To BE or not to BE?

Bridge Employment and Depressive Symptoms among Retirees in the United States – A Longitudinal Analysis Using Fixed Effects

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Abstract

Bridge Employment (BE) is described as moving gradually from employment to fully retired status, rather than retiring abruptly. In the U.S. in 2010, more than 50 percent of retirees aged 50-80 reported BE participation sometime in their lives. However, the mental health consequences of BE are still under debate. This study uses ten waves and three cohorts of the Health Retirement Survey to examine the effect of BE participation on mental health. The data were centered on the year of retirement (n=7967, person-waves=45,848), allowing to estimate fixed effects models to control endogeneity created by unmeasured time constant, pre-retirement and life course elements. We find that working in BE improves people's mental health, especially when people work in non-stressful and non-physically demanding BE. BE trajectories also affect mental health outcomes.

Introduction

BE is usually described as moving gradually from employment to fully retired status. This could mean both working again after having "fully" retired or reducing the hours of work then retiring completely (See paper 3 for a detailed account of where BE definition). To participate in BE, individuals first should have experienced or currently experiencing retirement. This is consistent with the meaning that BE is something that occurs in or after retirement (Bennett, Beehr, & Lepisto, 2017). In this dissertation, retirement is defined as the self-reported or pension defined labour status at the time of survey participation (Gustman & Steinmeimer, 2000).

The governments in many industrialized countries and the World Health Organization are increasingly encouraging participation in "bridge employment (BE)". They see participating in BE could thus be an important active aging activity as it has the potential to increase workers' participation in the workforce, alleviate the pension shortage, and improve workers' social life and mental health as they age.

Accordingly, in the United States and other industrially developed countries, more and more people retire gradually, they no longer experience the one-time transition of working one day then being retired the next day (Cahill, Giandrea, & Quinn, 2006, 2013; Drentea, 2002; McDaniel, 1995; Moen, 1996; Ruhm, 1990). Some participate in BE after retiring from their career jobs (Cahill et al., 2006), others slowly reduce the hours work then retire (Calvo, Haverstick, & Sass, 2009; Calvo & Sarkisian, 2011), others just move between employment and retirement and part-time paid work (Clark & Quinn, 2002; Ruhm, 1990). Scholars have recorded that between twenty and sixty percent of the population now participate in BE before retirement. In longitudinal analysis, researchers found that approximately twenty to thirty percent of the retired population engage in BE in a given survey year (R. Pleau & Shauman, 2013; Wang, Zhan, Liu, & Shultz, 2008; Zhan, Wang, Liu, & Shultz, 2009; Zissimopoulos & Karoly, 2009). In sum, studies show that at least 40% women and 50% men participate in BE sometimes in their lives (Cahill, Giandrea, & Quinn, 2018; Maestas, 2010). To note, there is a difference in participation rate if you are measuring participation rate at one point in time, or if you are measuring the total likelihood of a person ever participating in their life, the latter is higher. Notwithstanding the how BE is measured, the fact remains that this practice is more common that before. Americans born in the 1940s are 7% more likely to participate in BE than people born in the 1930s (Giandrea, Cahill, & Quinn, 2009). Despite the increase in participating in BE participation, the mental health consequences of participating in BE is still under debate.

Theories

There are three main theories that are often used to examine the relationship between participation in BE and mental health include continuity theory, role theory and the life course perspective.

Continuity theory - BE improves people's mental health

Continuity theory argues that people need to maintain continuity and daily routine to have better well-being (Atchley, 1989). Thus, working in BE helps people sustain their current level of financial cash flow, avoid the sudden loss of work-based social networks, develop new networks before losing contact with colleagues and maintain their work identity (Feldman, 1994).

Continuity theory sees retirement as a disturbance to the current life routine. Retirees are more distressed than currently employed workers: retirees may face challenges in supporting themselves financially after retirement, they may lose their work identity and may lose their work-related social network and social support (Goldberg, 2002; J. E. Kim & Moen, 2001; S. Kim & Feldman, 2000; Latulippe & Turner, 2000). Thus, engaging in "BE" compensates for the "losses" associated with "retirement" by providing a gradual exit from the workforce that helps retirees supplement their income, avoid the sudden loss of work-based social networks, develop new networks before losing contact with colleagues, and maintain continuity and routine (Goldberg, 2002; J. E. Kim & Moen, 2002; S. Kim & Feldman, 2000; Latulippe & Turner, 2000; Shaw, Patterson, Semple, & Grant, 1998).

Studies that support continuity theory found that BE participation is associated with higher life satisfaction (S. Kim & Feldman, 2000; Luoh & Herzog, 2002; Wang, 2007). Kim and Feldman (2000) found that among professors who retired early, working after retirement significantly predicts improvement in life satisfaction scores. Wang and colleagues (2007) improved upon previous research by using a nationally representative population who have been followed up over time. They found that people who participate in BE are more likely to belong to the latent class of individuals who maintain a high level of positive mental health before and after retirement. Moreover, Zhan and colleagues (2009) found that when people participate in career BE – the same occupation as their pre-retirement days – they experience better mental health than people who participate in other forms of BE.

Continuity theory is one of the most frequently-tested theories in the literature on BE. More importantly, its principles align public policies that encourage older workers to participate in BE and delay retirement. The limitation of continuity theory is that it assumes that participating in BE will benefit all people, regardless of their gender, differences in work trajectories, and health conditions. It assumes that people always enjoy the work they do; therefore, when they participate in the same jobs in BE it is assumed this will be beneficial for their physical and mental health. Furthermore, continuity theory only examines participation in BE, but ignores people's motivation for participating in BE and the quality of BE in which people participate. For example, it ignores whether the person voluntarily participates in BE, and if the BE stressful or physically demanding. Thus, retirement policies that follow continuity theory also assume that participating in BE is beneficial for all people and encourages BE participation. However, these policies do not consider whether people are physically and mentally capable of working, whether they want to be working, and whether the work is beneficial for their mental health.

Role Theory – perceived desirability of the job and its mental health consequences

Unlike continuity theory, role theory does not simply assume that retirement is harmful and BE is beneficial; rather, role theory views BE in terms of whether it is desirable or not (Wheaton, 1990). Role theory argues that when BE is perceived as desirable, participation is voluntary and it is should be beneficial; when it is perceived as undesirable, it is involuntary participation and BE is harmful (Dingemans & Henkens, 2014, 2015; Van Solinge & Henkens, 2007, 2008).

According to role theory, when the individual is highly invested in their role or job, being retired is the process of the losing or weakening of that role(Drentea, 2002). Thus, the unwanted job loss

resulting from retirement can lead to feelings of anxiety and depressive symptoms (Wang, Henkens, & van Solinge, 2011). Consequently, working in BE becomes desirable and voluntary and thus may alleviate feelings of role loss for people who enjoyed working. Dingeman and Henkens' (2014) research supports role theory. They found that when people have to retire involuntarily because of health or organizational restructuring reasons, but find BE afterwards, participating in BE significantly increases their life satisfaction (Dingemans & Henkens, 2015). Other researchers have also conceptualized the desirability of the situation using different terms. Researchers found that when the individual perceives a high level of control in their BE participation, they experience better mental health outcomes in the short and long term (De Vaus, Wells, Kendig, & Quine, 2007). The same was found on the decision to retirement, when people felt that the decision to retire is within their control, they are more likely to experience better mental health (Drentea, 2002; Ross & Drentea, 1998). Also, when people participate in voluntary post-retirement employment, they experience higher life satisfaction (Dingemans & Henkens, 2015).

In contrast, when the individual finds working stressful, then retirement is a relief from work. Being forced to participate in BE will be perceived as undesirable and involuntary. Although evidence shows that, compared to retirement, voluntary BE is associated better mental health, research did not find any significant positive or negative effect of involuntary BE on mental health. It is most likely that situations of involuntary BE include complex relationships that might involve gender, marital status, job characteristics, job conditions and more. It maybe possible that people who work involuntarily generally have lower social class, less occupational control, and find work unsatisfying. Although they may prefer to retire with a good income, but have difficulties attaining this goal (Shultz, Morton, & Weckerle, 1998). Even worse, people who are part of a lower social class have higher exposure to a stressful work environment and have poorer physical health (Thoits, 2010). As a result, although working in BE may alleviate some financial burden, people with lower SES still must deal with the extra emotional and physical stress added by their jobs. Thus, there are no significant findings.

Life course perspective –BE participation and BE mental health consequences depends on previous life experiences

While continuity theory and role theory largely examine how BE affects people's mental health, they do not answer who are more likely to participate in BE. The Life Course Perspective argues that the process of finding BE is highly selective and not everyone who needs to work in BE can find a job. The cumulative dis/advantage theory – a theory within the life course perspective – argues that, as people age, their initial relative advantage (e.g. childhood SEP) is multiplied over the entire life course as people experience the education system, work trajectories and everyday hassles. This will results in a systematic divergence in life course processes across individuals and groups over time (Ferraro & Kelley-Moore, 2003; Willson, Shuey, & Elder, 2007). Thus, people's cumulative health status, work experience and socioeconomic position all affect whether they will work in BE and the quality of BE in which they participate.

Empirical research shows support for the life course perspective and that people with high income, high education and high social capital are more likely to find BE (Hardy, 1991; Raymo, Warren, Sweeney, Hauser, & Ho, 2011; M. B. von Bonsdorff et al., 2012; M. E. von Bonsdorff,

Zhan, Song, & Wang, 2017) In high SEP jobs, such as doctors, lawyers and high-level executives, and professors, the workers have accumulated a lifetime of experience and expertise that is valued by employers. Therefore, they are more likely be an active contributor in the employment negotiation process and are less likely to be the target of age discrimination in hiring, making them more likely to be hired for BE. Also, research shows that high SEP jobs are also high on autonomy and job control, making people more likely to enjoy their job and want to go back (De Vaus et al., 2007; Tausig, 1999). As a result, people in high SEP jobs should experience a decrease in stress when they go back to work willingly. However, the stress of higher status theory argues otherwise. Although people who occupy important positions in the company receive many benefits such as high pay, high autonomy and high control, these people occupy very important positions in the company and in society and therefore experience high levels of stress (Schieman, Whitestone, & Van Gundy, 2006). Thus, the stress of being in these jobs might offset the total benefit of being in these jobs. Thus, we do not know whether the high stress of being in important positions erases the benefits of participating in BE.

In contrast, people with blue-collar jobs are more likely to be in poorer health, thus hurting their chance of finding BE. People in lower Socioeconomic Positions (SEP) are more likely to experience poorer work conditions that are stressful and physically demanding. The cumulative disadvantage theory argues that working continuously in physically demanding jobs increases the chance that these people will experience work injuries leading to more disabling health conditions in old age (Flippen & Tienda, 2000). Also, working in these conditions increases people's chance of experiencing everyday hassles that negatively impact their mental and physical health (Thoits, 2010). As a result, people with low SEP have earlier onset of health diseases and experience a faster rate of health deterioration as they (Hayward, Friedman, & Chen, 1998). Since blue-collar jobs value the youth and physical strength of workers, the poorer health state of workers increases their chance of being laid off and decreases their chance of being hired again for BE (Adams & Rau, 2004; Dingemans & Henkens, 2014; Shultz et al., 1998). Moreover, these people are more likely to be financially unprepared to retire fully. Thus, they are more likely to be working in BE because they must for financial reasons, not because they want to. Their previous work history affects the quality and the type of BE they find. Working in these jobs will likely have different effects on their mental health than working in higher-quality jobs. Therefore, it is crucial to examine who are more likely to participate in which quality of BE and how working in BE with different qualities affects people's mental health.

More importantly, poor work environments are not limited to blue-collar work. The Whitehall II Study shows that people in lower class positions in the government who perform white-collar jobs are just as likely to experience health implications due to working in a stressful environment (Marmot et al., 1991). Persistent stressors at work such as low job control and high job insecurity are likely to result in illnesses as the individual's capacity to cope with the stressors becomes exhausted over time (Marmot, Bosma, Hemingway, Brunner, & Stansfeld, 1997). Moreover, fast-paced work and deadline pressures – characteristics of low SES jobs – increase a variety of worker ailments ranging from repetitive motion injuries to stress-related illnesses such as ulcers and heart disease (Kuper & Marmot, 2003). Therefore, having long-term exposure to stress in the workplace makes workers of lower SEP face the multiple threats of being laid off at a young age, experiencing more health problems, and having trouble finding work because they need financial

support(Ferraro & Kelley-Moore, 2003). Thus, it is important to examine how working in stressful and physically demanding BE affects people's mental health in the short and long term. Previous studies of BE that only examined participation in BE does not examine the quality of BE and how it affects people's mental health.

Life course perspective and gender and race

Furthermore, gender and life course research show that men are more likely to participate in bridge employment than women (Maestas, 2010; Moen, 1996; R. L. Pleau, 2010). This is because women and men's retirement transitions are shaped differentially by family and work constraints and experiences (R. L. Pleau, 2010). Men, especially married men, are more likely to participate in bridge employment because they are more likely to have had a traditional career and continuous full-time work. Therefore, they often have reached higher positions in the company and established their seniority and expertise, making it easier for them to find BE. Furthermore, the population we are studying are born between the 1930s and 1950s. This birth cohort of men experienced relatively more traditional gender roles, such as being the breadwinners of the family. Therefore, they may want to continue their self-identity and their strong attachment to the workforce may push them to work longer after retirement. In contrast, married women generally have less attachment to the workforce than men and unmarried women. Even after retirement, women's bridge employment participation can still be affected by childbirth, maternity leave, and caregiving responsibilities of earlier years, and as a result they accumulate less long-term and less stable employment by the time of retirement and thus have more difficulties finding bridge employment. Even at an old age, women still provide more caregiving than men. Married women are also more likely to coordinate their retirement patterns with their husbands (Henretta & O'Rand, 1983). Factors such as dependent children, divorce, and a husband who is unable to work may push women to work longer, while child care responsibilities such as caring for children or grandchildren (Choi, 2002; O'Rand & Farkas, 2002) are more likely to pull women from bridge employment.

Finally, we need to also pay attention to the issue of race in the selection of participants into BE. Traditionally, African Americans worked in lower status jobs and had fewer job opportunities. Although the 1960s saw the emergence of the civil rights movement, race continued to influence black men and women's labour force opportunities and life trajectories. Therefore, compared to whites in America, blacks experienced more varied work trajectories that were disrupted by unemployment and part-time work (Williams, 1997). Therefore, the tripartite education model (youth) – work (adulthood) – retirement (old age) (Kohli & Meyer, 1986) hardly applied to blacks, as there were many different episodes of unemployment (Shuey & Willson, 2008). Furthermore, researchers showed that blacks tend to have more difficulties finding work in old age because they are more likely to suffer from physical disabilities from previous workplace injuries (Flippen & Tienda, 2000). This not only will prevent their ability to find bridge employment, but may negatively affect the quality of jobs they find and affect their bridge employment experience.

The systematic review and the theoretical perspectives both showed that current research focus mostly on BE participation, and not enough on the conceptualization and quality of BE. Therefore, this paper will examine the effect of conceptualization of BE trajectories on mental health, and the effect of stressfulness and physical demands of BE on mental health.

BE Trajectories

According to the past literature on BE and mental health, BE is generally described as moving gradually from employment to fully retired status. This could mean both working again after having "fully" retired (post-retirement employment) or first reducing the hours worked, then retiring (gradual retirement). However, after systematically reviewing 14 articles on the topic of BE and its mental health consequences, we found that the variabilities in conceptualization of BE should be further explored.

The difference between the concepts could not be explored fully in the systematic review because each paper had their own definition of BE. Also, researchers did not contrast two types of BE trajectory in one paper with the same population. Although the two terms used to represent BE in this literature only includes post-retirement employment and gradual retirement, there are more than just these two. Post-retirement employment is by far the most commonly used term to describe BE in the literature. Post-retirement employment generally conceptualized as any kind of paid work that retirees participate in after initial report of retirement (Choi, 2002; R. Pleau & Shauman, 2013; Rudolph, De Lange, & Van der Heijden, 2015; Wang et al., 2008; Zhan et al., 2009). The comparison group for post-retirement employment is full-time retirement. Gradual retirement is used to define slowly reducing the hours of work until retirement; it is used to contrast with abrupt retirement, in which people have a single and complete transition from working to retirement (Calvo et al., 2009; Calvo & Sarkisian, 2011). However, gradual retirement is also used to describe both reducing the hours of work until full retirement and post-retirement employment (De Vaus et al., 2007). In the systematic review, we did not find any significant differences in results due to the conceptualization of BE. However, they should still be explored further based on theoretical assumptions.

Hypothesis 1: Compared to those in fully retired status, participating in post-retirement employment will not lead to significant improvement in depressive symptoms.
Hypothesis 2: Compared to those in fully retired status, participating in partial-retirement will not to improvement in depressive symptoms.

According to the cumulative disadvantage theory, we hypothesize that retirees who go back to employment after initial retirement might be different than retirees who slowly retire. Therefore, participating in these types of bridge employment would results in different mental health consequences. According to cumulative disadvantage theory, retirees' life-long experience of family socioeconomic background, education, work trajectory and health status can provide advantages or act as barriers in their pursuit of BE (Ferraro & Kelley-Moore, 2003; Shuey & Willson, 2008; Shultz et al., 1998; Willson et al., 2007). Those who first retire, then go back to employment are experiencing a break in their work trajectory. The first retirement could be self-motivated retirement, or it could be some form of unemployment at old age. Thus, going back to employment after initial retirement could be people who had an episode of unemployment spell at old age (Casey & Laczko, 1989). Those who experience unemployment maybe more disadvantaged, therefore, we hypothesize BE participation in this type of trajectory provides them with benefits and costs. They benefit from being employed again, which could improve their mental health. This might be similar to the case of voluntary BE: after involuntary

retirement, they voluntarily participate in BE, which improve their mental health (Dingemans & Henkens, 2014). However, this employment opportunity may not be in the best work environment because, retirees are working because of financial necessity. Therefore, they will experience worse mental health from participating. On the other hand, when people slowly retire by reducing the hours of work, they are more likely to have more power and to be active negotiator in the retirement process. The cumulative advantage process also argues that they have experienced a relatively privileged work trajectory in life. Therefore, these people might have had better physical and mental health resulting in participating in this form of BE.

Stressfulness and Physical Demands of BE

There are two competing arguments in which the stress level and physical demands of BE might affect people's mental health. While they both agree that participating in non-stressful and non-physically demanding BE improves mental health. They disagree on whether participating in stressful and physically demanding BE improves or harms health. Both arguments are derived from the life course and the cumulative dis/advantage perspectives.

Hypothesis 3: participating in non-stressful BE will lead to improvement in depressive symptoms
Hypothesis 4: participating in non-physically demanding BE will lead to improvement in depressive symptoms

Hypothesis 5a: participating in stressful will be detrimental to one's depressive symptoms
Hypothesis 5b: participating in stressful will be not detrimental to one's depressive symptoms

Hypothesis 6a: participating in physically demanding work will be detrimental to one's depressive symptoms
Hypothesis 6a: participating in physically demanding work will not detrimental to one's depressive symptoms

The first argument is that non-stressful BE and non-physically demanding will improve retirees' mental health (hypothesis 3&4), but stressful BE and physically demanding BE will harm retirees' mental health (hypothesis 5a&6a). According the life course perspective and the cumulative disadvantage theory, people's pre-retirement experiences will affect their retirement consequences and BE participation. Research have long shown that stressful work and physically demanding work are detrimental to people's mental health (Bosma, Peter, Siegrist, & Marmot, 1998; Flippen & Tienda, 2000; Marmot et al., 1997; Schieman et al., 2006; M. B. von Bonsdorff et al., 2012). Therefore, participating in stressful and physically demanding BE after or during retirement will continue to harm people's mental health. Also, participating in non-stressful and non-physically demanding BE will be protective of people's mental health.

The perception of work stress at old age comes from age discrimination, job insecurity, difficulty performing technologically based work, high job demand and low job control (Gallo, Bradley, Siegel, & Kasl, 2000; Roscigno, 2010; M. B. von Bonsdorff et al., 2012; M. E. von Bonsdorff et al., 2017). Research show that participating in stressful work for long time, wears and tears at the individual mental and physical health (Kuper & Marmot, 2003; Marmot et al., 1997; Marmot et al., 1991). Thus, when people participate in stressful BE, it will negatively impact their mental health, the opposite is true when they participate in non-stressful BE.

Research on participating in physically demanding work shows that individual in blue collar jobs are exposes more environmental stressors on a daily basis, which result in faster aging and an earlier onset of the aging process (Flippen & Tienda, 2000; Hayward et al., 1998). Based on these empirical evidences from the cumulative disadvantage theory, we hypothesize that when people continue to work in physically demanding, their mental health will be even more compromised than before. When people participate in non-physically demanding work, their mental health will be more protected and improve. In sum, Hypothesis 3 and 4 and 5a and 6a argues that participating in BE will continue to be harm or protective of people's BE, as it was before retirement.

The second argument is that non-stressful BE and non-physically demanding will improve retirees' mental health (hypothesis 3&4), but stressful BE and physically demanding BE will not harm retirees' mental health (hypothesis 5b&6b). People might participate in BE for intrinsic reasons, for monetary reasons, or both (Adams & Rau, 2004; Shultz et al., 1998). If people participate in BE for intrinsic reasons, we hypothesize that they are also more likely be "choosy" about the type of BE they participate in, they will participate only in BE that they enjoy, which are more likely to be non-physically demanding and non-stressful work. Therefore, we hypothesize that those participating in non-stressful and non-physically demanding BE mostly leads to better mental health. This is because the job environment is protective of mental and physical health, also, the people participating in it tend have more health and economic advantage to begin with.

On the other hand, people who have experienced a more disadvantaged life trajectory might be participating in BE because they need financial support. Research finds that those working in manual jobs are less likely to be ready to retire financially (Hatcher, 2003). Also, those who had job stress due to job insecurity (Bosma et al., 1998; Kuper & Marmot, 2003; Marmot et al., 1991) are more likely to be unready to retire and need to participate in BE. In this case, if they are healthy enough to participate, they will be less selective about the BE work environment, making them more likely to accept BE that are physically demanding or stressful. Being able to be healthy enough to working in these jobs is better than being fully retired and not earning and income. Therefore, working in these jobs will being some benefits, such as financial support, but also bring stressors. Therefore, we hypothesize that the cost and benefit of participating in physically demanding or stressful job might cancel out. As a result, participating in stressful and physically demanding BE will not have a strong effect on mental health.

Objective

This paper analyzes how BE participation, BE stressfulness, BE physical demand and BE trajectory affect people's mental health. This paper seeks to demonstrate that working in higher-quality BE and poorer-quality BE have different consequences for people's mental health.

Research Questions:

1. What are the mental health consequences of participating in BE compared to retirement
    1. What are mental health consequences when people participate in BE as fully-employed people or participate in BE using a retired identity compared to full retirement?

2. What are the mental health consequences of participating in stressful BE and non-stressful BE compared to full retirement compared to full retirement?
3. What are the mental health consequences of participating in physically demanding BE and non-physically demanding BE compared to full retirement?

Methods

Data:

We are using the Health and Retirement Survey, a longitudinal survey of older adults in America. This dataset is supported by the National Institute on Aging and Social Security Administration. It was originally launched in 1992 at the University of Michigan's Institute for Social Research. Starting in 1992, whenever a new birth cohort reached the age of 50, the HRS started to follow them biannually (or annually) until death (Juster & Suzman, 1995). They have collected data on a total of seven birth cohorts. Now, the HRS is a nationally representative longitudinal survey of older adults in the United States (Sonnega et al., 2014). Due to the success of this survey, similar surveys have been replicated in the UK (ELSA), Europe (SHARE), Japan and China (CHARLS). However, the HRS is still the longest-running study on this subject. Thus, this is the best dataset to use to study the effects of the retirement transition on people's mental health because it contains detailed, nationally-representative information on all related subjects.

Sample Selection

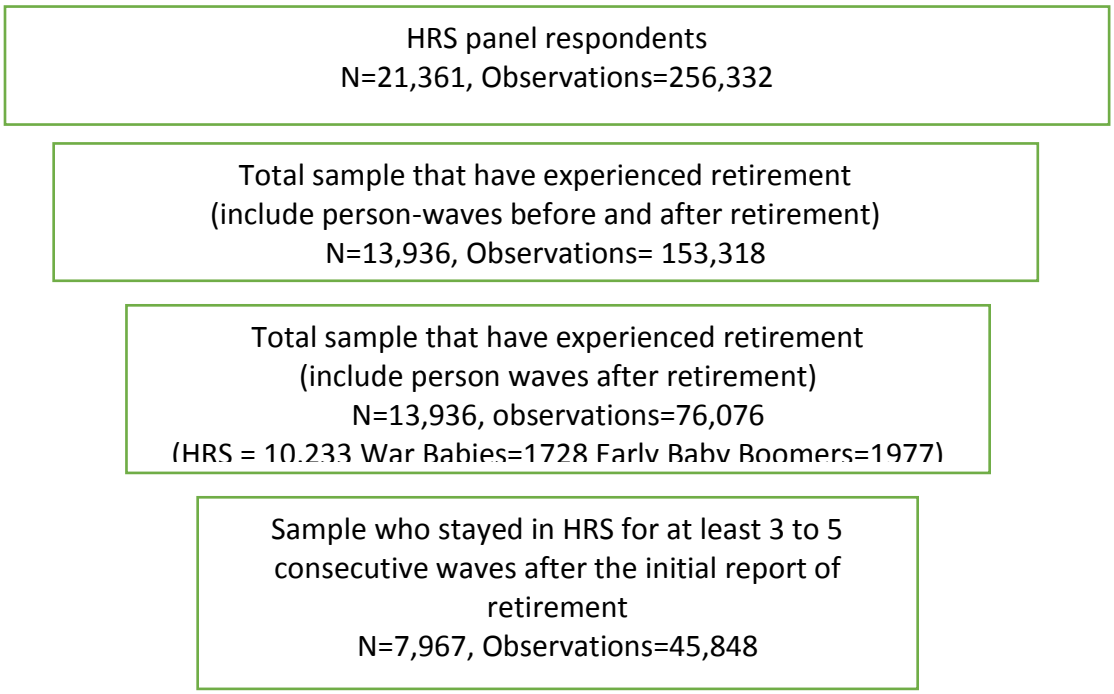


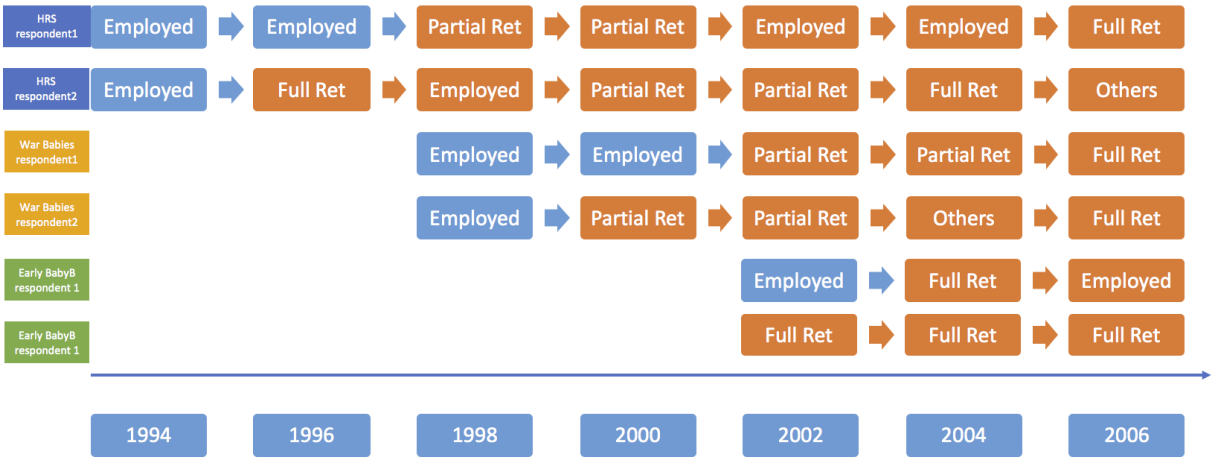
Figure 2. Sample Selection

The original sample of the three birth cohorts included 21,361 respondents with a total of 256,332 person waves. Everyone selected into the analytical sample has reported being retired at least once. In other words, the analytical sample only includes retired people and does not include people who have never retired. This is because retirement is an integral part of what it means to be participating in BE – working again after retirement or first reducing the hours of

work, then retiring. If the respondent never retired, then we would not know whether they are participating in BE or not. The retired population is 13,936 respondents with 153,318 person years. Counting only the people who have experienced 3 to 5 consecutive waves after the initial report of retirement there is a total of 7,967 individuals with a total of 45,848 person waves.

To reduce the impacts of dataset attrition and the staggered survey design on the sample size, I employ a method of reshaping the data in longitudinal analysis by combining different cohorts together (Falconer & Quesnel-Vallée, 2017; Quesnel-Vallée & Taylor, 2012). Instead of using the original data structure, where the respondents are aligned by the survey year they participated in, Falconer (2017) aligned the respondents by the timing of the first diagnosis of a disease and analyzed self-rated health before and after a medical diagnosis, and Quesnel-Vallée (2012) aligned the dataset by chronological age.

The HRS dataset was originally aligned by survey year. The top graph of Figure 1 shows what BE trajectory would look like if the individuals were lined up by survey year as indicated in the last row. People retired at different survey years, as one person had already been retired for 10 years, while the other person was just first experiencing retirement. In examples not shown on the graph, it is possible for one person to have died and a newer cohort to be just experiencing the first report of retirement. Thus, if I was to keep this data structure, these individuals would have to be analyzed separately. The bottom graph of Figure 1 shows what the individuals' BE trajectory would look like after I aligned them by the initial self-report of retirement. The respondents are anchored by their initial retirement, the years before retirement (B.R.) and years after retirement (A.R.). The years before retirement count as 2, and 4 years B.R. The years after retirement count as 2, 4, 6, 8, and 10 years A.R.



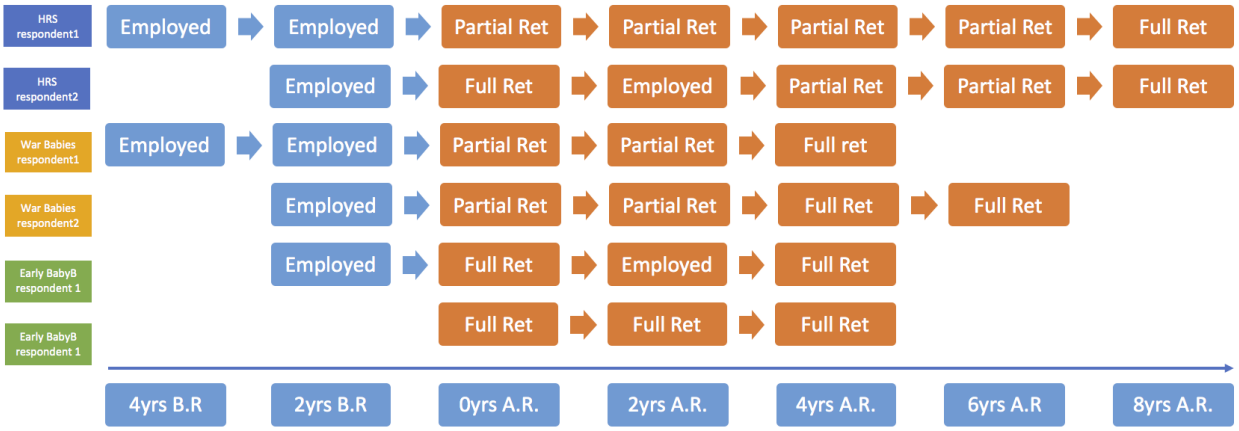


Figure 3. Data Re-alignment

By anchoring the data by the first report of retirement, I can combine people from different cohorts into the same time frame. Doing this allows me to achieve several objectives. First, it partially solves the issue of attrition; there was an issue of losing respondents because they experienced retirement in different waves, and now they experience it together. Moreover, this increases the sample size and the power of the prediction. We still conducted sensitivity analysis where we tested the effect of BE on retirement for separate cohorts and the combined cohort sample, and the results are not significantly different. Previous studies often had to separately analyze the population by birth cohort or limit their sample size to approximately less than 3000 people (Calvo et al., 2009; Calvo & Sarkisian, 2011; Szinovacz & Davey, 2005; Wang, 2007). Second, aligning the dataset by the number of years after the initial report of retirement instead of the survey year provides a more intuitive anchor point from a life course perspective, since we are examining how working after retirement affects mental health. Finally, this allows us to calculate the number of years respondents stayed in the survey after retirement. Thus, we have an accurate judgement of how many years people stayed in the survey after they retired. Using this advantage, we only included participants who participated in three (6 years) to five (10 years) consecutive waves after their initial retirement. This is crucial for our fixed effects analysis. Therefore, for my fixed effects analysis, I have 7967 participants to begin with, measuring 45,848 person waves. On average, people have participated in 5.5 waves per person (the first wave is when they retired, and they have participated in an average of 4.5 consecutives waves after their initial report of retirement).

Descriptive Statistics

Table 1 represents the mean, standard deviation of each status or the percentage of people in each status biennially after initial retirement. It is the percentage of people in each status biennially, not the change within individuals. For continuous variables, the last column represents the within-individual biennial standard deviation; in other words, it stands for the within-individual change every two years since initial retirement.

Dependent Variable:

Mental health measured by depressive symptoms. The outcome variable of the fixed effects regression is mental health. In this paper, mental health is measure using depressive symptoms,

formally called the Center for Epidemiologic Studies Depression Scale (CES-D) (Radloff, 1977). The CES-D one of the most-commonly-used measurements for mental health; that measures up to 21 items on people's mental health. It is also one of the most reliable and sensitive measures of people's mental health (Avison & Turner, 1988; Turner & Avison, 2003).

The HRS uses the condensed 7-item version CES-D scale. The CES-D scale is measured using the sum of scores of negative indicators (everything is an effort, sleep is restless, felt alone, felt sad, and could not get going) and positive indicators (felt happy and enjoyed life). There is high internal reliability shown at .89 Cronbach's alpha. People's depressive symptoms fluctuate between 1.44 and 1.53, and after initial retirement, there are no significant patterns of increase or decrease in the 10 years of measurements.

The seven-item scale was administered to the full sample in the HRS. Each question has a Yes/No response (Wallace & Herzog, 1995). To create the CES-D scale, the scores of 7 question are added together to determine people's level of depressive symptoms, with 0 being the minimum and 7 being the maximum (Wallace & Herzog, 1995). In the HRS, this scale was measured in all the waves (Sonnega et al., 2014). However, in 1992, it was measured using a Likert scale and from 1994 onwards it was measured using a dichotomous scale (Wallace & Herzog, 1995). Since there is no valid way of matching the two scales, we only used the dataset from between 1994 and 2014.

Fixed Effects Models

Fixed effects (FE) models examine how changes in BE status are associated with changes in depressive symptoms. Since the model measures the effect of change on change, any non-changing factors are automatically controlled and eliminated by the model (Allison, 2009). One criticism is that if the HRS includes many pre-retirement measurements such as income, wealth, pension, age of retirement, and pre-retirement work quality, why are they not just controlled in the OLS model? Using fixed effects eliminates their presence in the model; therefore, we do not see the effects of these time-constant factors on depressive symptoms. Even though these factors are measured, there is still the issue of missing data and attrition. The HRS does not measure factors that are known to predict BE participation in every wave of the study. Factors such as the level of autonomy people have on the job (Thompson & Prottas, 2006), the level of control people have (Daniels & Guppy, 1994; De Vaus, Wells, Kendig, & Quine, 2007; Pearlin, Mullan, Semple, & Skaff, 1990; Thoits, 2010), and whether they voluntarily retired or involuntarily retired (Dingemans & Henkens, 2014; Van Solinge & Henkens, 2007, 2008) all affect BE participation and depressive symptoms, but they are only measured in select waves of the HRS and thus cannot be efficiently used in the study.

The current research resolves this issue by not only using fixed effects, but combining fixed effects with a data realignment method adopted from Quesnel-Vallée & Taylor (2012) and Falconer and Quesnel-Vallee (2016). This method aligns the dataset by the year of first reported retirement instead of the survey years (see a detailed description in Figure 3). This method complement FE perfectly because now, anything that happened before the first report of retirement will remain constant after retirement because it is in the past. This is more efficient than only using fixed effects because FE only controls for time-constant factors. However, people's work quality, work environment, income and wealth will still change over time and

before and after retirement; thus, they will create endogeneity within the model. Using this data alignment method ensures that anything that happened before retirement stays constant in the model. This model seriously considers the life course suggestion that anything that happens before retirement can affect the post-retirement experience.

Time-Variant Covariates

Bridge Employment

BE in the fixed effects analysis is defined as working for retired pay after the initial reporting of retirement. BE includes three categories: full retirement, BE, and those in NLF status. Full retirement means that in the survey wave, the person reports being retired and current not working for pay. BE means that in the survey wave, the person report being retired in the current wave and still working of pay. BE also include individuals who identifies with being retired in previous waves and currently employed. At the time of the first report of retirement, 22% of the retired population are working for pay, and 78% of the retirees are fully retired. In wave two, more people may move into the retired and the NLF category. From wave two to ten, the percentage of respondents in the retired status increase from 65% to 81%, and the percentage of people in BE and NLF decreases. This shows that as people age, they all start to identify with being fully retired.

This variable comes from the labour force status variable from the Health and Retirement Study. It includes the categories employed full-time, employed part-time, partly retired, retired, and NLF (Juster & Suzman, 1995). NLF includes unemployed disabled, housemakers and others. All these people are placed into one group because there is a very small percentage of people in these groups, with the sample size often being fewer than 30 people. Considering that our total sample size is 7557, groups with fewer than 30 people are considered too small to produce meaningful analysis.

BE Trajectories. BE trajectories are distinguished into two categories: Post-retirement Employment (BE) and Partially retired (BE). Post-retirement employment (BE) means people going back to being employed again originally reporting being retired. Post-retirement employment take a more restrictive definition than in previous studies. In previous studies, researchers identified any kind of paid work after retirement (working full time, working part-time, working as a retiree, or working as a employed person) as post-retirement employment (R. Pleau & Shauman, 2013; Wang et al., 2008). In this study, only when people return to employment (part-time or full-time[1]) count as post-retirement employment, when people are just working for pay in the retired status, they are not participating in post-retirement employment. Partially-retired (BE) when people identifies as being retired while working for pay in part-time

[1] In the sensitivity analysis, we examined the effect of full-time and part-time post-retirement employment compared to full-retirement. Full-time post-retirement employment showed a significant effect, but part-time post-retirement employment did not show a significant effect. we did not include this result in the study because 8 and 10 years after initial retirement, both full-time and part-time employment had fewer than 30 people in the category.

status. People can only move from retired to post-retirement employment. But for partial retirement, people can first partially retire, then retire fully or first retire fully, then participate in partial retirement. A higher percentage of people participate in partially-retired BE (15.9% two years after retirement) than employed BE (6% two years after retirement).

Stressfulness of BE. BE is separated into stressful and non-stressful BE. Stressful BE is defined as when people identify having stressful work that is BE. Non-stressful BE is defined when people identify having non-stressful work that is BE. The other two categories are still retired and others. After retirement, twice as many people participate in non-stressful BE than stressful BE. At the time of retirement, 14.5% work in non-stressful jobs and 7.6% work in stressful jobs. As time passes after the initial retirement, the percentage of people working in stressful and non-stressful BE decreases, but there are still twice as many people in non-stressful than stressful BE.

Physically Demands of BE. The original definition of BE is separated into physically demanding (PD) and non-PD BE. Non-PD BE is defined as when people identify having non-PD work that is BE. Physically demanding BE is when people find physically demanding work that is BE. The other two categories are still retired and others. At the time of retirement, there are more than twice as many people working in non-physically demanding jobs than people working in physically demanding jobs. As time passes after the initial retirement, the percentage of people working in stressful and non-stressful BE decreases, but there are still more than twice as many people in non-physically demanding BE than physically demanding BE.

Age. The age of the respondents range from 49 to 80.

Annual respondent income. This is the annual income of the individual adjusted for inflation using the Consumer Price Index. It is in increments of $1000 and logged. Income includes before tax income from earnings, unemployment insurance, workers' compensation, social security, public assistance, veterans' benefits, pension and retirement income, interests, dividends, rent, and income form estates and trust, education assistance, alimony, child support, and other sources. The mean individual income is at the time of retirement 4.14 in the log of $1000 with a standard deviation of 4.95. Following initial retirement, we see that the income of individuals decreases to 1.92 in the log of $1000.

Household Wealth. This is the net value of non-housing financial wealth minus any debt of the household adjusting for inflation using the Consumer Price Index. It is in increments of $10,000. Non-housing financial wealth is calculated as the net value of stocks; mutual funds; investment trusts; checking, savings or money market accounts; government savings bonds and T-bills; bond funds; and all other savings minus all debt. Unlike income, which decreases after initial retirement, the non-housing financial wealth of individuals remains steady at a mean of 159,600 in all years after initial retirement with a standard deviation of 728,100. As time passes after retirement, there is less wealth inequality between individuals. This is not because there is less income inequality as people age; rather, this is because the poorest individuals have a higher likelihood of dying earlier according to the cumulative disadvantage theory (Willson et al., 2007).

Debt. This indicates whether the total non-household financial wealth is positive or negative. If it is negative, then the person is in debt. As people live longer after their initial retirement year, the percentage of people who are in debt decreases. This could be due to the cumulative disadvantage theory, which states that those who are in the worst economic positions are more likely to die or exit the survey (Hayward et al., 1998; Willson et al., 2007). Although other research did not discuss this, we hypothesize that having debt pushes people into jobs they may not enjoy.

Self-reported health. This is self-reported general health status. Codes range from "1" for Excellent to "5" for Poor. As time passes after the initial retirement, people experience worse general self-rated health.

Number of health conditions. This is the sum of indicators for whether a doctor has ever told the respondent that he or she has ever had a disease. The eight included diseases are high blood pressure, diabetes, cancer, lung disease, heart disease, stroke, psychiatric problems, and arthritis. This variable has three categories: those who have been diagnosed with no disease, those who have been diagnosed with one disease, and those who have been diagnosed with two or more diseases. As people live for longer after initial retirement, the percentage of people with one and two or more health conditions continues to increase. At the time of retirement, the percentage of respondents with no health conditions is 20.9%. Ten years after retirement, this percentage decreases to 5.72%.

Partnered or non-partnered. This indicates whether the person has a partner or not. At the time of retirement, 25% of people are not partnered and 75% of people are partnered. As people get older, the percentage of people who are not partnered increases to 30% and the percentage of people who are partnered decreases to 70%.

Table 1: Descriptive Statistics of Analytic Sample

Number of Years After First Self-Report of Retirement	0	2	4	6	8	10
Sample Size (person wave=**45,848**)	**7967**	**7967**	**7967**	**7967**	**7385**	**6595**
Depressive Symptoms						
Mean (range: 0-7)	1.49	1.44	1.53	1.49	1.50	1.46
Std. Dev.	2.06	1.98	2.01	1.99	2.03	1.99
BE Status						
Retired (%)	78.00	64.90	68.20	72.70	77.70	81.03
BE	22.00	21.90	19.50	16.60	13.47	11.99
NLF (%)	--	13.20	12.30	10.80	8.83	6.97
BE Status – Employed or Partially Retired						
Retired (%)	78.00	64.90	68.20	72.70	77.70	81.03
BE - Employed (%)	--	6.00	5.40	4.20	3.48	2.51
BE - Partially Retired (%)	22.00	15.90	14.10	12.40	9.99	9.48
NLF (%)	--	13.20	12.30	10.80	8.83	6.97
BE Status by Job Stress						
Retired (%)	78.00	64.70	68.10	73.10	77.70	81.03
BE- Not Stressed (%)	14.50	15.40	13.70	11.40	9.29	8.65
BE- Stressed (%)	7.60	6.90	6.10	5.10	4.18	3.21
NLF (%)	--	13.00	12.10	10.40	8.83	6.97
BE Status by Physical Demands						
Retired (%)	78.00	64.70	68.10	73.10	77.70	81.03
BE- Not Physically Demanding (%)	15.30	16.20	14.70	12.40	10.10	8.79
BE- Physically Demanding (%)	6.70	6.20	5.00	4.10	3.25	3.19
NLF (%)	--	13.00	12.10	10.40	8.94	6.99
Respondent's Annual Income (adjusted for inflation using 2014 CPI, in $1000, logged)						
Mean (range: 0-13.81)	4.15	1.92	1.71	1.46	1.23	1.05
SD	4.95	3.76	3.62	3.38	3.14	2.93
Financial Wealth not Including Non-housing (adjusted for inflation using 2014 CPI, in $10,000)						
Mean (range: -155.15-3590)	15.96	14.72	15.98	15.00	14.42	15.61
Std. Dev.	72.81	52.80	73.27	53.88	44.64	47.91
Debt						
Not in Debt (%)	85.9	84.9	85.5	85.9	86.53	88.56
In Debt (%)	14.1	15.1	14.5	14.1	13.47	11.44
Age						
Mean (range: 49-80)	61.05	63.03	65.01	67.02	68.87	70.63
Std. Dev.	5.32	5.34	5.36	5.34	5.24	5.09

Partnered Status						
Not Partnered (%)	25.2	26.9	29	31.3	30.43	30.26
Partnered (%)	74.8	73.1	71	68.7	69.57	69.74
Self-rated health						
Mean (range: 1 best – 5 worst)	2.81	2.81	2.89	2.92	2.97	3.01
Std. Dev.	1.17	1.13	1.12	1.10	1.10	1.09
Number of Health Conditions						
No health conditions (%)	20.9	17.4	14	11.1	8.25	5.72
1 health condition (%)	31.7	29	26.7	24	20.09	19.25
2-8 health conditions (%)	47.4	53.6	59.4	64.9	71.66	75.03
Change in policy on working after retirement						
After policy change (%)	60.9	50.6	38.7	26.6	93.1	83.6
Before policy change (%)	39.1	49.4	61.3	73.4	6.9	16.4
Female %	57.35					
Race						
White %	80.37					
Black %	15.93					
Others %	3.7					
Education						
Less than high school %	21.93					
Late graduation from high school %	5.65					
High school graduate %	32.84					
Some college %	20.79					
College and above %	18.79					

Results:

Table 4 presents the fixed effects coefficients of depressive symptoms when people change between participating in BE and retired status. This is for people who are aged 49 to 80 years old as they move in and out of retired and BE status 10 years after the initial report of retirement. The upper limit of years is set as 10 years to allow enough time to track labour force changes. Trajectory analysis shows that bridge employment trajectory can be a dynamic process in which people may be retired, move back to employment, and retire again(Cahill et al., 2006, 2013). Since the age range of the sample population starts at age 49, we need to allow enough time for people to move and finish their retirement trajectory[2]. At the same time, we needed to consider preventing attrition, thus we included the sample who participate in 3 consecutive waves or 6

[2] we have done sensitivity analysis using people who have continuously participated in the survey from 4 years to 14 years after retirement. The effect size of BE on depressive symptoms was not significantly different according to a Wald's test across the different samples.

years after retirement and who continued to participate in the HRS 5 consecutive waves after retirement.

The first model compares the within-individual effect of depressive symptoms as people move between retired and BE. Considering all the time-variant control factors, working in BE significantly decreases the person's depressive symptoms by .111. The control variables include any time-variant factors such as age, wealth, debt, income, self-rated general health, number of health conditions and marital status[3].

The second model compares within-individual differences in BE between stressful BE with retired status and non-stressful BE with retired status. Compared to being retired, working in non-stressful BE leads to a decrease of .142 points in depressive symptoms, which is almost 30 percent of the decrease in general BE. Compared to being retired, working in stressful jobs does not lead to a significant decrease in depressive symptoms.

The third model compares the within-individual differences of participating in non-physically demanding jobs and physically demanding jobs with those who are retired. Compared to those who are retired, those working in non-physically demanding jobs is associated with a significant decrease in depressive symptoms by .123 point. However, the surprising fact is that even working in physically demanding jobs significantly lowers people's depressive symptoms by .0827 point. This might be because the additional income coming from working in physically demanding jobs improves people's financial situation and therefore lowers their depressive symptoms slightly. According to this result working in physically demanding job lowers depressive symptoms slightly, likely because the benefits of working in physically demanding job outweighs the costs.

The last model compares partial retirement and post-retirement employment with retired status. Partial retirement means that the person is identified as being retired, but they are still working for pay part-time. Post-retirement employment in this case refers to people who report having experienced retirement once in their life; however, in a later wave they identify with being employed – in full-time employment or part-time employment[4]. In the last model, when people identify with working part time in retirement, their depressive symptoms decrease by .131 point. However, for people who identified with being in post-retirement employment, they show decrease in depressive symptoms, but is not significant.

[3] In the sensitivity analysis, we examined the effect of spousal income, spousal self-rated general health, and spouse's number of health conditions. None of these factors significantly predicted the effect of BE on mental health for those who are married. Also, adding the spousal factors only limited the sample to those who are married. Therefore, we eliminated them from the model.

[4] In the sensitivity analysis, we examined the effect of full-time and part-time post-retirement employment. Full-time post-retirement employment showed a significant effect, but part-time post-retirement employment did not show a significant effect. we did not include this result in the study because 8 and 10 years after initial retirement, both full-time and part-time employment had fewer than 30 people in the category.

Table 4: Estimated Coefficients and Robust Standard Errors from Fixed Effects Models with the Effect of BE (by stressfulness, physical demands and trajectories) on Depressive Symptoms (CES-D)

Bridge Employment		Stress		Physically Demands		BE Trajectory	
Ref(Ret)		Ref(Ret)		Ref(Ret)		Ref(Ret)	
BE	-0.111***	BE - Not Stressful	-0.142***	BE – No Physically Demanding	-0.123***	BE – Employed Full or Part-time	-0.0387
	(0.0261)		(0.0291)		(0.0294)		(0.0433)
		BE - Stressful	-0.0342	BE - Physically Demanding	-0.0827*	BE – Partial Retirement	-0.131***
			(0.0385)		(0.0404)		(0.0277)
NLF	0.0718*	NLF	0.0712*	NLF	0.0707*	NLF	0.0733*
	(0.0296)		(0.0296)		(0.0296)		(0.0296)
Person-waves	45,848	Person-waves	45,848	Person-waves	45,848	Person-waves	45,848
R-sq (within)	0.0280	R-sq (within)	0.0285	R-sq (within)	0.0282	R-sq (within)	0.0281
R-sq (betw)	0.3444	R-sq (betw)	0.3452	R-sq (betw)	0.3438	R-sq (betw)	0.3448
R-sq (overall)	0.2206	R-sq (overall)	0.2215	R-sq (overall)	0.2205	R-sq (overall)	0.2009
Sample	7967	Sample	7967	Sample	7967	Sample	7967
Time Variant Controls: Age, wealth, debt, income, self-rated health, health conditions and marital status Standard errors in parenthesis							
*** p<0.001, ** p<0.01, * p<0.05							

Discussion

This paper uses fixed effects analysis to answer the question of whether participating in BE improves people's mental health. Previous papers on this topic mostly focused on BE participation (Alcover, Topa, Parry, Fraccaroli, & Depolo, 2014; Rudolph et al., 2015; M. E. von Bonsdorff et al., 2017; Wang, 2007; Zhan et al., 2009), this paper makes the contribution in the literature by closely examining the effect of BE trajectory, the effect of stressfulness of BE, and the effect of physical demands of BE on mental health.

First, the fixed effects models show that when people move from retired to non-stressful and non-physically demanding BE, they experience a decrease in depressive symptoms. This result is consistent with that of Hypothesis 3 and 4. Based on the cumulative disadvantage theory and life course perspective, not everyone has equal opportunity to participate in BE. From there, we deduce that people also do not all have equal opportunity to participate in BE of different quality. Researchers found that the determinants of getting hired include employers' preferences, applicants' work histories, workers' motivations (intrinsic fulfillment, financial need or both), and a limited portfolio of resources, all of which produce constraints and opportunities (Rindfuss, Cooksey, & Sutterlin, 1999). Depending on the match between people's financial status, social status and previous work trajectories, they have different opportunity to work in higher or lower quality BE. People who are working for intrinsic satisfaction, are more likely to have control over the quality of jobs they participate in. They might have enjoyed working before retirement, therefore want to continue. These are likely to be individuals with more social capital (senior expertise, experience, and status), which also increases their power in negotiating a better retirement work package with their employer. Thus, the fact that they enjoy their jobs, and working in protective environment that are non-stressful and non-physically demanding, they experience improved mental health.

The result also shows that participating in stressful and physically demanding BE does not significantly improve or harm people's mental health. this result is consistent Hypothesis 5b and 6b. When people are working in low-quality BE, it is likely because they are working for the money, so they do not have many choices – beggars cannot be choosers. While working these worse quality jobs might alleviate their financial trouble which may improve their mental health, they are also face more day-to-day stressors, which harms their mental health. All in all, the cost and benefit balances out, as a result, working in stressful and physically demanding BE does not significantly improve or harm their mental.

Second, the fixed effects model demonstrates that compared to being retired, participating in post-retirement employment does not improve people's mental health; rather participating in partial retirement – working for pay part time in the retired status – improves people's mental health. This result is consistent with the predictions of Hypothesis 1 and 2[5]. Post-retirement employment is about the process of stopping to work in retirement, then going back to employment again. Therefore, those who participate in post-retirement employment essentially

[5] The systematic review showed that the concepts of gradual retirement and post-retirement were mostly blurred in past research. Therefore, this paper makes a point to distinguish between the different forms of bridge employment trajectories conceptually.

experienced a break in their work trajectory, which is reported as retirement. However, research shows that it could also be an episode of unemployment at old age, but reported as retirement because it sounds more socially desirable (Adams & Rau, 2004; Casey & Laczko, 1989; Hatcher, 2003; Szinovacz & Davey, 2005). Thus, participating in post-retirement employment does not significantly improve people's mental health could be due to the more disadvantaged status of individuals who are participating. Another possibility is that those who retired found that their pension is not able to support their life style. Therefore, they move back to employment again. In either case, they are motivated by financial incentives. Thus, they might accept more harsh or stressful work environment, which diminishes the positive psychological benefit of working in BE.

On the other hand, those who are working in partial retirement, are working for pay part-time in the retired status. Their insistence on the retired status means that they continuously consider themselves as retired. Rather than experiencing a break in retirement, they use partial retirement as a way move into full retirement, or work part-time in a job they enjoy after full retirement. Since they can negotiate a gradual retirement plan with their employer, we hypothesize that the participants have greater control over their retirement planning and employment status after retirement. Since they have greater control over whether they work, they would also likely have control in the type of work they engage in. thus, participating in partial retirement improves people's mental health because these people are more likely to be working because they want to, also they have more control over the quality and environment of work, all of this makes BE more beneficial for their mental health.

In conclusion, the current paper shows that while participating in high quality BE improve people's mental health, participating in lower quality BE does not harm people's mental health. Therefore, there are mental health benefits to participating in BE. However, is there equal opportunity to participating in the different types of BE. According to Cumulative dis/advantage theory and the life course perspective, people from different socioeconomic background, health status and work trajectories will have different opportunities. In this discussion section, we have only postulated the characteristics that gives people opportunities to participate in each type of BE. The following paper will examine the predictors of participation in each type of BE that we examined in this paper.

Limitations and Sensitivity Analysis

One limitation of the current study is that the HRS is surveyed every other year. Therefore, the fixed effect regressions are measuring the change in depressive symptoms and the change in BE participation every other year. This delayed measurement of the effect of change in participation in BE and change in depressive symptoms may lead to underestimation of the effect.

Furthermore, the current study only included respondents who stayed at least 6 years after the initial report of retirement. Those who dropped out within 6 years of retirement had higher depressive symptoms, lower education, lower wealth, and poorer health. The missing population likely dropped out because they were hospitalized or deceased. Furthermore, we conducted separate analysis by gender, race/ethnicity, education level, birth cohort, and pre-retirement work and health status. Using Wald's test, we found that the effect of BE on mental health does not differ significantly for these groups. This is consistent with past literature that examined the

effect of retirement on mental health for different populations. The difference of the effect of retirement on men and women and ethnic groups on depressive symptoms are not statistically significant according to the Wald's test (Long, Long, & Freese, 2006). According to the life course perspective and cumulative disadvantage theory, people's earlier life experiences add up in a multiplicative way, where at the end of the life course, those at the bottom of the social ladder would be most disadvantaged in terms of physical and mental health. Our findings cannot confirm this theory. Rather, we find that participating in BE as a partial retiree is a mediating factor, where working in non-stressful BE jobs improves people's mental health regardless of their original background or status. For sensitivity analysis, we have tested the effect of BE in non-stressful jobs by gender, race, previous work experiences, and previous health conditions.

Since we have re-aligned the population based on years after retirement, instead of survey years, we could not use the cross-sectional weights of HRS, which means that our sample is only a diverse sample of the U.S. population, and it is not nationally representative. However, we did conduct sensitivity analysis, aligning the population using survey years and applying the cross-sectional weights of HRS. we used the SUEST test to examine whether the effect of BE on depressive symptoms is different for the two populations. There is no significant difference for the effect of BE on depressive symptoms.

One of the criticisms of previous studies on bridge employment and mental health was that only testing whether working after retirement affects people's mental health may bias the results because people are not randomly selected into retirement. This criticism is based on the hypothesis that not everyone will retire, and only those who are financially ready to retire or those who are laid off at old age retire. Nevertheless, we conducted sensitivity analysis on the effect of working in different labour force statuses among the retired and working population. We found that there was no difference in significance levels and miniscule changes in coefficients between the retired population, the fully working population and retired workers. In the analysis, compared to those who are retired, working in partial retirement still provides the largest decrease in depressive symptoms. Compared to those who are fully retired, working full time or part time for the retired and non-retired population did not affect their depressive symptoms after control variables were added.

Moreover, we have tested how spousal statuses affect the relationship between bridge employment and depressive symptoms. This includes spousal labour force status, spousal self-rated health, spousal job characteristics and job quality, spousal health conditions, and spouse's age. Adding these variables to the fixed effects regression does not change the current effects.

Bibliography

Adams, G., & Rau, B. (2004). Job seeking among retirees seeking bridge employment. *Personnel Psychology, 57*(3), 719-744.

Alcover, C.-M., Topa, G., Parry, E., Fraccaroli, F., & Depolo, M. (2014). *Bridge employment: A research handbook*: Routledge.

Atchley, R. C. (1989). A continuity theory of normal aging. *The gerontologist, 29*(2), 183-190.

Avison, W. R., & Turner, R. J. (1988). Stressful life events and depressive symptoms: Disaggregating the effects of acute stressors and chronic strains. *Journal of health and social behavior, 29*(3), 253-264.

Bennett, M. M., Beehr, T. A., & Lepisto, L. R. (2017). A Longitudinal Study of Work After Retirement: Examining Predictors of Bridge Employment, Continued Career Employment and Retirement. *The International Journal of Aging and Human Development, 83*(3), 228-255.

Bosma, H., Peter, R., Siegrist, J., & Marmot, M. (1998). Two alternative job stress models and the risk of coronary heart disease. . *American Journal of Public Health*(88), 68-74.

Cahill, K. E., Giandrea, M. D., & Quinn, J. F. (2006). Retirement patterns from career employment. *The gerontologist, 46*(4), 514-523.

Cahill, K. E., Giandrea, M. D., & Quinn, J. F. (2013). Retirement patterns and the macroeconomy, 1992–2010: The prevalence and determinants of bridge jobs, phased retirement, and reentry among three recent cohorts of older Americans. *The gerontologist, 55*(3), 384-403.

Cahill, K. E., Giandrea, M. D., & Quinn, J. F. (2018). Is bridge job activity overstated? *Work, Aging and Retirement, 00*(00), 1-22.

Calvo, E., Haverstick, K., & Sass, S. A. (2009). Gradual Retirement, Sense of Control, and Retirees' Happiness. *Research on Aging, 31*(1), 112-135.

Calvo, E., & Sarkisian, N. (2011). Retirement and well-being: Examining the characteristics of life course transitions. *Documento de Trabajo, 2*.

Casey, B., & Laczko, F. (1989). Early retired or long-term unemployed? The situtation of non-working men aged 55-64-from 1979 to 1986. *Work, employment and society, 3*(4), 509-526.

Choi, N. G. (2002). Self‐Defined Retirement Status and Engagement in Paid Work among Older Working‐Age Women: Comparison between Childless Women and Mothers. *Sociological Inquiry, 72*(1), 43-71.

Clark, R. L., & Quinn, J. F. (2002). Pattern of work and retirement for a new centry. *Generations, 26*

(2), 17-24.

De Vaus, D., Wells, Y., Kendig, H., & Quine, S. (2007). Does gradual retirement have better outcomes than abrupt retirement? Results from an Australian panel study. *Ageing & Society, 27*(5), 667-682.

Dingemans, E., & Henkens, K. (2014). Involuntary retirement, bridge employment, and satisfaction with life: A longitudinal investigation. *Journal of Organizational Behavior, 35*(4), 575-591.

Dingemans, E., & Henkens, K. (2015). How do retirement dynamics influence mental well-being in later life? A 10-year panel study. *Scandinavian journal of work, environment & health, 41*(1), 16-23.

Drentea, P. (2002). Retirement and mental health. *Journal of aging and health*

, *14*(2), 167-194
.
Feldman, D. C. (1994). The decision to retire early: A review and conceptualization. *Academy of management review, 19*(2), 285-311.
Ferraro, K. F., & Kelley-Moore, J. A. (2003). Cumulative disadvantage and health: long-term consequences of obesity? *American Sociological Review, 68*(5), 707.
Flippen, C., & Tienda, M. (2000). Pathways to retirement: Patterns of labor force participation and labor market exit among the pre-retirement population by race, Hispanic origin, and sex. *Journals of Gerontology Series B: Psychological Sciences and Social Sciences, 55*(1), 14.
Gallo, W. T., Bradley, E. H., Siegel, M., & Kasl, S. V. (2000). Health effects of involuntary job loss among older workers: Findings from the Health and Retirement Survey. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences, 55*, 131-140.
Giandrea, M. D., Cahill, K. E., & Quinn, J. F. (2009). Bridge jobs: A comparison across cohorts. *Research on Aging, 31*(5), 549-576.
Goldberg, E. (2002). A healthy retirement. *AORN journal, 76*(5), 873-874.
Gustman, A. L., & Steinmeimer, T. L. (2000). Retirement outcomes in the Health and Retirement Study. *National Bureau of Economic Reseasrch*(No. W7588).
Hardy, M. A. (1991). Employment after Retirement: Who Gets Back in.? *Research on Aging, 13*(3), 267-288.
Hatcher, C. (2003). The economics of retirement decision In G. A. Adam & T. A. Beehr (Eds.), *Retirement: Reasons, proccesses, and results*. New York: Springer Publishing Company.
Hayward, M. D., Friedman, S., & Chen, H. (1998). Career trajectories and older men's retirement. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences, 53*(2), S91-S103.
Henretta, J. C., & O'Rand, A. M. (1983). Joint retirement in the dual worker family. *Social Forces, 62*(2), 504-520.
Juster, F. T., & Suzman, R. (1995). An overview of the Health and Retirement Study. *Journal of Human Resources*, S7-S56.
Kim, J. E., & Moen, P. (2001). Is retirement good or bad for subjective well-being? *Current directions in psychological science, 10*(3), 83-86.
Kim, J. E., & Moen, P. (2002). Retirement transitions, gender, and psychological well-being: A life-course, ecological model. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences, 57*(3), P212-P222.
Kim, S., & Feldman, D. C. (2000). Working in retirement: The antecedents of bridge employment and its consequences for quality of life in retirement. *Academy of management Journal, 43*(6), 1195-1210.
Kohli, M., & Meyer, J. W. (1986). Social structure and social construction of life stages. *Human Development, 29*(3), 145-149.
Kuper, H., & Marmot, M. (2003). Job strain, job demands, decision latitude, and risk of coronary heart disease within the Whitehall II study. *Journal of Epidemiology & Community Health, 57*(2), 147-153.
Latulippe, D., & Turner, J. (2000). Partial retirement and pension policy in industrialized countries. *International Labour Review, 139*(2), 179-195.

Long, S. J., Long, S. J., & Freese, J. (2006). *Regression models for categorical dependent variables using Stata*: Stata Press.
Luoh, M.-C., & Herzog, A. R. (2002). Individual consequences of volunteer and paid work in old age: Health and mortality. *Journal of health and social behavior*, 490-509.
Maestas, N. (2010). Back to work expectations and realizations of work after retirement. *Journal of Human Resources, 45*(3), 718-748.
Marmot, M. G., Bosma, H., Hemingway, H., Brunner, E., & Stansfeld, S. (1997). Contribution of job control and other risk factors to social variations in coronary heart disease incidence. *The lancet, 350*(9073), 235-239.
Marmot, M. G., Stansfeld, S., Patel, C., North, F., Head, J., White, I., . . . Smith, G. D. (1991). Health inequalities among British civil servants: the Whitehall II study. *The lancet, 337*(8754), 1387-1393.
McDaniel, S. A. (1995). *Work, retirement and women in later life*.
Moen, P. (1996). A life course perspective on retirement, gender, and well-being. *Journal of occupational health psychology, 1*(2), 131.
O'Rand, A. M., & Farkas, J. I. (2002). Couples' retirement timing in the United States in the 1990s: The impact of market and family role demands on joint work exits. *International Journal of Sociology, 32*(2), 11-29.
Pleau, R., & Shauman, K. (2013). Trends and correlates of post-retirement employment, 1977–2009. *Human Relations, 66*(1), 113-141.
Pleau, R. L. (2010). Gender differences in postretirement employment. *Research on Aging, 32*(3), 267-303.
Radloff, L. S. (1977). The CES-D scale: A self-report depression scale for research in the general population. *Applied psychological measurement, 1*(3), 385-401.
Raymo, J. M., Warren, J. R., Sweeney, M. M., Hauser, R. M., & Ho, J.-H. (2011). Precarious employment, bad jobs, labor unions, and early retirement. *Journals of Gerontology Series B: Psychological Sciences and Social Sciences, 66*(2), 249-259.
Rindfuss, R. R., Cooksey, E. C., & Sutterlin, R. L. (1999). Young adult occupational achievement: Early expectations versus behavioral reality. *Work and Occupations, 26*(2), 220-263.
Roscigno, V. J. (2010). Agism in the American workplace. *Context, 9*, 16-21.
Ross, C. E., & Drentea, P. (1998). Consequences of retirement activities for distress and the sense of personal control. *Journal of health and social behavior*, 317-334.
Rudolph, C. W., De Lange, A. H., & Van der Heijden, B. (2015). Adjustment processes in bridge employment: Where we are and where we need to go *Aging workers and the employee-employer relationship* (pp. 221-242): Springer.
Ruhm, C. J. (1990). Bridge jobs and partial retirement. *Journal of labor economics, 8*(4), 482-501.
Schieman, S., Whitestone, Y. K., & Van Gundy, K. (2006). The nature of work and the stress of higher status. *Journal of health and social behavior, 47*(3), 242-257.
Shaw, W. S., Patterson, T. L., Semple, S., & Grant, I. (1998). Health and Well-Being in Retirement *Handbook of clinical geropsychology* (pp. 383-409): Springer.
Shuey, K. M., & Willson, A. E. (2008). Cumulative disadvantage and black-white disparities in life-course health trajectories. *Research on Aging, 30*(2), 200-225.

Shultz, K. S., Morton, K. R., & Weckerle, J. R. (1998). The influence of push and pull factors on voluntary and involuntary early retirees' retirement decision and adjustment. *Journal of vocational behavior, 53*(1), 45-57.
Sonnega, A., Faul, J. D., O'fstedal, M. B., Langa, K. M., Phillips, J. W., & Weir, D. R. (2014). Cohort profile: The Health and Retiremetn Study (HRS). *International Journal of Epidemiology, 43*(2), 576-585.
Szinovacz, M. E., & Davey, A. (2005). Predictors of Preceptions of Involuntary Retirement. *The gerontologist, 45*(1), 36-47.
Tausig, M. (1999). Work and mental health *Handbook of the sociology of mental health* (pp. 255-274): Springer.
Thoits, P. A. (2010). Stress and health. Major findings and policy implications. . *Journal of health and social behavior, 51*(1), S41-S53.
Turner, R. J., & Avison, W. R. (2003). Status variations in stress exposure: Implications for the interpretation of research on race, socioeconomic status, and gender. *Journal of health and social behavior*, 488-505.
Van Solinge, H., & Henkens, K. (2007). Involuntary retirement: The role of restrictive circumstances, timing, and social embeddedness. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences, 62*(5), S295-S303.
Van Solinge, H., & Henkens, K. (2008). Adjustment to and satisfaction with retirement: two of a kind? *Psychology and aging, 23*(2), 422.
von Bonsdorff, M. B., Seitsamo, J., von Bonsdorff, M. E., Ilmarinen, J., Nygård, C.-H., & Rantanen, T. (2012). Job strain among blue-collar and white-collar employees as a determinant of total mortality: a 28-year population-based follow-up. *BMJ open, 2*(2), e000860.
von Bonsdorff, M. E., Zhan, Y., Song, Y., & Wang, M. (2017). Examining bridge employment from a self-employment perspective - Evidence from the Health and Retirement Study. *Work, Aging and Retirement, 3*(3), 298-312.
Wallace, R. B., & Herzog, A. R. (1995). Overview of the health measures in the Health and Retirement Study. *Journal of Human Resources, 30*(Special issue on the Health and Retirement Study: Data quality and early results), S84-S107.
Wang, M. (2007). Profiling retirees in the retirement transition and adjustment process: examining the longitudinal change patterns of retirees' psychological well-being. *Journal of Applied Psychology, 92*(2), 455.
Wang, M., Henkens, K., & van Solinge, H. (2011). Retirement adjustment: A review of theoretical and empirical advancements. *American Psychologist, 66*(3), 204.
Wang, M., Zhan, Y., Liu, S., & Shultz, K. S. (2008). Antecedents of bridge employment: a longitudinal investigation. *Journal of Applied Psychology, 93*(4), 818.
Wheaton, B. (1990). Life transitions, role histories, and mental health. *American Sociological Review*, 209-223.
Williams, D. R. (1997). Race and health: basic questions, emerging directions. *Annals of epidemiology, 7*(5), 322-333.
Willson, A. E., Shuey, K. M., & Elder, J., Glen H. (2007). Cumulative advantage processes as mechanisms of inequality in life course health. *American Journal of Sociology, 112*(6), 1886-1924.
Zhan, Y., Wang, M., Liu, S., & Shultz, K. S. (2009). Bridge employment and retirees' health: A longitudinal investigation. *Journal of occupational health psychology, 14*(4), 374.

Zissimopoulos, J. M., & Karoly, L. A. (2009). Labor-force dynamics at older ages: Movements into self-employment for workers and nonworkers. . *Research on Aging, 31*(89-111).