations

The current thesis has several limitations. In this thesis, the potential for spurious association cannot be ruled out due to the use of a cross-sectional sample. Individuals with a limited sense of control or who are already exposed to stresses may be more prone to IDR experiences, leading to reverse causation between poor mental health and IDR. Also, individuals who feel powerless may be less active in their attempts to avoid situations or work responsibilities that expose them to higher levels of depression, anxiety, anger, and lower levels of life satisfaction. Additional research should consider how processes of IDR and mental health occur longitudinally, especially by examining working statuses prior to, during, and after traditional retirement age, which would help to establish whether the sense of control is reduced as a result of IDR and whether this, in turn, leads to worse mental health. There could also be other potential sources of spuriousness that this thesis did not consider in the analyses that should be addressed in further studies. These spurious sources may include housing stress and job insecurity, which are likely to impact mental health in
older adults during economic downturns (Frasquilho et al. 2016; Koltaï and Stuckler 2020). During a recession, older adults may experience housing stress like moving in with family, selling the home for less, losing a home, and missing rent payments (Koltaï and Stuckler 2020). In addition, job insecurity refers to a situation in which employees are at risk of losing their jobs or becoming unemployed (Virtanen, Urban, and Anne Hammarström 2011). Research shows that job insecurity is associated with poor mental health in employees (Virtanen, Urban, and Anne Hammarström 2011) and a lack of personal control (Glavin 2013). Older workers are more likely than younger workers to be pushed out of the workforce during an economic recession (Picciotti et al. 2020). Therefore, future research should control for housing stress and job insecurity as potential sources of stress to older adults' mental health during or after a recession. Another limitation is that this thesis relies on self-reports for mental health variables, implying that dispositional biases of under or over-reporting depression, anxiety, anger, and life satisfaction should be addressed. Addressing self-report biases will be an essential area for future research in which longitudinal studies of change can take stable sources of dispositional reporting biases into account (Bierman and Lee 2018).

Policy Implications

Notwithstanding the limitations mentioned above, the findings of this study have important implications for policy and practice. This thesis, in particular, contributes to a growing body of evidence suggesting multi-dimensional strategies at the individual level in order to protect older adults' mental health, rather than focusing solely on prolonged employment (Walker 2006). The results of this thesis suggest that a sense of control is an important resource for older adults because the sense of control is a primary mechanism that explains the relationship between IDR and various mental health outcomes. Labour market interventions targeting the psychological coping resources of workers may help mitigate
substantial declines in the sense of control in older adults due to the economic hardships following a recession. Targeted interventions such as retirement counselling programs to increase financial literacy and social protection policies should be implemented to ensure the economic security of older adults. Economic security in old age will assist in deciding whether or not to work past retirement age, not for post-retirement monetary needs, but to maintain an active and productive life. Therefore, financial security and better protective standard for older adults may help them cope with adverse mental health outcomes.

In addition, this thesis found spuriousness when controlling for background socio-demographic, financial status, health-related, and work-related confounders. The findings of spuriousness imply that organizational efforts should be made to implement appropriate measures to address age-related challenges that older workers may face at work. Interventions for a modified workplace and practices of working beyond retirement age for older adults are needed so that working past the age of 65, even if one does not want to, will not harm the mental health of older adults. Modified workplace environments can be done by creating an age-friendly working environment for older adults. Providing an age-friendly workplace for older adults is a more critical policy issue than ever because an increasing number of older adults have been working past retirement age following the Great Recession. An age-friendly working environment and sources of a greater sense of control will help older adults gain confidence, become more active in addressing unwanted life events, and maintain better mental health. My thesis supports the idea that working older adults are likely to be vulnerable to IDR and adverse mental health following the Great Recession, but these adverse effects are preventable. Therefore, policies targeting both older workers and the workplace environment are critical in order to face challenges following the Great Recession that place working older adults’ mental health at a higher risk.
Conclusion

In summary, several main conclusions can be drawn from the results of this thesis, which are related to the broader mental health literature. First, the results of this thesis show that the majority of the working older adults reported IDR, suggesting that IDR is a common stressor in older adults who work past retirement age. Second, this thesis showed that IDR and multiple mental health outcomes were significantly related to each other when confounders were not taken into account. The relationship between IDR and multiple mental health outcomes was non-significant when all confounders were controlled for in this study. These results suggest that, among all the confounders examined in this thesis, financial strain and work-related factors are critical factors that must be addressed to determine whether or not studying the mental health effects of IDR is vital for older adults. However, an exception to the lack of significant overall association between IDR and the mental health outcomes indicates that IDR is significantly associated with anger-in over and above the confounders under this thesis. Therefore, this thesis concludes that IDR is an important source of stress for self-directed anger in older adults who work past retirement age.

The second important part of the findings of this thesis emphasizes that a sense of control is a critical psychological resource for older adults who work past retirement age. Given that the sense of control is a pathway between IDR and mental health, this research highlights that older adults with lower levels of sense of control should be assisted by taking appropriate individual and/or workplace levels interventions that help combat the mental health impacts of IDR. Specifically, my thesis suggests the importance of a sense of control for working older adults because, following the pandemic due to the COVID-19, a greater number of older adults will be working for money past the retirement age, which tends to be stressful. Therefore, policymakers should develop appropriate strategies to increase older
adults' sense of control as a critical mental health resource to combat the negative mental health consequences of working past retirement age.

Lastly, the results of this thesis indicate that the sense of control does not act as a buffering agent in the relationship between IDR and mental health, suggesting that the sense of control will not amplify the adverse impacts of IDR on various mental health outcomes. As is described above, there may be additional positive effects of IDR in older adults, which in turn may contribute to creating a non-significant moderating function of a sense of control. In this context, this thesis suggests the non-existence of the hypothesized structural amplification framework in the relationship between IDR and mental health outcomes. However, a non-significant moderation and non-existence structural amplification process in this thesis do not invalidate the importance of a sense of control because this thesis found that the sense of control is a mechanism in the relationship between IDR and multiple mental health outcomes. Therefore, this thesis concludes that a sense of control is likely to be a valuable resource in the face of IDR and may have positive long-term effects on older adults.
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List of Tables

<table>
<thead>
<tr>
<th>TABLE 1</th>
<th>Sample Descriptives</th>
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**Mental Health Outcomes**

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<td>4.751</td>
<td>5.056 ***</td>
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**Hypothesized Mediator/Moderator**

| Sense of Control | 5.333 | 4.822 | 5.069 *** |

**Background Social Status**

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**Health Status Measures**

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N=947. Descriptives are weighted.

Means are presented for continuous measures, proportions for categorical measures.

Differences are tested using T-tests based on bivariate regressions for continuous measures, and chi-square tests for categorical measures.

*p<0.05. **p<0.01. ***p <0.001 (Two-tailed tests).
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*p ≤ .05. **p ≤ .01. ***p ≤ .001 (Two-tailed tests). Metric coefficients are presented. N=947.
1. No high school degree is the reference group.
2. No chronic condition is the reference group.
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*p ≤ .05.  **p ≤ .01.  ***p ≤ .001 (Two-tailed tests). Metric coefficients are presented. N=947.
1. No high school degree is the reference group.
2. No chronic condition is the reference group.
<table>
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$R^2$ | 0.037 | 0.050 | 0.060 | 0.090 | 0.111 |     |

*p ≤ .05. **p ≤ .01. ***p ≤ .001 (Two-tailed tests). Metric coefficients are presented. N=947.

1. No high school degree is the reference group.
2. No chronic condition is the reference group.
TABLE 5
Multiple OLS Regression Analysis of IDR and Anger-cue

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*p ≤ .05. **p ≤ .01. ***p ≤ .001 (Two-tailed tests). Metric coefficients are presented. N=947.
1. No high school degree is the reference group.
2. No chronic condition is the reference group.
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*<sup>p</sup> ≤ .05. **<sup>p</sup> ≤ .01. ***<sup>p</sup> ≤ .001 (Two-tailed tests). Metric coefficients are presented. N=947.

1. No high school degree is the reference group.
2. No chronic condition is the reference group.
<table>
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<tr>
<th></th>
<th>Model 1</th>
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* $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$ (Two-tailed tests). Metric coefficients are presented. N=947.
1. No high school degree is the reference group.
2. No chronic condition is the reference group.
### TABLE 8
Multiple OLS Regression Analysis of IDR and Mental Health Outcomes

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<td>-0.030</td>
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<tr>
<td>High School, GED, an</td>
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<td>College or More Degree</td>
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<td>0.166</td>
<td>-0.165</td>
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<td>0.258</td>
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<td>Miority race or ethnic</td>
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<td>0.122</td>
<td>0.074</td>
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<td>-0.084</td>
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<td>One Chronic Condition</td>
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<tr>
<td>Two or More Chronic t</td>
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<td>Income</td>
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<td>0.093</td>
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<td>-0.145</td>
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<td>Survey Wave Variable</td>
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<td>3.208</td>
</tr>
</tbody>
</table>

R²: 0.151

*p ≤ .05.  **p ≤ .01.  ***p ≤ .001 (Two-tailed tests). Metric coefficients are presented. N=947.

1. No high school degree is the reference group.
2. No chronic condition is the reference group.
<table>
<thead>
<tr>
<th></th>
<th>Depression</th>
<th>Anxiety</th>
<th>Anger-in</th>
<th>Anger-out</th>
<th>Life satisfaction</th>
</tr>
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<tbody>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>ab</td>
<td>ab</td>
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<td>ab</td>
<td>ab</td>
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<tr>
<td>0.014872</td>
<td>0.028432</td>
<td>0.123859</td>
<td>0.022752</td>
<td>0.013642</td>
<td>0.006390</td>
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<tr>
<td>95% Conf. Interval</td>
<td>99.5% Conf. Interval</td>
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<td>99.9% Conf. Interval</td>
<td>99.9% Conf. Interval</td>
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<tr>
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<td>99.5% Conf. Interval</td>
<td>99.9% Conf. Interval</td>
<td>99.9% Conf. Interval</td>
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<td>99.9% Conf. Interval</td>
<td>99.9% Conf. Interval</td>
</tr>
<tr>
<td>0.0020107</td>
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</table>

Bootstrap results; Number of observations= 14,581; Replications= 5000 ; The most stringent level at which the interval is significant is bolded.
<table>
<thead>
<tr>
<th></th>
<th>Depression</th>
<th>Anxiety</th>
<th>Anger-in</th>
<th>Anger-out</th>
<th>Life Satisfaction</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>b</td>
<td>SE</td>
<td>b</td>
<td>SE</td>
<td>b</td>
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<tr>
<td>IDR</td>
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<td>Sense of Control</td>
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<td>IDR x Sense of Control</td>
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<td>0.148</td>
<td>0.194</td>
<td>0.124</td>
<td>0.063</td>
<td>0.329</td>
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</tbody>
</table>

Note: *p ≤ .05.  **p ≤ .01.  ***p ≤ .001 (Two-tailed tests). Models include all controls in Table 1. N=947.