Recession and Health:
The Impact of Work-Family Strain on Americans' Health in Economic Context

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ABSTRACT

This study adds to current understandings of the relationship between socioeconomic conditions and health by examining the influence of work-family strain on health in the context of the recent Great Recession and the preceding and following years in the United States. Analyses used data from the 2002 and 2008 National Survey of the Changing Workforce (NSCW) and 2002, 2006 and 2010 General Social Survey's Quality of Working Life modules. Findings suggest that work-family strain in general increased during the Great Recession compared to non-recessionary periods, that people who experience lower levels of work-family strain enjoy better health, and that health tends to be better during non-recessionary periods compared to recessionary periods. Work-family strain was shown to mediate a small portion of the impact of macroeconomic condition on health. While work-family strain does not appear to be a primary mediator of the relationship macroeconomic condition and health it remains significant and also a very alterable condition. Findings suggest that positive workplace environments can significantly lessen the negative impacts of work-family strain on health of employees. Improvements of workplace environments and conscious efforts to reduce work-family strain for employees could have significant impact on the health of the working US population with minimal costs during both recessionary and non-recessionary periods.

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CHAPTER ONE: INTRODUCTION

The impact of economic and social conditions on individuals' health has been a topic of philosophical and practical interest for centuries and a key aspect of sociological and medical research from the inception of medical sociology in the 1940s. While much has been done to examine these relationships with regards to personal incomes and employment, stress and strain in general, and the U.S. recession in the 1970s (Brenner 1987; Tausig and Fenwick 1999, Modrek et al. 2013), the impact of the most recent and expansive recession has not been heavily investigated. Where relationships between macroeconomic conditions and health have been found, they have not been fully explained. Do macroeconomic conditions exert their own impacts or are mediating variables such as work or family related stress the main culprits?

This study adds to current understandings of the relationship between socioeconomic conditions and health by examining the influence of work-family strain on health in the context of the recent Great Recession and the preceding and following years in the United States. Using data from the 2002 and 2008 National Survey of the Changing Workforce (NSCW) and 2002, 2006 and 2010 General Social Survey's Quality of Working Life modules, I identify the contribution of changes in work-family strain to changes in health as they relate to the Great Recession. This study also identifies how the relationship between work-family strain and health is impacted by specific occupational characteristics, income and education, being employed full-time versus part-time, and gender in the context of the Great Recession versus non-Great Recession periods.

The main research questions addressed are: a) how does health of adults in the United States vary according to the national economic context, and more specifically, that of the Great Recession? b) How does work-family strain affect the relationship between macroeconomic

conditions and health? c) Does the relationship between work-family strain and health vary by social characteristics differently in different macroeconomic conditions? To address these question I use the Stress Process Model, as outlined by Pearlin (1999), in conjunction with work-family strain theory, and the economic change model of pathology (Brenner 1987) to develop a model of the potential relationships between work and family stress, economic recession, and health.

Theoretical Background

The model for the impact of recession on employed people's health is founded on the Stress Process Model (Pearlin 1999), the economic change model of pathology (Brenner 1987), and work-family strain theory. The places people live, the groups they belong to, and the events they experience all have the ability to impact people in very personal ways influencing the type of food they eat, the clothes they wear, and even their health throughout their lives. A macroeconomic condition is a specific characteristic of a country people live and work in that is likely to have real influence on residents' lives and experiences. A recession is generally defined as two or more consecutive quarters of negative change in national economic output (Gaski 2012), though more elaborate conceptual definitions can be found and are utilized in U.S. official economic activity labeling (NBER 2014).

The National Bureau of Economic Research (NBER), whose Business Cycle Dating Committee maintains the official government recognized chronology of the U.S. business cycle, defines a recession as the period between a peak in economic activity and trough in the business cycle (NBER 2014). This definition is set apart by the ability of a recession to include periods of growth and expansion followed by further decline in economic activity. There is no set definition of economic activity (NBER 2014) though it broadly is considered to include real

Gross Domestic Production (GDP), employment rates, and real income (NBER 2014). This macroeconomic circumstance itself may act as a primary stressor having an independent impact on health while also impacting health through secondary stressors that it directly influences. Because an economic recession may act as a primary stressor, its impact on health is expected to be substantial and negative.

A recession, by general definition, impacts employment rates and real income (NBER 2014); both of which can impact workers' experiences of stress and strain. A specific type of strain that may increase in times of recession is work-family strain – the strain experienced while trying to balance or maintain both work and family responsibilities (Stevens, Kiger, and Riley 2006; Nylen, Melin, and Laflamme 2007). This may act as a secondary stressor, a stressor directly influenced by the primary stressor, the Great Recession, but also having an independent impact on workers' health. The impacts of both the recession and work-family strain on health may further be influenced by a number of social and job characteristics, including socioeconomic status, gender, age, being employed part-time versus full-time, job autonomy, occupational utilization of skills, and family-friendly work environments.

Socioeconomic status has been positively linked to health outcomes in numerous studies (Adler et al. 1994; Marmot and Smith 1991). Workers who have higher socioeconomic status (SES), measured by education and/or income, may be less likely to face a distinct threat of job loss and have more favorable working conditions in general than workers who have lower SES, which could lead to lower levels of stress increase. Increased stress for workers with lower SES during a recession may widen the expected gap in health between people with and higher and lower SES compared to a non-recession time.

Women's and men's paid and unpaid labor contributions have been converging over time. However, women, even those employed for pay, are still responsible for a majority of household and family responsibilities (Greenstein 2009). Women's greater family responsibilities may make them particularly vulnerable to increased work-family strain during times of economic recession. If women who are employed experience greater work-family strain than men, they may also experience more negative health consequences of an economic recession than men who are employed. However, because a majority of one-earner families have a man as the sole earner, and because men are the higher paid income earner in approximately 70 percent of dual earner families (BLS 2011), it is possible that men will have greater experiences of stress related to the economic recession compared to women and be more likely to suffer negative health consequences. Because of this, it may be that men and women experience similar health consequences during a recession though the stress may operate through different pathways.

The influence of workplace characteristics on health have been documented by numerous studies (Breaugh 1985; Boerjan et al. 2010; McGann, Moss, and White 2012). It is likely that specific positive job characteristics, including high autonomy, the ability to utilize one's skills, and having a family-friendly work environment will lessen work-family strain experienced by workers compared to less autonomy, not utilizing one's skills or potential, and having a less family-friendly workplace. This potential lessening of strain may in turn lessen the impact of economic recession on employees' health.

Summary of Supporting Literature

"The Great Recession" officially lasted from December 2007 to June 2009 (Bureau of Labor and Statistics 2012) but its effects began prior to December and have lasted well beyond

2009. Staggering job loss and rising unemployment, a collapse of the housing market, and a downgrading of the U.S. credit rating are some of the more prominent economic and social changes that occurred. Specifically, unemployment rose from 5 percent in 2007 to 9.5 percent by 2009 (U.S. Bureau of Labor and Statistics 2010).

Previous sociological, psychological, and medical research has connected larger socio-economic conditions to both individuals' health outcomes and the aggregate well-being of the population (Brenner 1987; Brenner and Mooney 1983; Catalano 1991; Modrek et al. 2013; Zivin, Paczkowski, and Galea 2011; Tausig and Fenwick 1999). For example, a study of Swedish health during economic change from 1950 to 1980 found that an economic recession was related to increases in total mortality for almost all age groups of both men and women for all major causes of death (Brenner 1987). Other more recent studies have found that economic downturns and job instability are correlated with higher levels of symptoms of psychological disorders (Catalano 1991; Ferrie et al. 2002), increased blood pressure, and higher relative chronic illness (Ferrie et al. 2002) and poorer self-reported mental health (Lam, Fan, and Moen 2013).

However, the potentially changing relationship between national economic conditions and work-family strain as they relate to health outcomes has yet to be investigated in-depth. While the U.S. Great Depression of the 1930s, the U.S. recession from 1974-1975, and specific time periods from non-U.S. countries have provided rich contexts for the initial study of the impact of changing economic conditions on aggregate national health (See Tausig and Fenwick 1999), the Great Recession provides another opportunity for furthering our understanding of the health-related impacts of changing economic conditions.

Research focused on previous eras of the U.S. recession provide not only an outline of the potential negative impacts of economic downturns on individuals' health, but also a number of theoretical explanations for these changing health patterns (Colledge 1982; Bunn 1979). One prominent explanation for the relationship between health and economic change has been an association between economic condition and aggregate social behaviors, including alcohol consumption, cigarette use, and changes in rates of associated diseases and pathologies (Brenner 1987; Modrek et al. 2013). Another prominent explanation for potential changes in well-being involves increased levels of stressors as economic and employment conditions become less stable, increasing the likelihood of poorer reported health (Bunn 1979; Ragnarsdottir, Bernburg, and Olafsdottir 2013).

With regards to the study of economic and employment conditions as potential stressors, the main variables analyzed tend to be related to increased actual and potential for unemployment, negative expectations about the future, and inability to provide for oneself or one's family (Colledge 1982; Ragnarsdottir, Bernburg, and Olafsdottir 2013). Since the 1970s, a growing body of literature has identified work and family conditions as stressors in themselves in the form of work-family strain, not necessarily connected to fears about access to resources or family provisions. In general, work-family strain is measured using variables focused on the likelihood that a job interferes with partner relationships, household chores, or productivity at home, or makes it difficult to have or enjoy free time outside of work (Stevens, Kiger, and Riley 2006; Nylen, Melin, and Laflamme 2007). Alternatively, work-family strain may reflect the likelihood that family or home life interferes with work or work productivity, energy levels at work, and/or ability to focus on demands of a job (Schieman and Young 2011; Nylen, Melin, and Laflamme 2007).

Some previous research suggests that work-family strain, as a source of stress, may directly impact health. Other research has concluded that work-family strain may also impact health by influencing food consumption, exercise, and sleep patterns (Allen and Armstrong 2006; Nylen, Melin, and Laflamme 2007; Williams, et al. 2006).

Model Specifications

Based on the Stress Process Model (Pearlin 1999), the economic change model of pathology (Brenner 1987), and work-family strain theory, I specified a model of the impact of economic recession on health. From this model, I tested the relationship between the Great Recession and health with work-family strain acting as a mediator. The model also incorporated the influence of social characteristics, occupation/work-place characteristics, and moderating resources on the relationship between the recession, work-family strain, and health. Social characteristics included race, gender, age, parenthood/number of children, and employment as either part or full-time. Occupational characteristics included autonomy, recognition of work well-done, and family-friendly work environment. Education and income were designated as moderating resources.

I predicted that economic condition itself would be a stressor that impacted health. I expected negative economic condition or change, as it relates to higher levels of unemployment, GDP growth, job insecurity, and the general emotional and mental stress that accompanies turbulent social times to be associated with poorer health. However, part of its impact on health was also expected to be mediated specifically by work-family strain. Additionally, work-family strain was expected to be impacted by occupational characteristics. The relationship between work-family strain and health was expected to be further impacted by income and education,

which were expected to lessen the negative health effects of both the recession and work-family strain on health.

Methodological Background

I was able to test the proposed model by analyzing data from the 2002 and 2008 National Survey of the Changing Workforce (NSCW) and data from the 2002, 2006, and 2010 General Social Survey's (GSS) Quality of Working Life modules. Data from the 2002 and 2008 NSCW and 2002, 2006, and 2010 GSS contains variables necessary to measure work-family strain, health, occupational characteristics, a number of demographic characteristics, and the potential impact of economic condition on health and work-family strain.

Importance of Research

Experiences of work-family strain and its relationship to health are likely to vary according to macroeconomic conditions and across groups. However, analyses to determine the potential independent influence of larger social and economic conditions on reports of overall health with regards to the Great Recession relative to proceeding time periods have not been conducted. Understanding the ways that the work-family strain-health relationship varies across groups, such as men and women or by level of socioeconomic status, within the context of changing economic conditions will help illuminate potential sites for the production of health disparities. Greater understanding of the ways macroeconomic conditions relate to work-family life and health will also help suggest recommendations and policies aimed at lessening the potential for economic downturns to negatively impact aggregate U.S. health outcomes. As health is connected to both quality of life of a nation's citizens and health care is a large percentage of the national budget, prevention of negative health outcomes related to modifiable

work conditions during times of economic turmoil would not only improve individuals' well-being, but also potentially lower national health care costs.

CHAPTER TWO: MODEL SPECIFICATION AND LITERATURE REVIEW

Model Specification

Figure 1 in the appendix depicts a model of the potential impact of the economic recession on health specifically incorporating work-family strain, occupational characteristics, moderating resources, and demographic characteristics. The presented model is an adaptation of Pearlin's (1999) stress process model. The model contains five panels labeled "Primary Stressors," "Secondary Stressors," Occupation/Workplace Characteristics," "Moderating Resources," and "Health" interacting inside an enclosed system that is being impacted by a final panel, "Social Characteristics." The first panel "Social Characteristics" includes gender, race, age, parental status/number of children, full-time versus part-time employment. In the next panel, "Primary Stressors" are the macroeconomic conditions categorized as either the Great Recession or a non-Great Recession period.

The "Secondary Stressors" in the model are work-family strain divided into two directional categories as either work-to-family or family-to-work strain. The "Occupational/Workplace Characteristics" panel includes characteristics of a workplace that may impact the relationship between economic conditions, work-family strain, and health including autonomy, utilization of skills, family-friendly environment, and hours worked.. In the bottom panel, the "Moderating Resources" that may either lessen or strengthen the relationship between the recession, work-family strain, and health include income and education. The final panel is the main outcome variable of interest, health.

This model predicts several relationships. The central predicted relationship is work-family strain mediating the relationship between economic condition and health. However, I do not expect a complete mediation of the effects of economic condition on health through work-

family strain. The recession may have an influence on health apart from work-family strain, mainly through the well documented pathways of unemployment and increased job insecurity that results in greater anxiety and stress. Further, the recession may impact the importance and role of education and income which will in turn impact the strength of the relationship between work-family strain and health. Occupation/workplace characteristics may also impact the relationship between work-family strain and health. And finally, social characteristics, such as number of children, may impact the relationship between work-family strain and health or impact health directly, as is expected with age.

Primary Stressors

Macroeconomic condition of the Great Recession. Brenner's (1987) economic change model of pathology provides a detailed outline for defining and interpreting how national economic change affects physical, mental, and social well-being. The model has five main elements: long-term economic growth, economic instability, adaptational error related to economic growth, and random shocks. Adaptational error refers to changes in behaviors as a result of economic change that may result in changes in population health. Random shocks refer to events such as natural disasters that may coincide with economic change that may result in changes to a population's health (Brenner 1987). Additionally, utilizing the model requires awareness of a potential lag period between the economic change and its noticeable/measureable effects (Brenner 1987).

The lag period refers to the amount of time from an initial economic change to the time when the specific health effects of that change become measurable in the population. The lag period is not uniform for all health conditions or measures of well-being (Brenner 1987). Generally, based on data and research from multiple countries, the expected lag period is up to

six years (Brenner 1987) from the inception of a recession. Within this six year period there tend to be two peaks, the first occurring within the first year, the second two to three years after the recession ends (Brenner 1987). The first peak will be the most potentially measurable outcome for this study using the NSCW data. Based on this model, I expect to see negative changes in health within the first year of the Great Recession.

For this study, the period of the Great Recession (December 2007 to June 2009) was the macroeconomic condition that was considered a primary stressor and was measured by survey monthly unemployment and gross domestic product (GDP) growth, respectively. Colledge (1982) provides an overview of the main foundational theoretical arguments in the research field of health and economic cycles and highlights findings from main authors in the area. Some have argued that it is the threat of job loss that is most detrimental to health, not actual loss, as the treat increases stress more than the actual loss (Colledge 1982). There have been findings that mortality was actually at its lowest in the US as the unemployment rate rose finding lags between unemployment rates and rises in mortality that differ for different age groups but range from immediate changes to about a 2 year lag. Potential lagged health effects of the Great Recession were the primary impact of the Great Recession analyzed in the GSS based analyses. In the GSS analyses surveys completed in 2010 were considered data reflective of the Great Recession's potential health impacts.

Prior to Colledge's paper a number of studies had studied macro trends of unemployment and health/mortality, but none had been able to concretely connect macro social conditions to health through any definite causal pathways with findings studying entire populations. College (1982) then attempts to illuminate the potential causal pathways through which the economic environment of a nation (which may be measured by unemployment) may impact people's health

through psychological impacts such as decreased self-esteem, rises in depression, and the influence of stress on health.

One prominent explanation for the relationship between health and economic change has been an association between economic condition and aggregate social behaviors, including alcohol consumption, cigarette use, and changes in rates of associated diseases and pathologies (Brenner 1987; Modrek et al. 2013). Another prominent explanation for potential changes in well-being involves increased levels of stressors as economic and employment conditions become less stable, increasing the likelihood of poorer reported health (Bunn 1979; Ragnarsdottir, Bernburg, and Olafsdottir 2013).

With regards to the study of economic and employment conditions as potential stressors, the main variables analyzed tend to be related to increased actual and potential for unemployment, negative expectations about the future, and inability to provide for oneself or one's family (Colledge 1982; Ragnarsdottir, Bernburg, and Olafsdottir 2013). Unemployment rates were used as a measure to capture these aspects of economic condition. Changes in GDP are also a primary determinant of the US economy in the business cycle. GDP is the total value of the goods and services produced by the nation's economy minus the total value of the goods and services used during production (bea.gov 2015). This measure captures an aspect of the economy that is often a predecessor to changes in unemployment. Because of this, changes in GDP were also included as a measure of economic condition.

Secondary Stressors

Work-family strain. Work-family strain is an imbalance between family and work responsibilities and roles that can have detrimental impacts on health. Previous studies of work-family strain and health have concluded that relatively higher levels of work-family strain are

associated with relatively worse health (Allen and Armstrong 2006; Byron 2005; Nylen, Melin, and Laflamme 2007). Though exact quantification may vary, in general, work-family strain is measured by variables focused on how much a job interferes with partner relationships or household chores or productivity at home, and makes it difficult to have or enjoy free time outside of work (Stevens, Kiger, and Riley 2006; Nylen, Melin, and Laflamme 2007). Alternatively, work-family strain may be measured as how much family or home life interferes with: work or work productivity, energy levels at work, and/or ability to focus on demands of a job (Schieman and Young 2011; Nylen, Melin, and Laflamme 2007).

Research has suggested separating work-family strain into two categories based on whether it is family/home-related responsibilities interfering with work or work responsibilities interfering with family/home life as both directions of interference may have distinct stress-related consequences (Allen and Armstrong 2006; Byron 2005; Nylen, Melin, and Laflamme 2007). These two categories can be designated as family life interference with work (FIW) and work interference with family life (WIF) interference/strain (Allen and Armstrong 2006). Both types of work-family strain are generally associated with poorer health. However, they may impact different groups at different rates and each may have unique health impacts.

Both WIF and FIW may impact health through a variety of mechanisms. However, findings on their impacts are mixed according to the health dimensions studied. For example, findings on the relationship between WIF and FIW and physical health behaviors, including consumption of fatty foods, levels of physical exercise, and consumption of healthy foods, which are all correlated with health outcomes are not uniform (Allen and Armstrong 2006). Allen and Armstrong (2006) found that FIW but not WIF significantly decreased physical activity. Whereas Grzywacs and Marks (2001) found that relatively higher levels of WIF were related to

significant increases in amounts of vigorous physical exercise but FIW did not have a relationship (Grzywacz and Marks 2001). Allen and Armstrong (2006) also found that FIW was related to eating more fatty foods, but not fewer healthy foods, while WIF was related to eating fewer healthy foods, but not more fatty foods. Further, when included in models controlling for exercise and food consumption behaviors, WIF but not FIW, still had an independent and significant impact on specific health disorders including high cholesterol, high blood pressure, diabetes, asthma, and ulcers (Allen and Armstrong 2006).

Anyone who is employed could potentially be at risk for FIW and/or WIF. However, there have been documented patterns according to a number of social characteristics. People who experience higher WIF conflict tend to be in upper-level occupational positions that require higher education and tend to enjoy better health overall compared to those in lower-level positions (Byron 2005; Schieman and Gavin 2011). Women employed full-time tend to experience higher levels of work-family strain overall than men employed full-time (Marshall and Barnett 1995). Further inquiry into gender differences has shown that mothers employed full-time experience significantly higher work-family strain than fathers and childless men (Marshall and Barnett 1995). However, these findings have been contradicted by other research that has shown little to no gender differences in either work-to-family or family-to-work strain (Byron 2005). These general patterns are important to understanding the potential impact of the recession on work-family strain as a stressor that may impact health differently for different groups. However, the impact of the Great Recession on work-family strain in the United States has not been investigated.

Occupation and Workplace Characteristics

Characteristics of occupations themselves may also contribute to health independent of their links to work-family strain. Many different physical and psychosocial characteristics of different types of work/jobs have been shown to impact health outcomes including management or leadership relationships, job knowledge and skills, job demands, social relations in the workplace, and frequency of exposure to loud noises (Warren et al. 2004; Madsen et al. 2005). There are a number of theoretical frameworks and models that may potentially be utilized to explain relationships between work and health. In this paper the potential impact of work environment on health is based on the effort-rewards imbalance model of work and stress (Siegrist et al. 2004), research on stress and job autonomy, and studies of the impact of a family-friendly versus less family-friendly work environments on health.

Occupational efforts and rewards. The effort-rewards model states that people who put in more effort at work than the rewards they receive are likely to experience more tension/stress that will result in increased likelihood of poorer health (Theorell 2000; Siegrist et al. 2004). Effort includes time commitments, physical load, and psychological demands (Siegrist et al. 2004). Rewards are generally financial, esteem related, or related to promotion prospects and security (Siegrist et al. 2004).

This study used supervisor recognition of work well-done as a measure of esteem rewards. Based on this model, I expected receiving recognition for work well done would have a direct positive impact on health and also moderate the relationship between work-family strain and health by reducing the potential negative impact of work-family strain on health.

Job autonomy. Autonomy is generally defined as the ability to make decisions and control the events and activities in one's life (Reis et al. 2000; Radoilska 2012). Numerous

studies have concluded that greater levels of autonomy are associated with better mental and physical health (Reis et al. 2000; Borejan et al. 2010; McGann, Moss, and White 2012). The importance of autonomy can be more specifically parsed and assessed within different spheres of a person's life such as the workplace. High job autonomy, or having relatively more control over work scheduling and work decisions and procedures (Breaugh 1985), can greatly decrease work-related stress and improve subsequent reports of health (Boerjan et al. 2010; McGann, Moss, and White 2012). For example, a study of Dutch medical residents found that residents who experienced high levels of job-related autonomy were twice as likely to be healthy, based on responses to a 21 item inventory of common physical health complaints, as residents who experienced medium levels of job-related autonomy (Borejan et al. 2010). Likewise, McGann, Moss, and White (2012) found that rural contract workers from a number of specific workplaces, including fisheries, agriculture, food processing plants, and construction among others, who had higher work autonomy, in the form of ability to negotiate work conditions, had better health and psychological well-being than workers who had less work autonomy. These previous findings suggest that people who experience relatively higher levels of workplace autonomy, in the form of control over how their job is completed, will likely experience better health than people with lower levels of autonomy.

Family-Friendly Work Environment.

How "family-friendly" workplaces are influences workers' experiences of work-family strain and health (Mesmer-Magnus and Viswesvaran 2006). Two dimensions of family-friendly work environments are (1) work/family programs, policies, or benefits and (2) a family-friendly culture (Mesmer-Magnus and Viswesvaran 2006). Work/family programs, policies, and benefits include the option of flexible work arrangements when needed. Family-friendly culture includes

perceptions of an overall supportive work environment, including a lack of discrimination and the presence of supportive and flexible supervisors. Higher levels of both types of family-friendly workplace characteristics significantly reduce work-family conflict (Mesmer-Magnus and Viswesvaran 2006).

Moderating Resources

Income. Income is a commonly utilized measure of socioeconomic status (SES) that is strongly associated with health. While income is tied to education levels, occupational characteristics, and even work-family strain, it also has an independent effect on health. Health does not vary between just those who earn the highest incomes and those who earn the lowest incomes. Instead, health and income have a positive relationship, varying together to form a social gradient of health that is present at all levels, not just between the richest and poorest (Adler et al. 1994; Marmot and Smith 1991). Additionally, I expected that the relationship between health and income would be magnified during the Great Recession period.

In times of recession people in the middle and lower class (based on education) are more likely to become unemployed and rehired, with significant income drops (Belsie 2014). In light of this tendency, income inequality between those with the highest incomes and those with relatively lower incomes may functionally increase in times of recession relative to non-recession periods. During the Great Recession people may be more likely to face economic strain that could lead to increased work-family strain and lead to poorer health. However, people with higher incomes may be able to off-set the negative association between work-family strain and health by using economic resources to purchase services that will lessen the impact of work-family strain on health. For example, if a person has a higher income they will be more likely to be able to use quality reliable childcare or hire someone to help with family work while they

work from home. Because of this, it is likely that the relationship between health and income will become more pronounced during times of recession with higher incomes acting as a buffer between the negative impact of the Great Recession on work-family strain and health. For the purpose of this study "income" refers to total family income as this will be more reflective of total economic resources available than individual income.

Education. Education, which is another component of SES, has been positively associated with health in a number of interesting ways both independently and in conjunction with the effects of income (Ross and Mirowsky 1999; Schnittker 2004). Ross and Mirowsky (1999) for example, found that years of education have a standardized positive relationship with perceived health and perceived functioning that is second largest to the impact of age. The association between education and health may be due to 1) the quantity of education or 2) the value of resulting credentials (Ross and Mirowsky 1999). The quantity model is based on the idea that the more years of school people have completed the greater stock of human capital they will have accumulated (skills, abilities, and resources including being socialized to be dependable, to use good judgment, to be self-motivated, and to think logically in addition to having developed good communication skills and an ability to learn, potentially including lifestyle behaviors.) and will have greater status attainment through exposure to increasingly complex environments that lead to better cognitive skills. This also leads to higher sense of personal control (Ross and Mirowsky 1999).

The credential model assumes that additional years of education are inherently worthless, providing no real skills. Instead, education is valuable because employers emphasize and use degrees as a measure or criteria for hiring so that higher education leads to better jobs and higher incomes. In contrast to the quantity model, the credential model sees no additional benefit to

additional years of schooling. The degree conferred is the only important factor, and additional schooling without a degree is of no benefit or use (Ross and Mirowsky 1999). The main concluding point for Ross and Mirowsky (1999) is that part of education's impact on health may be mediated by work and economic conditions, social and psychological resources, and health lifestyle (Ross and Mirowsky 1999).

With regards to work-family strain, people with higher education tend to be employed in occupations with both higher pressures and higher income. These occupations also tend to have higher levels of work-family spillover, a situation where there is not a clear cut distinction between work life and family life, than occupations requiring lower levels of education (Schieman and Glavin 2011). For example, a physician may be at home but also on-call for a hospital or a professor may be at home but working because they have a publication deadline to meet. Higher work-family spillover tends to create greater conflict and work-family strain for families (Schieman and Glavin 2011). People with the lowest education (less than a high school degree) also tend to be at increased risks for conflict due to variable work shifts (Schieman and Glavin 2011). However, for those with the higher education levels, other associated variables, such as income, seem to counteract the negative impacts of work-family spillover and strain (Schieman and Reed 2009). People with lower education do not have the same counteracting resources. Because education has such a positive association with health and is linked to health through such a multitude of potential pathways, it is likely that during a recession, education will retain a protective effect on health and the gap between health of people with the highest and lowest education will widen.

Health behaviors. A number of specific behaviors have been identified as potentially impacting a person's health in either positive or negative ways. Three that have gained attention among both researchers and the general public are smoking, alcohol consumption, and exercise.

Smoking has been linked to a higher likelihood of a number of negative health consequences such as chronic bronchitis, emphysema, lung cancer (Hyland et al. 2003), and increased relative risk of contraction of infectious diseases (Arcavi and Benowitz 2004), as well as increased risk for premature death (Roger et al. 2005) compared to people who have never or do not currently smoke. Relapses back to smoking for former smokers have been linked to stressful life experiences (Baer and Lichtenstein 1988). Smoking may be a mediating variable between the Great Recession and health.

Like smoking, heavy alcohol use has been linked to both stressful life experiences, especially among men, and negative health consequences. Potential negative health consequences include increased risk of certain cancers, depression, and multiple cardiovascular diseases including hypertension, coronary heart disease, cerebrovascular disease, and stroke (Rehm et al. 2003). In general, the higher the amount of alcohol consumed on a regular basis the greater the risk of disease. Even so, light and moderate drinkers have been found to have a reduction in cardiovascular disease compared to nondrinkers and heavy drinkers (Rehm et al. 2003). Because of this, I expected that level of alcohol consumption would influence the relationship between the recession, work-family strain, and health.

Regular physical activity has been shown to aid in prevention of multiple chronic diseases including cardiovascular disease, diabetes, cancer, hypertension, obesity, and depression (Warburton, Nicol, and Bredin 2006). I expect that people who engage in higher amounts of vigorous physical activity monthly will experience better health relative to those who engage in

less activity. Because vigorous activity has also been shown to help reduce the physiological markers of stress (Bruning and Few 1987) it may also reduce the negative effects of work-family strain on health.

Social Characteristics

Gender. Gender is strongly linked to both overall health (Bird and Rieker 2008) and work-family strain (Schieman and Young 2010). Because of these links, the relationship between the recession and health is expected to be different for men and women. In general, women have higher levels of morbidity than men (Bird and Rieker 2008). So it may be expected that women will have poorer reported health overall. However, some research has suggested that the overall health gap between men and women has decreased significantly over the past decades and as of 2004, is either no longer significant or very small, depending on what dataset and measures of health are examined and what controls are included (Schnittker 2007). For example, accounting for educational differences between men and women explains a large portion of the impact of gender on health in general (Schnittker 2007). Gender, however, may still remain very important to understanding the impacts of work-family strain on health; especially in light of the gendered division of household labor.

Women's tendency to perform more household labor than men may result in relatively greater experiences of work-family strain. Current research finds growing equality in divisions of household work and paid labor. However, among heterosexual couples, gender is the most significant predictor of the amount of time spent performing household labor with women still spending twice as much time on household chores compared to men (Greenstein 2009). Researchers have started to examine the potentially gendered experiences of work-family strain

and also the potentially gendered impacts of work-family strain on health (Nylen, Melin, and Laflamme 2007).

For example, Nylen, Melin, and Laflamme (2007) used data on Swedish men and women aged 25-64 employed either full-time or part-time to determine potential links between either work-to-family interference or family-to-work interference and self-rated health while also taking into account having or not having time to "unwind" after work. The authors found that, for both men and women, both work-to-family and family-to-work interference predicted poorer self-rated health. However, when the ability to unwind after work was taken into consideration the relationship between health and work-to-family interference remained significant for men, but disappeared for women regardless of work schedules (Nylen, Melin and Laflamme 2007). This suggests that men and women may have different resources for off-setting the negative impacts of work-family strain on health. This is not as surprising in light of some findings that women and men tend to have different methods of coping with stressful situations (Torkelson and Muhonen 2004).

Research on differences in stress coping styles between men and women is mixed. Some findings outline clear gendered differences in responses to stress while others find that gender is not a significant predictor of coping (Torkelson and Muhonen 2004). Torkelson and Muhonen (2004) demonstrate that the context and level of work, not just gender, significantly impacts coping styles for both men and women. Men and women in lower level occupational positions tend to cope with stress in traditionally gendered ways. Women tend to use emotions-focused methods (such as seeking emotional support) whereas men tend to use more problem-focused methods (such as seeking instrumental support and suppression through alcohol and drugs) (Torkelson and Muhonen 2004). However, in upper level managerial positions men and

women's coping strategies converge, with men and women were equally likely to use problem-focused coping. Even so, women remained more likely to seek emotional support (Torkelson and Muhonen 2004). The authors also found that emotions-focused coping significantly reduced health problems while problem-focused coping did not.

Men and women's potentially different coping styles may also lead to different health outcomes in the context of a recession. Previous research suggests that in the context of a recession men in lower level occupations may cope with stress in ways that are more detrimental to health than women in lower level occupations. Whereas men and women in higher level occupations may cope more similarly. In light of mixed research finding about gendered differences in coping and the impacts of work-family strain on health, I expect, based on the idea of salience of the family role for women, that work-family strain will be more detrimental to women's health than men's.

Part-time versus full-time employment and hours worked. Being employed part-time versus full-time is likely to impact experiences of work-family strain in a number of ways. First, full-time employment will be directly linked to relatively higher work hours, which could lead to an increased likelihood of work-family strain compared to part-time work. However, part-time employment may be linked to less predictable work schedules which may also lead to greater work-family strain. Despite this, even when work-family strain is experienced, previous research has suggested that people employed part-time may have less negative health consequences related to work-family strain than people employed full-time (Nylen, Melin, and Laflamme 2007). A potential reason for this differential impact is leisure time availability.

Over the past 30 years, there has been a growing disparity in the amount of time spent working between people who work less than 40 hours per week and those who work more than

40 hours per week (Jacobs and Gerson 2004). Record numbers of people are putting in more than 50 hours per week, especially in professional occupations. This has led to people with lower education or less than a college degree having more "leisure" time than those with a college degree, regardless of whether they want the non-working time or not (Jacobs and Gerson 2004). The findings of growing disparities in hours worked by occupation and education level may be very important for understanding the differential impacts of work-family stress on health. For example, Allen and Armstrong (2006), discussed previously, concluded that time limitations may be a main contributing factor to disparities in health behaviors among families with lower or higher work-to-family interference.

Based on these findings and patterns, I expected that people employed full-time would have higher levels of work-family strain compared to people employed part-time. Being employed full-time or part-time, though strongly associated with hours worked will not account for potential difference within groups by number of hours worked.

Parenthood/children. People employed for pay outside the home who have children are potentially at greater risk for work-family strain. Research has found that number of children is one of the strongest predictors of FIW for both men and women (Kinnunen and Mauno 1998). Previous research has had mixed finding on the impact of children on well-being of parents with regards to age at first becoming a parent, current parental age, gender, and income (Umberson, Purdrovska, and Reczek 2010). Generally, childless young adults report higher levels of well-being than young adults who are parents. However, later in life the negative relationship between parental status and well-being seems to diminish and being a parent has been found to be related to relatively better health, especially for men, compared to remaining childless, though marital status and other contextual factors of parenthood were important to the nature of the relationship

(Umberson, Purdrovska, and Reczek 2010). Because of the general relationship between childlessness and higher well-being among young adults, the relationship between number of children and likelihood of work-family and potentially economic strain, I expected employed people who had more children would have poorer health than employed people who had fewer or no children.

Marital Status. Marital status has been connected to health through multiple pathways in multiple studies (Hui and Umberson 2008; William and Umberson 2004). In general, married people experience better health than people who have been previously married or who have never been married (Hui and Umberson 2008). One potential explanation for these differences is selection bias, people who are healthier may be more likely to marry. Another explanation is related to resources (Williams and Umberson 2004). Marriage provides a pooling of economic and social resources that are likely to improve or maintain better health. In contrast, divorce, separation, and becoming a widow create a situation where resources generally decrease. It is possible that negative health impacts of the dissolution of the marriage may contribute more to differences in health between married and previously married than do any particular benefits of marriage (Williams and Umberson 2008). Another potential pathway for the impact of marriage is through partner monitoring and encouraging more health beneficial behaviors, such as a healthy diet and regular medical check-ups. Due to the vast number of potential pathways through which marriage may impact health it is included as a control in these analyses. People who are married are expected to experience better health than people who have never been married and those who are previously married-including those who are divorced, separated, or widowed.

Age. As people get older health tends to decline. Because of this, age was included as a control variable in the analysis.

Hypotheses

Primary Stressor->Secondary Stressor

Hypothesis 1: Work-family strain will be higher during the Great Recession (indicated by higher unemployment rates versus lower unemployment rates, and lower quarterly gross domestic product growth versus higher gross domestic product growth) compared to nonrecessionary periods.

Primary Stressor ->Health

Hypothesis 2: Health will be poorer during the Great Recession (indicated by higher unemployment and lower quarterly gross domestic product growth)compared to nonrecessionary periods.

Secondary Stressor->Health

Hypothesis 3: People who report lower work-family strain will experience better health than people who report higher work-family strain..

Hypothesis 3a: People who experience higher work-family strain during non-recessionary periods will experience better health than people who experience higher work-family strain during the Great Recession (measured by periods of higher unemployment and quarterly gross domestic product growth).

Social Characteristics->Secondary Stressor

Hypothesis 4: Women will experience higher levels of work-family strain than men.

Hypothesis 4a: Men who experience higher levels of work-family strain will experience better health than women who experience higher levels of work-family strain.

Hypothesis 5: Work-family strain will be greater for people with more children compared to people with fewer or no children.

Hypothesis 6: People employed full-time will experience higher levels of work-family strain than people employed part-time.

Moderating Resources

Hypothesis 7: People with higher incomes will experience better health compared to people with lower incomes.

Hypothesis 7a: People with higher income will experience better health during the Great Recession (measured by monthly unemployment) compared to people with lower education levels.

Hypothesis 8: People with higher levels of education will experience better health compared to people with lower levels of education.

Hypothesis 8a: People who have higher education levels will have better health when exposed to work-family strain compared to people with lower levels of education.

Occupational Characteristics and Health

Hypothesis 9: People who receive higher levels of occupational rewards in the form of recognition for work well done will experience better health than people who receive lower levels of recognition.

Hypothesis 9a: People who receive more recognition for work well-done will have better health during a recession (measured by monthly unemployment) compared to people who receive less recognition.

Hypothesis 10: People employed in more family-friendly work environments will experience better health than people employed in less family-friendly work environments

Hypothesis 10a: People employed in more family-friendly work environments who experience higher work-family strain will have better health than people employed in less family-friendly environments.

Hypothesis 11: People who feel their job utilizes their skills more will experience better health than people who feel their job utilizes their skills less.

Hypothesis 11a: People who feel their job is utilizing their skills more will experience better health during a recession (measured by monthly unemployment) compared to people who feel their job utilizes their skills less.

Hypothesis 12: People who experience higher levels of job autonomy will report better health than people who experience lower levels of job autonomy.

Hypothesis 12a: People who have higher job autonomy will report better health when exposed to work-family strain compared to people with lower levels of job autonomy.

Health Behaviors

Hypothesis 13: Non-smokers will experience better health than smokers.

Hypothesis 13a: People who do not smoke will experience better health when exposed to work-family strain than people who smoke.

Hypothesis 14: Lower levels of regular alcohol consumption will be associated with better health compared to higher levels of alcohol consumption.

Hypothesis 14a: People who consume lower levels of alcohol will experience better health when exposed to work-family strain than people who consumer higher levels of alcohol.

Hypothesis 15: People who exercise more frequently will have better health than people who exercise less frequently.

Hypothesis 15a: People who exercise more frequently will report better health when exposed to work-family strain compared to people who exercise less frequently.

CHAPTER THREE: METHODS

Sample

This study used data from the 2002 and 2008 National Survey of the Changing Workforce (NSCW) and data from the 2002, 2006, and 2010 GSS Quality of Working Life modules. Both the NSCW and GSS are sets of nationally representative cross-sectional surveys of non-institutionalized U.S. adults. Data for the NSCW were collected on individuals' work, personal, and family lives through telephone interviews. A majority of data for the GSS samples was gathered through face-to-face interviews, although telephone interviews were used if scheduling a face-to-face meeting was difficult. Both data sets included questions about levels and types of work-to-family and family-to-work strain. In addition, the surveys also incorporated general demographic questions and questions about work-family strain, personal health, and occupational/workplace characteristics.

The 2002 and 2008 NSCW data was combined into one comparison data set that was adjusted for design effects and weighted to match the overall demographics of wage and salaried workers in the U.S. workforce. The variable "WAGEWT" was provided in the 2002-2008 NSCW subsample dataset that included only wage and salaried workers. Weighting the comparison file by the variable "WAGEWT" weighted the data set to the population of wage and salaried workers in the US (NSCW 2011). The combined 2002 and 2008 NSCW dataset contained a total of 5,595 respondents. Of those, 2,810 completed the survey in 2002 and 2,769 completed the survey in 2008.

I pooled the 2002, 2006, and 2010 GSS data into one data set. From this data set only I included only respondents who completed the Quality of Working Life module (QWLM) (including unemployed). In 2004 the GSS adopted a new non-respondent, sub-sampling design

that made weighting the data necessary to be a representative sample of adults in the US. The GSS provided weighting variables not only for 2004 and more recent data but also for 2002 data so the data could be pooled and weighted in the same way. I weighted the cumulative data set to be a representative sample of all adults in the US using the GSS provided weighting variable "WTSSALL." The total weighted number of respondents include in the GSS data is 6,641. Of that, 1,847 respondents participated in the 2002 survey, 3,516 respondents participated in the 2006 survey, and 1,311 respondents participated in the 2010 survey.

Approximately 76.6 percent of the survey respondents included in the NSCW based analyses were white, the remaining 23.4 percent were categorized as "other." Women accounted for 48.4 percent of respondents, men accounted for 51.6 percent. Full-time employees made up 82.9 percent of the sample; part-time employees made up 17.1 percent. For the GSS-based analyses, 75 percent of respondents were white, the remaining 25 percent were categorized as "other." Women made up 54 percent of the sample; 46 percent were men. 51.5 percent of respondents were employed full-time, 11 percent were employed part-time, 5 percent were unemployed, and the remaining 34 percent were non-employed (including students, retired people, people who keep home, employed people who were temporarily not working due to strike, leave, etc. and all others).

Measures

Dependent variable. In the NSCW data health was measured by the question "How would you rate your current state of health -- excellent, good, fair, or poor. In the GSS data health is measured by the question "Would you say your own health, in general, is excellent (3), good (2), fair (1), or poor (1)?" Due to the small size of respondents in the "poor" category in

each data set and my interested in likelihood of poorer health, I combined "poor" and "fair" responses into one category (0) and good and excellent into one category (1).

Primary stressors/the Great Recession. Monthly unemployment rates were the main measure of economic conditions. For both the GSS and data NSCW-based analyses monthly unemployment rates were computed using respondents' specific interview dates and historical monthly unemployment rates reported by the U.S. Bureau of Labor and Statistics (BLS) (BLS.gov 2015). Respondents were first grouped according to interview date, then unemployment rates were assigned to each group. For the NSCW data unemployment rates ranged from 4.7 to 6.3 percent. In the GSS data unemployment rates ranged from 4.6 to 9.9 percent.

In addition to monthly unemployment rates, quarterly GDP growth was included as a measure of economic conditions. Quarterly GDP growth was determined using respondents' specific interview dates and historical quarterly GDP growth rates outlined by the US Bureau of Economic Analysis (BEA) (bea.gov 2015). U.S. GDP was measured quarterly with quarters beginning January 1, April 1, July 1, and October 1 each year. Each respondent was assigned a GDP growth rate based on the GDP growth rate of the quarter and year in which they completed their survey. In the NSCW data GDP growth rates ranged from 0.84 to 2.04 percent and from 1.42 to 3.17 in the GSS data. In order to have more meaningful regression coefficients and odds ratios both the monthly unemployment and GDP measures were modified to have a lowest value of 0. For the NSCW health behaviors analysis a factor analysis was used to create one centered economic context variable based on monthly unemployment and quarterly GDP growth. The economic context variable is positively related to better economic conditions. Higher economic measure values are associated with lower unemployment and higher GDP growth. Values

ranged from -1.20 to 4.09. Due to high collinearity with both monthly unemployment and quarterly GDP growth, year was not included as a measure of economic condition in any analysis.

Secondary stressors/work-family strain. Work-to-family strain was divided into two variables, work-to-family strain and family-to-work strain. In the NSCW each type of work-family strain was measured by a composite variable. The NSCW composite variable for work-to-family strain was created by reverse coding and averaging respondents' scores on the following 3 questions:

"How often have you NOT had enough time for your family or other important people in your life because of your job? " Never (1), Rarely (2), Sometimes (3), Often (4) or Very Often (5). "How often have you NOT had the energy to do things with your family or other important people in your life because of your job?" Never (1), Rarely (2), Sometimes (3), Often (4) or Very Often (5). "How often has your job kept you from concentrating on important things in your family or personal life?" Never (1), Rarely (2), Sometimes (3), Often (4) or Very Often (5).

For the GSS-based analyses work-to-family strain was measured by a single variable:

'How often do the demands of your job interfere with your family life?". Never (0), Rarely (1), Sometimes (2), or Often (3). I coded unemployed people as 0.

I created the NSCW composite variable for family-to-work strain by reverse coding and averaging respondents' scores on the following 3 questions: "How often has your family or personal life kept you from doing as good a job at work as you could? " Never (1), rarely (2), Sometimes (3), Often (4) or Very Often (5). "How often have you not had enough time for your job because of your family or personal life?" Never (1), Rarely (2), Sometimes (3), Often (4) or

Very Often (5). And, "How often has your family or personal life kept you from concentrating on your job?" Never (1), Rarely (2), Sometimes (3), Often (4) or Very Often (5).

For the GSS based analyses I measured family-to-work strain using a single question: "How often do the demands of your family interfere with your work on the job?" Never (0), Rarely (1), Sometimes (2), Often (3). People who are unemployed were coded as 0.

Employment status. The NSCW data was limited to people who earned a wage or salary at the time the survey was conducted. Employment status was measured in the NSCW data as either full-time or part-time based on the question "Do you/Does your employer consider this to be a full-time or part-time job?" (part-time=1, full-time=0). The GSS data was not limited to wage and salaried workers. For the GSS data employment status was measured by the question "Last week were you working full time, part time, going to school, keeping house, or what?" Responses were coded into four dummy variables: full-time, part-time, unemployed, and non-employed. The non-employed category included students, retired people, people who keep home, people who were employed but not currently working due to leave, strike, etc., and everyone who did not categorize themselves in any of the other outlined categories. Employed full-time was the omitted reference category.

Occupational characteristics. Occupational characteristics include measures of job autonomy, occupational utilization of skills, recognition of work well-done, and level of family-friendliness of a person's work environment. In the GSS data each occupational characteristic was measured on a scale that begins with the lowest category as "0." For each occupational characteristic the unemployed remain included and coded as "0."

A measure of job autonomy was only available in the NSCW data. In the NSCW data autonomy is measured by the question: "It is basically my own responsibility to decide how my

job gets done." strongly disagree (1), somewhat disagree (2), somewhat agree (3) strongly agree (4)). In both the NSCW and GSS data utilization of skills and abilities is measured by the question: "My job lets me use my skills and abilities. In NSCW responses included strongly disagree (1), somewhat disagree (2), somewhat agree (3) strongly agree (4). GSS responses included strongly disagree (0), disagree (1), agree (2), strongly agree (3). Unemployed people are coded as 0. In the NSCW data reward was measured by: "My supervisor or manager recognizes when I do a good job." Responses included strongly disagree (1), disagree (2), agree (3), strongly agree (4).In the GSS data reward was measured by the question "When you do your job well, are you likely to be praised by your supervisor or employer?" (no=0, maybe=1, yes=2). People who were not currently working were coded as 0.

For the NSCW data Family-Friendly Environment was measured by: "My supervisor or manager (is responsive to my needs)(accommodates me) when I have family or personal business to take care of -- for example, medical appointments, meeting with child's teacher, etc." (0=disagree, 1=agree). In the GSS data Family-Friendly Environment was measured by the question "How hard is it to take time off during your work to take care of personal or family matters?" "Very Hard (3) Somewhat Hard (2), Not too hard (1) Not hard at all (0)." People who were currently not working were coded as 0.

Social characteristics. For both the NSCW and GSS data gender was coded as male (0) or female (1) and race was coded as white (0) or other (1). In the GSS data age was measured in years from 18 to 89. In the NSCW data age was measured in years from 18-89. In both the NSCW and GSS data number of respondent's children 18 years and younger was included as a scale variable ranging from 0 to 8+. For both the NSCW and GSS marital status was coded as three dummy variables- married (0,1), never married (0,1), and previously married (0,1) which

included people who were widowed, divorced, and separated- married was the omitted category. For both the NSCW and GSS data I used total family income as the measure of income. Family income was measured as a scale variable in real (1986) US dollars based on respondents estimated total family incomes. Education was measured as the highest degree earned by the respondent. Education was coded as dummy variables with categories of less than high school diploma, high school diploma or some college (including associates degrees), and bachelor's degree or higher where high school diploma or some college was the omitted category.

Interaction terms. In order to test for moderating effects 13 interaction terms were created. Work-to-family strain*income, and family-to-work strain*income was used to assess income as a moderator of the relationship between work-to-family-strain and health and family-to-work strain and health. Work-to-family strain*education, and family-to-work strain*education assessed education as a moderator of the relationship between economic condition and health, work-to-family-strain and health, and family-to-work strain and health.

Work-to-family strain*autonomy, work-to-family strain*utilization of skills, and work-to-family strain* family-friend environment were used to assess specific job characteristics as moderators of the relationship between work-to-family strain and health. Family-to-work strain*autonomy, family-to-work strain*utilization of skills, and family-to-work strain*family friendly environment were used to assess specific job characteristics as moderators of the relationship between family-to-work strain and health. In order to determine if work-family strain was more negatively associated with health for men than women the interaction terms work-to-family strain*female and family-to-work strain*female was created. To test for a moderation of the relationship between economic context and health by income an income*monthly unemployment interaction term was created.

Health Behaviors. Data on health behaviors were only available in the 2008 NSCW dataset. For the 2008 NSCW respondents' smoking or not was measured by the question "Do you smoke?" with responses coded as either no (0) or yes (1). Patterns of alcohol consumption were measured by the question "At the present time, do you consider yourself to be…." with responses including being a nondrinker (1), light drinker (2), a light to moderate drinker (3), a moderate drinker (4) moderate to heavy drinker (5), or a heavy drinker (6). Level of personal exercise was measured by the question "On how many different occasions did you do vigorous physical exercise during the past 30 days?" responses ranged from 0-99 times and were included as a scale variable.

Plan of Analysis/Analytic Strategy

Data on wage and salaried workers from the 2002 and 2008 National Survey of the Changing Workforce (NSCW) and the 2002, 2006, and 2010 GSS Quality of Working Life modules were analyzed using ordinary least squares (OLS) and binomial logistic regression analysis. Separate regression analyses were used for the GSS and NSCW data sets to examine the relationships between changing national socioeconomic conditions, work-family strain, and health. For each data set three regressions were completed- one OLS regression using work-to-family strain as the dependent variable, one OLS regression using family-to-work strain as the dependent variable, and one binomial logistic regression using health as the dependent variable. For the OLS regressions both work-family strain measures were ordinal. However, my data did not fit the assumption of parallel lines necessary to run a ordinal regression model. Previous research has concluded that while the ordinal regression is ideal for analyses including ordinal dependent variables the OLS regression yields similar results as long as the sample size is large enough and not heavily skewed (Taylor, West, and Aiken 2006; Haplan 2012). Additionally, a

binomial logistic regression was used to examine the potential mediating effect of health behaviors on health during the Great Recession using only data from the 2008 NSCW.

Both the GSS based and NSCW based OLS regressions with work-to-family strain as the dependent variable included only one model that includes gender, marital status, age, race, education level, number of children, employment/occupational status, income, monthly unemployment and quarterly GDP growth as independent variables/controls. The OLS regressions completed using family-to-work strain as the dependent variable for both the GSS and NSCW data also contained only one model that included gender, age, race, education level, number of children, employment/occupational status, income, monthly unemployment and quarterly GDP growth as independent variables/controls.

The GSS-based binomial logistic regression with health as the dependent variable included 4 main models with health as the dependent variable. Additional models tested for interaction effects. Model 1 included only the variables related to economic context-- monthly unemployment rates and quarterly GDP growth. In Model 2 the control variables for the analysis-- gender, marital status, age, race, education level, number of children, employment/occupational status, and the income measures- were added in.

Model 3 incorporated the measures of work-to-family and family-to-work strain. Model 4 incorporated the measures of family-friendly work environment, job reward, and utilization of skills. Additional final models included each interaction term individually except for terms that contain education which were added as a pair.

The NSCW-based binomial logistic regression using health as the dependent variable included four main models with health as the dependent variable; additional models tested for interaction effects. Model 1 included only the variables related to economic context-- monthly

unemployment rates and quarterly GDP growth. The control variables for the analysis-- gender, marital status, income, age, race, number of children, education level, and employment status as either full or part-time-- were added in Model 2.

Model 3 included the measures of work-to-family and family-to-work strain. In Model 4 the measures of job autonomy, job rewards, and family-friendly work environment, were added in. The final models included each interaction term individually except for terms that contain education which were added as a pair.

A final binomial logistic regression analysis was used to examine the potential mediating effect of health behaviors on health during the Great Recession using only data from the 2008 NSCW. The NSCW based binomial regression included 5 main models with health as the dependent variable. Additional models tested for interaction effects. Model 1 included only the economic context measure. The control variables for the analysis-- income, gender, marital status, age, race, number of children, and employment status as either full or part-time-- were added in Model 2.

Model 3 included the measures of work-to-family and family-to-work strain. In Model 4 the measures of job autonomy, job rewards, utilization of skills, and family-friendly work environment were added in.

Model 5 included the measures of health behaviors, including smoking or not, personal categorization of drinking level/alcohol consumption level, and instances of exercise in the past 30 days. Subsequent models added in interaction terms one at a time.

CHAPTER FOUR: RESULTS

This study used data from the 2002 and 2008 NSCW and data from the 2002, 2006, and 2010 GSS Quality of Working Life modules to examine the influence of work-family strain on health in the context of the recent Great Recession and the preceding and following years in the United States. While both surveys were nationally representative samples and both contained similar information related to work-family strain and health, there were differences in overall descriptive statistics for each data set used- the 2002 and 2008 NSCW data, the 2008 only NSCW data set, and the 2002, 2006, and 2010 GSS data (see Tables 1, 2, and 3 in the appendix).

For the 2002, 2006, and 2010 GSS data 82.5 percent of respondents reported good or excellent health, 17.5 percent reported fair or poor health. In 2002, 84.6 percent reported good or excellent health and 15.4 percent reported fair or poor health. In 2006 in the GSS data, 80.1 percent reported good or excellent health and 19.9 percent reported fair or excellent health. In 2010 in the GSS data, 82.2 percent reported good or excellent health and 17.8 percent reported poor or fair health. In both the NSCW 2002 and 2008 data and the NSCW 2008 only data, 80 percent reported good or excellent health and 19 percent reported fair or poor health. In 2002, 82.4 percent of respondents reported good or excellent health and 17.6 percent reported fair or poor health compared to 2008 in which 78.1 percent reported good or excellent health and 21.9 percent reported fair or poor health. In the GSS data, work-to-family strain and family-to-work strain scores ranged from 0-3 with averages of .60 and .61, respectively. These average work-family strain scores imply lower levels of both work-to-family and family-to-work strain are experienced by a majority of respondents. However, the GSS sample included non-employed and unemployed individuals coded as 0 which resulted in a lower mean score than may be expected or compared to the NSCW data which only included employed respondents. In the NSCW 2002

and 2008 data work-to-family and family-to-work strain scores ranged from 1-5 with averages of 2.48 and 2.73, respectively. The NSCW work-family strain scores were based off of the average of three separate questions each. Scores ranging from 2-3 imply that most respondents experienced a variety of work-to-family and family-to-work strain sometimes to often. In the NSCW 2008-only data, work-to-family and family-to-work strain scores ranged from 1-5 with averages of 2.50 and 2.04. These scores imply that most respondents experienced a variety of work-to-family strain between sometimes and often and family-to-work strain sometimes. These differences are important to remember when interpreting the effects of work-family strain on health.

In the GSS and NSCW 2002 and 2008 data sets, economic context was measured by monthly unemployment rates and quarterly GDP growth. Participants included in the GSS analyses complete the survey in either 2002 (28 percent), 2006 (53 percent), or 2010 (19 percent). Participants in the NSCW data completed the survey in either 2002 (58 percent) or 2008 (42 percent). In the GSS data, the average monthly unemployment rate was 5.95 with a range of 4.60 to 9.90. In the NSCW data, the average monthly unemployment rate was 5.55 with a range of 4.7-6.3. While the average unemployment rates were similar for both the GSS and NSCW data sets, the range for the GSS data is wider possibly making monthly unemployment a better indicator of economic condition in the GSS data than in the NSCW data. In the GSS data, the range of unemployment in 2002 was 5.7 to 5.9 percent, the range was 4.6 to 4.7 percent in 2006, and the range was 9.4 to 9.9 percent in 2010. These differences in unemployment rate provide further justification for belief that lagged health effects of the Great Recession were expected to be visible in the 2010 data and that unemployment rate was an acceptable proxy for economic condition.

In the GSS data, the average quarterly GDP growth was 2.41 with a range of 1.42 to 3.17. In the NSCW, the average quarterly GDP growth was 1.61 with a range of .84 to 2.04. Due to the range of dates when the survey was administered and the connection between GDP growth and decline and formal classification of a period as recessionary or non-recessionary, the quarterly GDP measure included in my analyses never captured actual negative growth (which occurred between July 2008 and December 2009 with the greater loss in GDP occurring July to September 2009 with GDP growth of -3.5) (Federal Reserve Bank of St. Louis 2016). Because of this, GDP growth may not be as accurate of a measure of the Great Recession as monthly unemployment.

In the GSS data, occupation characteristics including family-friendly work environment, recognition for work-well done, and occupational utilization of skills were measured with scores ranging from 0-3 on each question. To include unemployed and non-employed respondents, "inapplicable" responses were coded as 0. In the GSS data, the mean scores for family-friendly work environment, recognition, and utilization of skills (excluding non and unemployed respondents) were 1.55, 1.69, and 1.03, respectively. In both NSCW data sets, occupational characteristics including family-friendly work environment, recognition for work well-done, and occupational utilization of skills, and autonomy were measured with scores ranging from 1-4 based on one question each. For the NSCW data, the mean scores for family-friendly work environment, recognition, utilization of skills and autonomy were 3.58, 3.58, 3.52, and 2.95.

GSS and NSCW OLS Regressions of Work-Family Strain Measures on Related Variables

In order to assess the relationship between work-family strain and recession, two OLS regressions were run using the 2002, 2006, and 2010 GSS data with work-to-family strain as the dependent variable in one test and family-to-work strain as the dependent variable in a second

test (in order to gain a more accurate picture of the relationship between independent variables and work-family strain both of the GSS OLS regressions included only respondents employed full or part-time). These same two regressions were also completed using the 2008 and 2002 NSCW data (see Table 4 in the appendix for results).

The first OLS regression of the GSS data demonstrated significant relationships between work-to-family strain and monthly unemployment, quarterly GDP growth, income, race, marital status, number of children, and education. Supporting Hypothesis 1, higher unemployment rates were significant predictors of higher work-to-family strain. Also supporting Hypothesis 1, higher quarterly GDP growth was associated with lower work-to-family strain. People with higher incomes experienced greater work-to-family strain than people with lower incomes. Being white was associated with higher work-to-family strain compared to being non-white. People who were never married experienced lower levels of work-to-family strain than people who were married. Supporting Hypothesis 5, people who had more children reported higher levels work-to-family strain than people who had fewer or no children. People who held less than a high school diploma experienced lower levels of work-to-family strain than people with only a high school diploma. People who complete college experienced higher levels of work-to-family strain than people who held only a high school diploma.

The OLS regression of the GSS data using family-to-work strain demonstrated significant relationships between family-to-work strain and monthly employment rate, quarterly GDP growth, income, race, marital status, part-time employment, and education. Supporting Hypothesis 1 was the finding that higher monthly unemployment predicted higher levels of family-to-work strain and higher GDP growth predicted lower levels of strain. Higher incomes were associated with higher levels of family-to-work strain. Never married respondents

experienced lower levels of strain than did married respondents. Supporting Hypothesis 6, people employed part-time reported lower levels of family-to-work strain than people who worked full-time. People with less than a high school diploma experienced lower levels of family-to-work strain than people with a high school diploma. People with a college degree experienced higher levels of family-to-work strain than people who held only a high school diploma.

The NSCW OLS regression using work-to-family strain as the dependent variable showed significant relationships between work-to-family strain and race, number of children, being employed part-time versus full-time, and education. Hypothesis 1 predicted work-family strain would be higher during the Great Recession compared to non-recessionary periods (measured by monthly unemployment and quarterly GDP growth). This was not supported. As Table 4 shows, there were no significant relationships between either monthly unemployment or GDP growth with work-to-family strain. Non-white respondents were more likely to experience higher levels of work-to-family strain. Contrary to Hypothesis 4, gender was not significantly related to work-to-family strain. Supporting Hypothesis 5, people with more children experienced lower levels of work-to-family strain compared to people with fewer or no children. Contrary to Hypothesis 6, people employed part-time experienced higher levels of work-to-family strain compared to people employed full-time. Both people whose highest education was less than a high school diploma and people who completed college experienced lower levels of work-to-family strain than people who had a high school diploma or some college.

The NSCW OLS regression using family-to-work strain as the dependent variable demonstrated significant relationships between family-to-work strain and race, gender, martial status, number of children, part-time employment, and education. In contrast to expectations of Hypothesis 1, neither monthly unemployment nor quarterly GDP growth were significant

predictors of family-to-work strain. Whites reported lower levels of family-to-work strain than non-white people. Contrary to Hypothesis 4, Table 4 shows that women reported significantly lower levels of family-to-work strain than men. People who were both never married and previously married reported lower levels of family-to-work strain than people who were currently married. Contradicting Hypothesis 5, people with more children experienced lower levels of family-to-work strain than people with fewer or no children. Contrary to Hypothesis 6, people employed part-time reported higher levels of family-to-work strain than people employed full-time. People who completed college experienced lower levels of family-to-work strain than people whose highest education was a high school diploma or some college.

GSS 2002, 2006, and 2010 Logistic Regression of Health on Independent Variables

The logistic regression of health on related independent variables using the GSS 2002, 2006, and 2010 data had four main models. Additional models were run testing the impact of individual interaction terms on health (except for work-family strain*education terms which were added in pairs). Results from the analysis can be found in Table 5 of the appendix. Model 1 included only the economic context variables. This model accounted for .004 percent of variance in health. As shown in Table 5, only quarterly GDP growth was a significant predictor of health. Contrary to Hypothesis 2, higher GDP growth rates were associated with a decreased likelihood of experiencing better health.

In Model 2, the control variables age, gender, race, marital status, number of children, income, education and employment status were included. This model explained 17 percent of the variance in health. Lower GDP growth remained predictive of better health. Age, race, being previously married, income, education, and employment status were significant predictors of health. Older respondents were less likely to report good or excellent health than younger

respondents. People who were non-white were 35 percent less likely to report good or excellent health than whites. People who were previously married were about 23 percent less likely to report good or excellent health compared to currently married respondents. As was predicted in Hypothesis 7, people with higher incomes were more likely to report better health than people with lower incomes. In line with predictions of Hypothesis 8, people whose highest degree was less than a high school diploma were approximately half as likely to report good or excellent health as people who held a high school diploma or some college. People who held either a bachelors degree or a graduate degree were 1.8 times more likely to report excellent or good health compared to people who held only a high school diploma or some college. People who were unemployed were about 40 percent less likely to report good or excellent health compared to people employed full-time and people who were non-employed were about 50 percent less likely to report good or excellent health than people employed full-time.

Model 3 incorporated the measures of work-to-family and family-to-work strain and explained 17 percent of variance in health. Higher GDP growth remained associated with decreased likelihood of reporting good or excellent health. Hypothesis 3 predicted people who experienced less work-family strain would have better health compared to people who experienced higher levels of work-family strain. However, as Table 5 shows, neither work-to-family nor family-to-work strain was a significant predictor of health in this model. Age, race, marital status, income, education, and employment status as unemployed or non-employed continued to be significant predictors of health with no changes from the previous model.

Model 4 incorporated the measures of family-friendly work environment, job reward, and utilization of skills. This model explained 18 percent of the variance in health. Age, race, marital status, income, education, and employment status continued to be significant predictors of health.

Younger respondents were more likely to report good or excellent health than older respondents. People who were non-white were more likely to report good or excellent health than whites. Married respondents experienced better health than previously married respondents. People with higher incomes were more likely to report good or excellent health than people with lower incomes. People who had not completed high school were less likely to report good or excellent health than people who held a high school diploma or some college. People who held a college degree were more likely to report good or excellent health compared to people who held only a high school diploma or some college. People who were employed full time experienced better health than unemployed or non-employed people. Additionally, once the measures of family-friendly work environment, job reward, and utilization of skills were added, work-to-family strain became a significant predictor of health. As was predicted in Hypothesis 3, people who experienced higher levels of work-to-family strain were less likely to report good or excellent health compared to people who experienced lower levels of work-to-family strain. Utilization of skills was also a significant predictor of health. As was predicted in Hypothesis 11, Table 5 shows greater utilization of skills increased the likelihood of reporting better health.

Additional models added in each interaction term individually (see Table 5a). Six of the interaction terms were significant: work-to-family strain*female, work-to-family strain*family-friendly work environment, work-to-family strain*recognition of work well done, family-to-work strain*family-friendly work environment, family-to-work strain*utilization of skills, and family-to-work*recognition of work well-done. As predicted in Hypothesis 4a, work-to-family strain had a greater negative impact on health for women than men. As was predicted in Hypothesis 10a, people who experienced higher levels of either work-to-family strain or family-to-work strain but also more family-friendly work environments were more likely to have better

health than those who had less family-friendly environments. As was predicted in Hypothesis 9a, people who experienced higher levels of work-to-family strain or family-to-work strain in conjunction with higher levels of recognition for work-well done were more likely to report better health than people who received lower levels of recognition. As was predicted in Hypothesis 11a, people who experienced higher levels of family-to-work strain along with higher utilization of skills were more likely to report better health than people who experienced higher work-to-family strain and lower levels of utilization of skills (see Table 5a in Appendix).

Logistic Regression of Health on Independent Variables using NSCW 2002 and 2008 Data

The binomial logistic regression analysis of health on theoretically relevant independent variables using NSCW 2002 and 2008 data was composed of four main models. Additional models tested for interaction effects of individual interaction terms (except for work-family strain*education terms, which were included in pairs). The results of this analysis can be found in Table 6 in the appendix. Model 1 of the NSCW binomial logistic regression included the recession related variables- monthly unemployment rates and quarterly GDP growth. These variables explained approximately 1 percent of variance in health based on Nagelkerke's R square. Hypothesis 2 predicted health would be better during the non-recessionary periods compared to during the Great Recession (as measured by monthly unemployment, and quarterly GDP growth). Contrary to Hypothesis 2, neither of the economic context variables were significant predictors of health.

All control variables were added in Model 2. The model explained 9 percent of variance in health. Age, gender, marital status, income, and education were significant predictors of health. Younger people were more likely to report better health than older people. Women were about 30 percent less likely to report good or excellent health compared to men. People who

were never married were about 25 percent less likely to report good or excellent health compared to married people. As predicted in Hypothesis 7, people with higher incomes were more likely to report better health than those with lower incomes. As predicted in Hypothesis 8, compared to people whose highest education was a high school diploma or some college, those with less than a high school diploma were 70 percent less likely to experience good or excellent health and those with a college degree were 60 percent more likely to experience good or excellent health. Additionally, once the control variables were included monthly unemployment became a significant predictor of health. However, contrary to Hypothesis 2, higher monthly unemployment rates were associated with *better* health.

Model 3 included the measures of work-to-family and family-to-work strain. After the inclusion of these variables the model explained 13 percent of variance in health. Hypothesis 3 predicted that people who experienced lower levels of work-family strain would experience better health. As was predicted in Hypothesis 3, Table 6 shows both measures of work-family strain were associated with a decreased likelihood of reporting good or excellent health. People who experienced higher work-to-family were less likely to report good or excellent health. People who experienced higher levels of family-to-work strain were less likely to report good or excellent health. Monthly unemployment rates, age, gender, race, income, and education remained significant predictors of health. Higher unemployment rates were associated with *better* health. People with less than a high school diploma remained significantly less likely to experience better health compared to people with a high school diploma or some college and people with a bachelor's degree or higher where more likely to experience better health. Higher incomes remained positively associated with better health.

Model 4 included measures of job autonomy, job rewards, and family-friendly work environment and explained 15 percent of variance in health. As predicted in Hypothesis 10, people employed in more family-friendly environments were significantly more likely to experience better health compared to those with less family-friendly environments. As predicted in Hypothesis 9, Table 6 shows that people who received more recognition for work well-done were more likely to experience good or excellent health than people who received less recognition for work well-done. The impacts of work-to-family strain, family-to-work strain, age, gender, income, race, and education remained significant and unchanged.

Subsequent models were added in each interaction term individually except for education related terms which were added as a pair (see Table 6a in Appendix). Only one of the interaction terms was significant. Work-to-family strain*less than high school education. Contrary to Hypothesis 8a, Table 6a shows people with less than a high school diploma who experienced higher levels of work-to-family strain were more likely to report better health than those who experienced lower levels of work-to-family strain.

NSCW Binomial Logistic Regression Health Behaviors Analysis Results

The NSCW binomial logistic regression for the health behaviors analysis examined the potential mediating effect of health behaviors on health during the Great Recession using only data from the 2008 NSCW (see Table 7 in Appendix). Model 1 included only the economic conditions measure. This model explained less than 1 percent of variance in health. As predicted in Hypothesis 2, Table 7 shows "better" economic conditions (lower unemployment rates and higher GDP) were associated with better health.

The control variables for the analysis-- gender, age, race, number of children, income, and employment status as either full or part-time-- were added in Model 2. The economic

conditions measure remained significant and unchanged. Of the control variables, only the measures of race, income, and education were significant predictors of health. Non-white respondents were about 40 percent less likely to report good or excellent health compared to white respondents. As predicted in Hypothesis 7, higher incomes were associated with an increased likelihood of reporting good or excellent health. As predicted in Hypothesis 8, people with less than a high school diploma were about 60 percent less likely to report good or excellent health compared to people with a high school diploma or some college. Respondents who held a college degree were approximately 75 percent more likely to experience good or excellent health compared to people with a high school diploma or some college. This model accounted for 8 percent of variance in health.

Model 3 included the measures of work-to-family and family-to-work strain. After the inclusion of these variables the model explained 12 percent of variance in health. In this model, supporting Hypothesis 2, better economic conditions remained a significant predictor of better health. As was predicted in Hypothesis 3, higher levels of both work-to-family strain and family-to-work strain were associated with a decreased likelihood of reporting good or excellent health. Age was associated with poorer health. Being non-white remained a significant predictor of a decreased likelihood of good or excellent health compared to whites. Higher incomes remained positively associated with better health. With regards to education, people with less than a high school diploma remained significantly less likely to experience better health than people with a high school diploma or some college and people with a bachelor's degree or higher were more likely to experience better health.

Model 4, shown in Table 7, included measures of job autonomy, job rewards, job-related utilization of skills, and family-friendly work environment and explained 14 percent of variance

in health. Lower levels of work-to-family strain remained associated with better health compared to higher work-to-family strain. Lower levels of family-to-work strain remained associated with better health compared to higher levels. Better economic conditions remained predictive of better health. As predicted in Hypothesis 10, people employed in more family-friendly work environments reported better health than people in less family-friendly work environments. As predicted in Hypothesis 9, people who experienced higher levels of recognition for work well done were more likely to experience good or excellent health compared to people who received less recognition. Non-white respondents remained less likely to report good or excellent health compared to whites. Higher incomes remained positively associated with better health. Having less than a high school diploma was associated with a decreased likelihood of good or excellent health compared to those with a high school diploma or some college and people who held a four year degree or higher remained more likely to report better health compared to those with a high school diploma.

Model 5 included the measures of health behaviors of smoking, average alcohol consumption, and exercise in the past 30 days. This model accounted for 16 percent of the variance in health. Economic context, work-to-family strain, family-to-work strain, family-friendly work environment, recognition of work well-done, race, income, and education remained significant predictors of health unchanged from the previous model. Additionally, as predicted in Hypothesis 13, smokers were half as likely to report good or excellent health compared to non-smokers. Supporting Hypothesis 15, Table 7 shows that people who reported higher levels of exercise reported better health. Additional models added in each interaction term individually. None of the interactions were significant (see Table 7a).

CHAPTER FIVE: DISCUSSION AND CONCLUSIONS

The purpose of this study was to add to current understandings of the relationship between socioeconomic conditions and health by examining the influence of work-family strain on health in the context of the recent Great Recession and the preceding and following years in the United States. Using data from the 2002 and 2008 National Survey of the Changing Workforce (NSCW) and 2002, 2006 and 2010 General Social Survey's Quality of Working Life modules, I identified the contribution of changes in work-family strain to changes in health as they relate to the Great Recession. I also identified how the relationship between work-family strain and health is impacted by specific occupational characteristics, income and education, being employed full-time versus part-time, and gender in the context of the Great Recession versus non-Great Recession periods utilizing an adaptation of Pearlin's (1999) stress process model and binomial logistic regression analyses.

My model of the impact of economic conditions on health was an adaptation of Pearlin's (1999) stress process model. My model specifically incorporated work-family strain, occupational characteristics, moderating resources, and demographic characteristics as potential influences on health related relationships. The model contained five main variable categories, "Primary Stressors," "Secondary Stressors," Occupation/Workplace Characteristics," "Moderating Resources," and "Health" interacting inside an enclosed system that is impacted by "Social Characteristics." The proposed relationships among variables stated in the hypotheses were based on previous research. The results of my regression analyses supported some of my hypotheses and failed to support or contradicted others.

Primary Stressors

Macroeconomic condition. "Primary Stressors" were the macroeconomic conditions categorized as either the Great Recession or a non-Great Recession period. The Great Recession was set apart by its exceptionally high unemployment rates. In light of this, Hypothesis 2 predicted health would be better during non-Great Recession periods compared to during the Great Recession, as measured by monthly unemployment, and GDP growth. The GSS data analysis partially supported this prediction. Contrary to Hypothesis 2, higher GDP growth was associated with poorer health. However, lower monthly unemployment, an additional measure of economic context, was associated with better health as expected in Hypothesis 2. Once control variables were added into the model neither GDP growth nor unemployment rates were significant predictors of health. The lack of significance of economic context measures after inclusion of the control variables suggests that macroeconomic conditions may be impacting health through individual level variables.

Previous research has shown that certain groups of people are more or less likely to suffer the negative consequences of economic downturns. When there is an economic downturn, as measured by a rise in the mean national unemployment, black men are significantly more likely to be unemployed than white men (Ewing, Levernier, and Malik 2005). Because of this, the inclusion of race into the model may detract from the impact of monthly unemployment. Likewise, economic recessions have been found to have negative impacts upon mental health due to job insecurity for the employed (Lam, Fan, and Moen 2013). However, the impacts of a recession may be greater for people who were actually unemployed due to the recession than for those who were remained employed but faced greater job insecurity (or potentially greater work-family strain). The inclusion of unemployed as an employment status in this analysis (which is

not able to take into account longitudinal changes including impact of entry into unemployment due to recession) may also have reduced the significance of GDP growth and monthly unemployment rates.

In the NSCW-based 2002 and 2008 data analysis, Hypothesis 2 was contradicted. Contrary to Hypothesis 2, higher monthly unemployment was associated with *better* health. Quarterly GDP growth was not a significant predictor of health. As was a potential issue in the GSS-based analysis, it is possible that the 2002 data reflects the lagged health effects of the March 2001 to November 2001 recession. These lagged effects may result in a more pronounced impact of unemployment rates on health at the end of the 2001 recession after unemployment rates had already begun to drop than at the initial stages of the Great Recession when the impact of unemployment rates on health may not have fully set in.

Secondary Stressors

Work-family strain. The "Secondary Stressors" in the model were work-family strain, either work-to-family or family-to-work strain. Hypothesis 3 predicted work-family strain would be negatively associated with health. Using the GSS 2002, 2006, and 2010 data, I found that lower levels of work-to-family strain were associated with better health compared to higher levels (supporting Hypothesis 3). However, this relationship was only significant once job characteristics (family-friendliness of work environment, utilization of one's skills on the job, and job rewards) were taken into consideration. This finding is in line with previous research that has concluded that relatively higher levels of work-family strain are associated with relatively worse health (Allen and Armstrong 2006; Nylen, Melin, and Laflamme 2007). However, family-to-work strain was never a significant predictor of health. These findings support the need to divide work-family strain into two separate measures- work-to-family strain

and family-to-work strain. It is possible that family-to-work strain is a less negative form of strain because people may be more likely to endorse a "family first" attitude. So while the stress of family interfering with work may not be positive for health, family interference with work may be something that is easier to accept or cope with than work interfering with family life. However, analysis of the NSCW 2002 and 2008 data set suggest that the negative health impacts of both work-to-family strain and family-to-work strain are very similar. This suggests it may be possible that the less specific measure of family-to-work strain used in the GSS made it more likely that people would report family-to-work strain in general while the more specific measure of family-to-work strain used in the NSCW captured more specific types of family-to-work strain that may be more detrimental to health.

Analysis of the NSCW 2002 and 2008 dataset also supported previous findings. Lower levels of work-to family strain and higher levels of family-to-work strain were both independently associated with better health (supporting Hypothesis 3). Unlike the GSS data analysis, the impacts of work-to-family and family-to-work strain were significant prior to and also after taking occupational characteristics into account.

Work-Family Strain in Economic Context. There have been multiple studies addressing the antecedents of work-family strain in a variety of different populations (Byron 2005; Marshall and Barnett 1995; Schieman and Gavin 2011) And, there have been a number of generalizations about work-family strain that have come out of this research concerning gender, number of children, specific occupation and occupational characteristics, and education. However, my study adds to the understanding of antecedents of work-to-family and family-to-work strain among adults in the United States and fills a gap in literature about the impact of economic condition on work-family strain. Using the GSS 2002, 2006, and 2010 data, I found partial support for

Hypothesis 1 that work-family strain would be higher in the context of the Great Recession compared to non-Great Recession periods. Monthly unemployment was a significant predictor of both work-to-family and family-to-work strain. The finding that higher monthly unemployment was associated with higher levels of strain supports Hypothesis 1. Additionally supporting Hypothesis 1 I found that higher GDP growth was associated with lower levels of both forms of work-family strain. Higher unemployment rates and lower quarterly GDP rates being predictive of higher work-family strain is a contribution of economic condition to work-family strain that was previously unidentified in US data and literature.

Analysis of the 2002 and 2008 NSCW data revealed no significant relationship between either work-to-family or family-to-work strain and monthly unemployment or quarterly GDP growth (refuting Hypothesis 1).

Economic Context, Work-family Strain, and Health. I expected the negative impacts of work-to family and family-to-work strain on health to be magnified in the context of the Great Recession period versus a non-Great Recession period (3a). However, there were no significant relationships between work-to-family strain*monthly unemployment interaction terms and health or family-to-work strain*monthly unemployment interaction terms and health. It is also possible that, while the Great Recession is set apart economically through many characteristics such as unemployment rates, length of unemployment and overall length of recession, the lagged health effects from the previous milder recession from March 2001 to November 2001 were enough to off-set recession-related expected differences.

The relationships between both measures of work-family strain and health were not significantly impacted by economic context in the NSCW data. Again, the possible lagged

health effects of the previous eight month recession in 2001 may have been enough to off-set recession-related expected differences between 2002 and 2008.

Social Characteristics

In my model "Social Characteristics" includes gender, race, age, parental status/number of children, and employment status as full-time or part-time employment or non-employed.

Gender. Based on persistent gender roles that emphasize women's expected contributions to household chores and childcare despite rises in women's employment rates, I expected women to experience higher levels of work-family strain than men (Hypothesis 4). As has been the case with previous research, my results concerning the relationship between work-family strain and gender were mixed. Analysis of the NSCW data contradicted this hypothesis with regards to family-to-work strain. In the NSCW, women reported significantly lower levels of family-to-work strain than men (contradicting Hypothesis 4) and there was no relationship between work-to-family and gender (refuting Hypothesis 4). While women's employment rates have risen and women still tend to perform more household chores, it is possible that women's increased likelihood to drop out of the labor force when faced with high levels of work-family strain (Stone 2007) or a possible tendency to cut back on paid working hours to alleviate strain may result in women's lower work-to-family and family-to-work strain scores.

Previous research on gender and work family strain has been mixed; some find that gender has little or no predictive values and others find women experience higher levels of strain. (Byron 2005; Marshal and Barnett 1995). My findings, though mixed, also support gendered differences. They contradict previous research in that women were *less* likely to experience family-to-work strain. I have taken this analysis a step further to investigate potential interactions between experiences of work-family strain and gender that could have significant

consequences for health. I have found that while women may be less likely to report work-to-family strain, women who experienced higher levels of work-to-family strain were at an increased likelihood of negative health effects than men.

Based on the assumption that family roles are more salient for women, I predicted in Hypothesis 4a that men would be more likely to have better health when exposed to higher work-family strain compared to women who were exposed to higher work-family strain. The GSS analysis supported this hypothesis. Women who experienced higher levels of work-to-family strain were less likely to report good or excellent health than men who experienced higher levels of work-to-family strain. The interaction was not significant in the NSCW analysis (refuting Hypothesis 4a). It is possible that women's labor in the family is more salient to their identities than men and having conflict between their paid labor and unpaid household responsibilities results in greater physical manifestations of stress for women than similar levels of strain create in men.

Marital Status. In both the GSS analysis people who were married experienced better health than people who were previously married in all models. This finding is in line with previous research (Hui and Umberson 2008). In the NSCW being previously married was not a significant predictor of health. This contradicts a majority of literature that has suggested being previously married is associated with poorer health (Williams and Umberson 2004). However, in this analysis being never married was associated with poorer health, a finding not present in the GSS data but that is also in line with previous research (Hui and Umberson 2008).

Race. In the both the GSS 2002, 2006, and 2010, binomial logistic regression and the NSCW analysis people who were non-white were more likely to report poorer health than

whites. This finding is in line with a vast amount of literature establishing increased likelihood of non-white people to experience poorer health than white people (LaVeist 2005).

Age. Both the GSS 2002, 2006, and 2010 binomial logistsic regression and the NSCW 2002 and 2008 data analysis showed that older people reported poorer health than younger people. These findings are in line with previous research and general knowledge about the impact of age on health and validate the need to include age as a control in a model explaining health differences.

Full versus part-time employment. Previous research suggested being employed part-time versus full-time was likely to impact experiences of work-family strain in a number of ways. First, full-time employment is linked to relatively higher work hours, which could lead to an increased likelihood of work-family strain compared to part-time work, especially in light of growing disparities in hours worked between those working less than 40 hours per week and those working over 40 hours per week (Jacobs and Gerson 2004). However, part-time employment may be linked to less predictable work schedules, which may also lead to greater work-family strain. Ultimately, I expected people employed full-time to experience higher levels of work-family strain compared to people employed part-time (Hypothesis 6). The GSS analyses showed a significant relationship between part-time employment and lower levels of family-to-work strain compared to full-time employment (supporting Hypothesis 6). In the NSCW analyses part-time employment was associated with higher levels of both work-to-family and family-to-work strain (contrary to Hypothesis 6). The higher levels of work-family strain associated with part-time employment leave open the need for further investigation into aspects of part-time employment that create higher strain than full-time employment. It also implies that there may be a need to measure not only part-time versus full-time employment, but also to

distinguish between part-time employees who hold only one job versus those who hold two or more jobs, who may experience greater strain.

Number of children. Previous research has found that number of children was a predictor of higher levels of work-family strain for both men and women (Kinnunen and Mauno 1998; Byron 2005). Supporting Hypothesis 5, in the GSS data having more children was associated with higher levels of work-to-family strain. However, contrary to Hypothesis 5 and previous research findings, analysis of the NSCW data showed that having more children was associated with *lower* levels of both work-to-family and family-to-work strain. In this study, the number of children included all children under the age of 18. However, specific age of children was not taken into account. It is possible that older children can help more with household chores and family responsibilities including caring for younger siblings. Families with more children will, except in the case of twins, etc., have at least one older child who will be and more likely to participate in household chores.

Moderating Resources

In my model, "Moderating Resources," namely income and education, were resources expected to either lessen or strengthen the relationships between the recession, work-family strain, and health.

Income. Income is a commonly utilized measure of SES that is strongly associated with health (Adler et al. 1994; Marmot and Smith 1991). The analyses of both the GSS and NSCW data support this. Higher total family incomes were associated with better health in all analytic models (supporting Hypothesis 7). This finding is in line with previous research establishing a health gradient in which people with the higher incomes tend to enjoy better health than people with lower incomes. However, the relationship between income and health was not linear.

Inclusion of an income-squared variable suggested a curvilinear relationship between income and health as was found in Lam, Fan, and Moen (2013). Lam, Fan, and Moen (2013) found that in the context of higher or lower job insecurity (as a measure of economic condition) people with middle-range incomes were most likely to experience poorer mental health compared to people with higher or lower incomes. In my analysis, the curvilinear relationship suggests that the positive health benefits of income begin to weaken after reaching a certain point.

I hypothesized that higher income would be more strongly related to better health during the Great Recession, measured by monthly unemployment (Hypothesis 7a). This was based on the idea that people with higher incomes may be able to off-set the effects of the recession that would result in poorer health or may be less likely to face job insecurity compared to people with lower incomes. However, this hypothesis was not supported. The interaction term monthly unemployment*income was not significant in either analysis.

Education. Education, which is another component of SES, has been positively associated with health in a number of interesting ways both independently and in conjunction with the effects of income (Ross and Mirowsky 1999; Schnittker 2004). Both the GSS and NSCW data analyses supported previous research suggesting an association between higher education levels and better health (Hypothesis 8). Additionally, based on previous literature people with lower education were presumed to not have the same resources that may counteract the negative impact of the Great Recession on health compared to people with higher education. Because education has such a positive association with health and is linked to health through such a multitude of potential pathways, it was likely that during a recession education would retain a protective effect on health, and the gap between health of people with the highest and lowest education would widen. This was contradicted in my findings (Hypothesis 8a).

The interaction between increased work-to-family strain and having less than a high school diploma was significant and increased the likelihood of *better* health in the NSCW data (contradicting Hypothesis 8a). Increased levels of work-to-family strain may also be due to higher hours worked within the entire full-to-part-time employment classification. For people with the lowest levels of education, work-family strain may actually be a *good* stress to have as opposed to lower work-to-family strain that may be due to inability to find work that provides enough hours. There were no other significant interactions between education and work-family strain in either the NSCW or GSS data analyses (refuting Hypothesis 8a).

Occupational/Workplace Characteristics

The potential impact of work environment on health was based on the effort-rewards imbalance model of work and stress (Siegrist et al. 2004), research on stress and occupational autonomy (Boerjan et al. 2010; McGann, Moss, and White 2012) , and studies of the impact of a family-friendly versus less family-friendly work environments on health (Mesmer-Magnus and Viswesvaran 2006). Previous research has suggested that specific work-place characteristics such as work support and scheduling flexibility reduce experiences of both work-to-family and family-to-work strain (Byron 2005). In my model, "Occupational/Workplace Characteristics" were occupational rewards, utilization of skills, and family-friendly work environment as characteristics of a workplace that may impact the relationship between economic conditions, work-family strain, and health. I have taken the current understanding of the impact of work-place environments on work-family strain a step further by also investigating potential interactions between work environment and work-family strain that could have significant impacts on health. I have found significant results that suggest that not only may beneficial

aspects of the workenvironment reduce experiences of work-family strain, but they may also reduce negative health impacts when higher strain is experienced.

Occupational rewards. I expected that receiving higher levels of occupational rewards in the form of recognition for work well done would be associated with better health (Hypothesis 9). This hypothesis was partially supported by my findings. In the NSCW analysis, a higher likelihood of recognition of work well-done was positively associated with better health (supporting Hypothesis 9). In the GSS analysis, the occupational rewards variable was never a significant predictor of health (refuting Hypothesis 9). Additionally, I hypothesized that work-family strain would have a less negative impact on health when a person was more likely to receive recognition for work well-done (Hypothesis 9a). This was supported by the GSS analyses. Both the work-to-family strain*recognition and the family-to-work*recognition interaction terms were significant predictors of health with people who experienced higher levels of work-to-family strain or family-to-work strain in conjunction with higher levels of recognition for work well-done being more likely to report better health than people who received lower levels of recognition (supporting Hypothesis 9a).

Utilization of skills. I expected people who felt their job effectively utilized their skills would experience better health than people who felt their job did not utilize their skills. The GSS analysis supported this expectation (Hypothesis 11). However, there was no significant relationship between utilization of skills and health in the NSCW analyses (refuting Hypothesis 11). Additionally, I hypothesized that work-family strain would have a less negative impact on health when a person felt their job utilized their skills compared to when a person felt their job did not utilize their skills (Hypothesis 11a). The GSS analysis supported this hypothesis. In the GSS analysis, experiencing higher levels of both family-to-work strain and utilization of skills

simultaneously (measured through the interaction variable) increased the likelihood of reporting better health. However, the interaction between work-to-family strain and utilization of skills was not significant. The interactions were not significant in the NSCW analysis.

Again, these findings demonstrate the importance of distinguishing between work-to-family and family-to-work strain. The association between better health and family-to-work strain*utilization of skills was expected based on the idea that higher levels of utilization of skills on the job would mitigate some of the negative impacts of higher levels of work-family strain in general.

Family-friendly work environment. I expected that people employed in more family-friendly work environments would experience better health than people employed in less family-friendly work environments (Hypothesis 10). The NSCW analysis supported this hypothesis. There was no significant relationship between family-friendly environment and health in the GSS analysis. Additionally, I expected work-family strain to have a less negative impact on health when a person was employed in a more family-friendly work environment compared to a less family-friendly work environment (Hypothesis 10a). This hypothesis was supported by the GSS analysis. People who experienced higher levels of both family-to-work strain and work-to-family strain in conjunction with more family-friendly work-environments were more likely to report better health than people who experienced less family-friendly environments. The interactions were not significant in the NSCW analysis.

Job autonomy. Based on previous research, I expected higher levels of job autonomy to be associated with better health (Hypothesis 12). A measure of autonomy was only available in the NSCW analyses. Autonomy was never a significant predictor of health (refuting Hypothesis 12). Additionally, I expected higher levels of job autonomy to decrease the negative effects of

work-family strain (Hypothesis 12a). The NSCW analysis supported this hypothesis. People who experienced higher levels of work-to-family strain along with higher levels of work-related autonomy were more likely to report good or excellent health than people with lower levels of autonomy. Likewise, people who experienced higher levels of family-to-work strain in conjunction with higher levels of autonomy were also more likely to report better health than people who reported lower levels of autonomy (supporting Hypothesis 12a).

Work-family Strain, Health Behaviors, and Health

The NSCW binomial logistic regression analysis which included health behaviors examined the potential mediating effect of health behaviors on health during the Great Recession using only data from the 2008 NSCW. I hypothesized that smokers would experience poorer health than non-smokers (Hypothesis 13). This hypothesis was supported. Being a smoker was associated with an increased likelihood of poorer health compared to non-smokers. Additionally, I expected that work-family strain would have a greater negative impact on the health of people who smoke than people who do not (Hypothesis 13a). Analysis of the 2008 NSCW data did not support this. The interaction between being a smoker and experiencing higher levels of either work-to-family or family-to-work strain did not significantly impact health.

Like smoking, heavy alcohol use has been linked to both stressful life experiences and poorer health (Rehm et al. 2013). I expected general level of alcohol consumption to be negatively associated with health (Hypothesis 14). However, my analysis did not support this expectation. There was no significant relationship between alcohol consumption and health. Additionally, there was no significant interaction relationship between work-family strain and alcohol consumption levels (refuting Hypothesis 14a). The potential lack of significance may be due to small numbers of people reporting moderate or higher levels of alcohol consumption. The

majority of respondents considered themselves nondrinkers or light drinkers. Additionally, it is possible that self-identified drinking category did not accurately capture levels alcohol consumption. Definitions of "light" drinker may vary for different respondents in ways that could significantly impact health. More concrete measures of alcohol consumption may have provided different results.

Based on previous research findings, I expected higher levels of exercise to be associated with relatively better health (Hypothesis 15). This was supported in my analysis. Further, I expected the protective or beneficial effects of exercise may be magnified when they occurred with higher levels of work-family strain (Hypoethesis 15a). This was not supported through my analysis. The interactions of work-to-family strain*exercise and family-to-work strain* exercise were not significant predictors of health.

Conclusion

This study examined the relationship between socioeconomic conditions and health with a focus on changes in work-family strain as a main contributor to changes in health in the context of the Great Recession versus non-Great Recession periods. This study also identified how the relationship between work-family strain and health is impacted by specific occupational characteristics, income and education, being employed full-time versus part-time, gender, and race in the context of the Great Recession versus non-Great Recession periods. To test these relationships, I developed a model of the potential relationships between work and family stress, economic recession, and health based on Pearlin's (1999) Stress Process Model, work-family strain theory (Byron 2005), and the economic change model of pathology (Brenner 1987). I then conducted a series of OLS and binomial logistic regression analyses using multiple data sets to test the fit of my model and accuracy of my hypotheses.

Overall, my model as displayed in Figure 1 (in Appendix) outlines a number of significant pathways through which health may be impacted. My multiple analyses suggested that both work-to-family and family-to-work strain have negative impacts on people's health. However, the analysis does not definitively support the hypothesis that work-family strain acts as a main mediator for the impact of economic condition on health. While there were changes in coefficients that suggested a small mediation of the impacts of economic conditions on health by work-family strain.

This study gains strength and potential insight through the use of two separate data sets and multiple analyses. The use of multiple data sets highlighted the potential impact of variable measurement on outcomes. It is possible that the use of a composite variable for both work-to-family and family-to-work strain as used in the NSCW data provides more specific and potentially accurate measures of each variable compared to the use of a single broad question for both work-to-family and family-to-work strain as was the case in the GSS data.

While there may be benefits to the use of multiple datasets, their use also leads to limitations. Small differences in variable construction may lead to potentially incongruent findings that are difficult to definitively or precisely explain. These findings leave open the need for additional research to more fully understand the impact of economic context on work-family strain in general. It may be possible that peoples' definitions of work-family interference are variable or adaptive along with economic conditions. For example, people may have a tendency to reply with middle-of-the-road responses to questions about strain regardless of actual quantitative changes in hours or numbers of instances of interference that could result in higher or lower strain.

It is also possible that the data utilized in this study did not accurately capture the greatest health impacts of the Great Recession due to the potential for lagged effects on health that may have occurred around 2 years after the recession ended (Brenner 1987). Additionally, the use of cross-sectional data for a study aiming to identify changes in aggregate health limits the ability to draw definite conclusions of causality and increases likelihood of an ecological fallacy. Longitudinal data would be required in order to more accurately assess the role of economic conditions on individual health.

Additionally, the limited number of health behaviors available in the NSCW data set limited my ability to fully understand how health behaviors may mediate the impact of work-family strain on health. Previous research has suggested that a range of health behaviors, including those such as time available to unwind (Nylen, Melin and Laflamme 2007), time necessary to prepare and eat healthy meals (Allen and Armstrong 2006), and sleep patterns (Williams et al. 2006), and not only smoking, alcohol consumption, and exercise, may significantly mediate the relationship between work-family strain and health.

These limitations, especially the use of non-specific measures of work-to-family and family-to-work strain, leave open the need for more in-depth research. Further investigation into the impact of work-family strain on health related not only to respondents' generalized perceptions of interference but based on actual quantitative instances of specific instances of work-to-family and family-to-work interference per specific periods of time would provide greater understanding of harmful and potentially beneficial aspects of work-family strain. Longitudinal data and analysis would provide greater insight into potential causality of relationships between economic contexts and health.

Finally, while the binomial logistic regression analysis of health is sufficient for examining relationships between variables of interest and health, it does not account for potential differences in experiencing good versus excellent health. There may be differences in health at levels that are not captured here. This study leaves open the possibility and need for future research examining the impact of economic context on health utilizing a model that could provide greater insight into differences between multiple health categories.

Despite limitations, this research has added to a greater understanding of the role of work-family strain as a mediator for the relationship between macroeconomic condition and health. My analyses suggest that work-family strain in general was greater during the Great Recession compared to non-recessionary periods, that people who experienced lower levels of work-family strain enjoyed better health, and that health tended to be better during non-recessionary periods compared to recessionary periods. Work-family strain has been shown to mediate a small portion of the impact of macroeconomic conditions on health. While work-family strain does not appear to be a primary mediator of the relationship between macroeconmic conditions and health it remains significant and also a very alterable condition (Boerjan et al. 2010; McGann, Moss, and White 2012). As was shown in my analyses and found in previous research, positive workplace environments, such as more family-friendly environments, can significantly lessen the negative impacts of work-family strain on health of employees (Boerjan et al. 2010; McGann, Moss, and White 2012). Improvements of workplace environments and conscious efforts to reduce work-family strain for employees could have significant impact on the health of the working U.S. population with minimal costs during both recessionary and non-recessionary periods.

When discussing work-family strain it is also important to remember the distinction between work-to-family and family-to-work strain. And while work-to-family strain in general has been shown to negatively impact health, for some people, work-family strain may be linked to aspects of employment that are beneficial to health and off-set work-family strain's negative impacts. As was shown in my analyses people with the lowest education levels who experienced higher levels of work-to-family strain were more likely to report better health than people with lower education and less work-to-family strain. Here work-family strain may be acting as a proxy measure for hours of working-time available to people who may have a difficult time finding adequate hours. This leaves open the need for further investigation into potential work-related benefits different groups experience in conjunction with greater work-family strain that may off-set negative impacts of strain.

WORKS CITED

Adkins, Cheryl L. and Sonya F. Premeaux. 2012. “Spending Time: The Impacts of Hours Worked on Work-Family Conflict.” *Journal of Vocational Behavior* 80: 380-389.

Adler, Nancy E., Thomas Boyce, Margaret A. Chesney, Sheldon Cohen, Susan Folkman, Robert L. Kahn, and S. Leonard Syme. 1994. "Socioeconomic Status and Health: The Challenge of the Gradient." *American Psychologist* 49:15-24.

Allen, Tammy D., and Jeremy Armstrong. 2006. “Further Examination of the Link Between Work-Family Conflict and Physical Health: The Role of Health-Related Behaviors.” *The American Behavioral Scientist* 49(9):1204–1221.

Arcavi, Lidia and Neal L. Benowitz. 2004. "Cigarette Smoking and Infection." *Archives of Internal Medicine* 164(20):2206-2216

Baer, John S., and Edward Lichtenstein. 1988. “Classification and Prediction of Smoking Relapse Episodes: An Exploration of Individual Differences.” *Journal of Counseling and Clinical Psychology* 56(1):104-110.

Bureau of Economic Analysis (BEA). 2015. “US Economy at a Glance from US Accounts.”< bea.gov>

Beckfield, Jason. 2004. “Does Income Inequality Harm Health? New Cross-National Evidence.” *Journal of Health and Social Behavior* 45:231-48.

Belsie, Laurent. 2011. “Job Loss in the Great Recession.” *The National Bureau of Economic Research.* <www.nber.org/digest> Accessed 28 February 2014.

Bird, Chloe E. and Patricia P. Rieker. 2008. *Gender and Health: The Effects of Constrained Choices and Social Policies*. Cambridge: Cambridge University of Press.

Bureau of Labor Statistics (BLS). 2011. "Table 25. Wives who earn more than their husbands, 1987–2009," *Women in the Labor Force: A Databook*. <http://www.bls.gov/cps/wlf>

Boerjan, Martine, Simone J M Bluyssen, Robert P Bleichrodt, Evelyn M Van Weel-Baumgarten, and Harry Van Goor. 2010. "Work-Related Health Complaints in Surgical Residents and the Influence of Social Support and Job-Related Autonomy." *Medical Education* 44(8): 835–844.

Brenner, M. Harvey. 1987. "Relation of economic change to Swedish health and social well-being, 1950–1980." *Social Science & Medicine*, *25*(2), 183–195.

Brenner, M. Harvey and Anne Mooney. 1983. "Unemployment and health in the context of economic change." *Social Science & Medicine*, *17*(16), 1125–1138.

Breaugh, James A. 1985. 'The Measurement of Work Autonomy." *Human Relations* 38(6): 551–570.

Bruning, Nealia S., and David R. Frew. 1987. "Effects of exercise, relaxation, and management skills training on physiological stress indicators: A field experiment." *Journal of Applied Psychology* 72(4)515-521.

Bunn, A.R. 1979. "Ischaemic Heart Disease Mortality and the Business Cycle in Australia." *American Journal of Public Health* 69(8): 772-.

Bureau of Labor and Statistics. 2012. "BLS Spotlight on Statistics: The Recession of 2007-2009." www.bls.gov/spotlight

Byron, Kristin. 2005. "A meta-analytic review of work-family conflict and its antecedents." *Journal of Vocational Behavior* 67:169-198.

Catalano, Ralph. 1991. 'The Health Effects of Economic Insecurity." *American Journal of Public Health* 81(9): 1148.

Colledge, Malcolm. 1982. Economic cycles and health: Towards a sociological understanding of the impact of the recession on health and illness." *Social Science & Medicine* 16(22): 1919-1927.

Ewing, Bradley T., William Levernier, and Farooq Malik. 2005. "Modeling Unemployment Rates by Race and Gendre: A Nonlinear Time Series Approach." *Eastern Economic Journal* 31(3):333-347.

Federal Reserve Bank of St. Louis Economic Research. 2016. "Economic Data: Releases: Real Gross Domestic Product." <https://research.stlouisfed.org/fred2/series/A191RO1Q156NBEA>

Ferrie, Jane E, M.J. Shipley, S.A. Stansfeld, and M.G. Marmot. 2002. "Effects of Chronic Job Insecurity and Change in Job Security on Self Reported Health, Minor Psychiatric Morbidity, Physiological Measures, and Health Related Behaviours in British Civil Servants: The Whitehall II Study." *Journal of Epidemiology & Community Health* 56(6): 450–454.

Gaski, John F. 2012. "On the Competing Definitions of Recession." *Society* 49(2):118-121.

Greenstein, Theodore N. 2009. "National Context, Family Satisfaction, and Fairness in the Division of Household Labor." *Journal of Marriage and Family* 71:1039-1051.

Grzywacz, Joseph G., & Marks, Nadine F. 2001. Social inequalities and exercise during adulthood: Toward an ecological perspective. *Journal of Health & Social Behavior*, 42(2): 202-220.

Haplan, Brendan. 2012. "Multinomial and Ordinal Logistic." Department of Sociology, University of Limerick. < http://teaching.sociology.ul.ie>

Liu, Hui and Debra J. Umberson. 2008. “The Times They Are a Changin’: Marital Status and Health Differentials from 1972 to 2003.” *Journal of Health and Social Behavior* 49:239-253.

Hyland, A., C. Vena, J. Bauer, Q. Li and et al. 2003. *Cigarette Smoking-Attributable Morbidity - United States, 2000.* Atlanta: U.S. Center for Disease Control (http://ezproxy.lib.vt.edu:8080/login?url=http://search.proquest.com/docview/203697604?accountid=14826).

Jacobs, Jerry A. and Kathleen Gerson. 2004. “Understanding Changes in American Working Time: A Synthesis.” Pp. 25-45 in *Fighting for Time: Shifting Boundaries of Work and Social Life*, edited by C. Fuchs Epstein and A. L. Kalleberg. New York: Russell Sage.

Kinnunen, Ulla, and Saija Mauno. 1998. “Antecedents and Outcomes of Work-Family Conflict among Employed Women and Men in Finland.” *Human Relations* 51(2): 157–177.

Lam, Jack, Wen Fan, and Phyllis Moen. 2013. “Is Insecurity Worse for Well-being in Turbulent Times? Mental Health in Context.” *Society and Mental Health* 4(1) 1-19.

LaVeist, Thomas. 2005. Minority Populations and Health. San Francisco: Jossey-Bass.

Madsen, Susan R., John, Cameron R., and Miller, Duane. 2005. “Work-family conflict and health: A study of workplace, psychological, and behavioral correlates.” *Journal of Behavioral and Applied Management*, 6(3), 225-247.

Marmot, Michael G., and George D. Smith. 1991. “Health Inequalities among British Civil Servants: The Whitehall II Study.” *Lancet* 337(8754): 1387.

Marshall, Nancy L. and Rosalind C. Barnett. 1995. “Work-Family Strains and Gains Among Two-Earner Couples.” *Journal of Community Psychology* 21:64-78.

McGann, Michael, Jeremy Moss, and Kevin White. 2012. "Health, Freedom and Work in Rural Victoria: The Impact of Labour Market Casualisation on Health and Wellbeing." *Health Sociology Review* 21(1): 99–115.

Mesmer-Magnus, Jessica R. and Chockalingam Viswesvaran. 2006. "How Family-Friendly Work Environments Affect Work/Family Conflict: A Meta-Analytic Examination." *Journal of Labor Research* 4: 555-575.

Modrek, Sepideh, David Stuckler, Martin McKee, Mark R. Cullen, and Sanjay Basu. 2013. "A Review of Health Consequences of Recessions Internationally and a Synthesis of the US Response during the Great Recession." *Public Health Reviews* 35(1): 1–33.

(The) National Bureau of Economic Research. 2010. "Business Cycle Dating Committee, National Bureau of Economic Research." Accessed 2014. <http://www.nber.org/cycles/sept2010.html>

(The) National Bureau of Economic Research. 2014. "The NBER's Business Cycle Dating Committee." http://www.nber.org/cycles/recessions.html

Nylén, Lotta, Bo Melin, and Lucie Laflamme. 2007. "Interference between work and outside-work demands relative to health: unwinding possibilities among full-time and part-time employees." *International Journal of Behavioral Medicine* 14(4):229–236.

Mirowsky, John. 2012. "Analyzing Associations between Mental Health and Social Circumstances." Pp. 143-165 in *Handbook of the Sociology of Mental Health 2nd ed.* edited by Carol S. Aneshensel, Jo C. Phelan, and Alex Bierman. LOCATION: Springer Netherlands.

Pearlin, Leonard I. 1999. “The Stress Process Revisited; Reflections on Concepts and Their Interrelationships.” In C. S. Aneshensel & J. C. Phelan (Eds.), *Handbook of the Sociology of Mental Health* (pp. 395–416). New York: Springer.

Radoilska, Lubomira. 2012. “Introduction: personal autonomy, decisional capacity, and mental disorder.” Pp. ix in *Autonomy and Mental Disorder. International Perspectives in Philosophy and Psychiatry*. Lubomira Radoilska ed. Oxford ; New York: Oxford University Press.

Ragnarsdóttir, Berglind Hólm, Jón Gunnar Bernburg, and Sigrún Ólafsdóttir. 2013. “The Global Financial Crisis and Individual Distress: The Role of Subjective Comparisons after the Collapse of the Icelandic Economy.” *Sociology* 47(4): 755–775.

Rehm, J., Gmel, G., Sempos, C., & Trevisan, M. 2003. Alcohol-related morbidity and mortality. *Alcohol Research & Health*, *27*(1), 39-51.

Reis, Harry T., Kennon M. Sheldon, Shelly L. Gable, Joseph Roscoe, and Richard M. Ryan. 2000. “Daily Well-Being: The Role of Autonomy, Competence, and Relatedness.” *Personality and Social Psychology Bulletin,* 26:419-435.

Rogers, Richard G., Robert A. Hummer, Patrick M. Krueger and Fred C. Pampel. 2005. “Mortality Attributable to Cigarette Smoking in the United States.”*Population and Development Review* 31(2): 259-292

Ross, Catherine E. and John Mirowsky. 1999. “Refining the Association Between Education and Health: The Effects of Quantity, Credential, and Selectivity.” *Demography* 36:445-460.

Schieman, Scott, and Paul Glavin. 2011. “Education and Work-Family Conflict: Explanations, Contingencies and Mental Health Consequences.” *Social Forces* 89(4):1341–1362

Schieman, Scott, and Marisa Young. 2011. "Economic Hardship and Family-to-Work Conflict: The Importance of Gender and Work Conditions." *Journal of Family and Economic Issues* 32(1):46–61.

Schnittker, Jason. 2004. "Education and the Changing Shape of the Income Gradient in Health." *Journal of Health and Social Behavior* 45:286-305.

Siegrist, Johannes, Dagmar Starke, Tarani Chandola, Isabelle Godin, Michael Marmot, Isabelle Niedhammer, and Richard Peter. 2004. "The Measuremnt of Effort-Reward Imbalance at Workd: European Comparisons." *Social Science & Medicine,* 58: 1483-1499.

Stevens, Daphne Pedersen, Gary Kiger, and Pamela J. Riley. 2006. "His, hers, or ours? Work-to-family spillover, crossover, and family cohesion." *The Social Science Journal* 43(3):425–436.

Stone, Pamela. 2007. "The Rhetoric and Reality of Opting Out." *Contexts* 6:14-19.

Taylor, Aaron, Stephen West, and Leona Aiken. 2006. "Loss of Poewr in Logistic, Ordinal Logistic, and Probit Regression When Outcome Variable is Coarsely Categorized." *Education and Psychological Measurement.* 66(2): 228-239.

Tausig, Mark, and Rudy Fenwick. 1999. "Recession and Well-Being." *Journal of Health and Social Behavior*. 40:1-16.

Theorell, Tores. 2000. "Chapter 5: Working Conditions and Health." In: Berkman, Lisa F and Ichiro Kawachi (eds). *Social Epidemiology*. New York: Oxford University Press, 2000; pp. 95-117.

Torkelson, Eva, and Tuija Muhonen. 2004. "The Role of Gender and Job Level in Coping with Occupational Stress." *Work & Stress* 18(3): 267–274.

Umberson, Debra, Tetyana Pudrovska, and Corinne Reczek. 2010. "Parenthood, Childlessness, and Well-Being: A Life Course Perspective." *Journal of Marriage and Family* 72:612-629.

Warburton, Darren E.R., Crystal Whitney Nicol, and Shannon S.D. Bredin. 2006. "Health Benefits of Physical Activity: The Evidence." *Canadian Medical Association Journal.* 174(6): 801-809.

Warren, John Robert, Peter Hoonakker, Pascale Carayon, and Jennie Brand. 2004. "Job Characteristics as Mediators in SES-Health Relationships." *Social Science and Medicine* 59:1367-78.

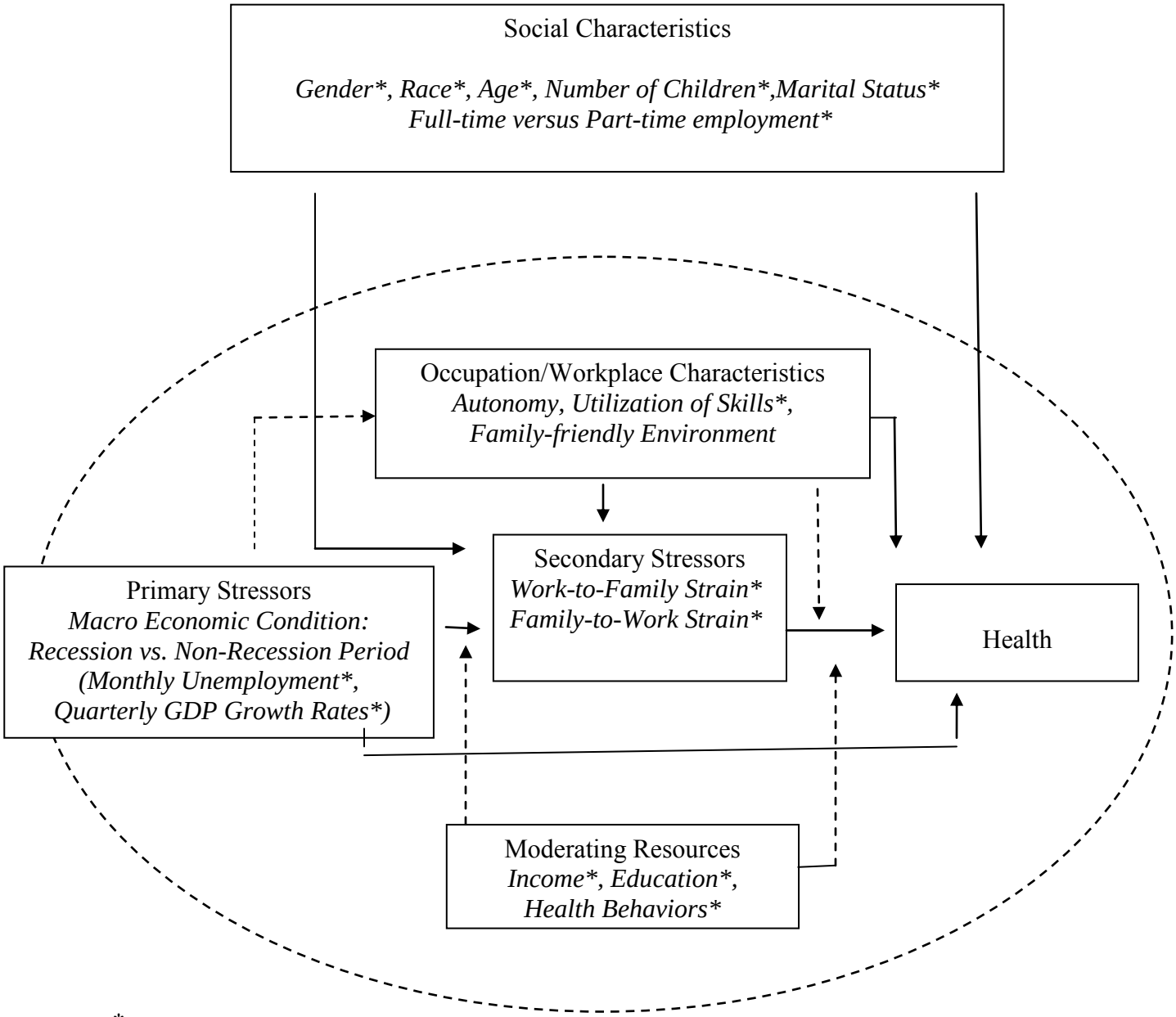
Williams, Alysha, Renée-Louise Franche, Selahadin Ibrahim, Cameron A. Mustard, and Francine Roussy Layton. 2006. "Examining the relationship between work-family spillover and sleep quality." *Journal of Occupational Health Psychology* 11(1):27–37.

Williams, Kristi and Debra Umberson. 2004. "Marital Status, Marital Transitions and Health: A Gendered Life Course Perspective." *Journal of Health and Social Behavior* 45: 81-98.

Zivin, K., M. Paczkowski, and S. Galea. 2011. "Economic Downturns and Population Mental Health: Research Findings, Gaps, Challenges and Priorities." *Psychological Medicine* 41(07): 1343–1348.

APPENDIX

Figure 1. Model of Impact of Economic Conditions on Health



*indicates that a significant relationship was found through model testing analyses.

Table 1. Descriptive Statistics and Unweighted Ns for Study Variables, All Respondents, General Social Survey 2002, 2006, and 2010

	Range	Mean (S.D.) or Proportion	*N*
Health			
Fair/poor	0,1	.25	6,645
Excellent/good	0,1	.75	6,645
Year			
2002		.28	6,645
2006		.53	6,645
2010		.19	6,645
Monthly unemployment rates	4.60-9.90	5.95 (1.90)	6,631
Quarterly GDP growth	1.42-3.17	2.41 (.69)	6,637
Work-family strain[a]			
Work-to-family strain	0-3	.95 (1.01) 0=44.8 1=24.0 2=21.4 3=9.2	4,128
Family-to-work strain	0-3	.75 (.87) 0=49.2 1=28.7 2=17.8 3=3.7	4,128
Employment status			
Full-time	0,1	.51	6,645
Part-time	0,1	.11	6,645
Unemployed	0,1	.05	6,654
Non-employed	0,1	.34	6,641
Occupational characteristics[a]	0-3	.49 (.79)	6,616
Family-friendly work environment	0-3	1.55 (1.25) 0=33.2 1=11.1 2=22.9 3=32.8	4,124
Utilization of skills	0-3	1.69(1.66) 0=27.3 1=6.6 2=35.6 3=30.5	4,126
Recognition of work well-done	0-2	1.03(.90) 0=39.3 1=18.8 2=41.9	4,069
Age	18-89	45.51 (16.75)	6,624
Female	0,1	.54	6,645
Race (non-white)			
Non-white	0,1	.25	6,645
White	0,1	.75	6,645
Marital Status			

Married	0,1	.55	6,645
Never married	0,1	.24	6,645
Previously married	0,1	.21	6,645
Number of children	0-8+	1.09 (.88)	6,634
Family income (in tens of thousands of US dollars)	0-14.45	2.95 (3.31)	6,641
Education			
Less than high school	0,1	.15	6,645
High school or some college (including associate's degree)	0,1	.60	6,645
College degree	0,1	.25	6,645

Notes: Means (and standard errors) or proportions for weighted *N*'s; unweighted *N*'s are shown.
a. Means, S.D., and *N* shown for employed respondents only for these variable categories.

Table 2. Descriptive Statistics and Unweighted Ns for Study Variables, National Survey of the Changing Workforce 2002 & 2008[a]

	Range	Mean (S.D) or Proportion	*N*
Health			
Poor/fair	0,1	.19	5,595
Good/excellent	0,1	.80	5,595
Year			
2002	0,1	.58	5,595
2008	0,1	.42	5,595
Monthly unemployment rates	0-1.5	.77 (.50)	5,579
Quarterly GDP growth	0-1.03	.59(.33)	5,579
Work-family strain			
Work-to-family strain	1-5	2.48 (.92) 1=21.5 2=36.3 3=31.3 4=9.7 5=1.3	5,557
Family-to-work strain	1-5	2.73 (.77) 1=16.6 2=47.9 3=29.9 4=5.4 5=.2	5,546
Employment status part-time	0,1	.17	5,569
Occupational characteristics			
Family-friendly work environment	1-4	3.58 (.74) 1=3.9 2=3.4 3=23.1 4=69.6	4,983
Utilization of Skills	1-4	3.52 (.82) 1=4.8 2=4.9 3=23.2 4=67.0	5,579
Recognition	1-4	3.58 (.74) 1=4.0 2=6.8 3=31.0 4=58.2	5,020
Autonomy	1-4	2.95 (.79) 1=8.1 2=8.5 3=29.3 4=54.1	5,579
Age	18-89	40.79 (12.96)	5,515
Female	0,1	.48	5,579

Race			
Non-white	0,1	.23	5,522
White	0,1	.76	5,522
Marital status			
Married	0,1	.58	5,579
Never married	0,1	.22	5,579
Previously married	0,1	.19	5,579
Number of children	0-22	1.56 (.50)	5,595
Family income (in tens of thousands of US dollars)	0-8000	9.27 (112.14)	5,160
Education			
Less than high school diploma	0,1	.09	5,579
High school diploma or some college (including associate's degree)	0,1	.62	5,579
Bachelor's degree or higher	0,1	.30	5,579

Notes: Means (and standard errors) or proportions for weighted *N*'s; unweighted *N*'s are shown.
a. Survey was limited to people employed as wage or salaried workers.

Table 3. Descriptive Statistics and Unweighted Ns for Study Variables, National Survey of the Changing Workforce 2008 Health Behavior Data Set[a]

	Range	Mean (S.D) or Proportion	*N*
Health			
Poor/fair	0,1	.19	2,769
Good/excellent	0,1	.80	2,769
Work-Family Strain			
Work-to-Family Strain	1-5	2.51 (.93)	2,761
Family-to-Work Strain	1-5	2.04 (.71)	2,757
Occupational Characteristics			
Family-Friendly Work Environment	1-4	3.61 (.70)	2,459
Utilization of Skills	1-4	3.51 (.84)	2,769
Recognition	1-4	3.60 (.70)	2,474
Autonomy	1-4	2.95 (.80)	2,769
Health Behaviors			
Smoker	0,1	.25	2,769
Alcohol Consumption	1-6	1.87 (.99)	2,769
Exercise	0- 99	10.51 (10.28)	2,769
Age	18-89 years	40.59 (13.00)	2,730
Female	0,1	.48	2,769
Race (non-white)	0,1		2,740
Number of children	0-8+	1.47 (1.56)	2,769
Marital status			
Married	0,1	59.5	2,760
Never married	0,1	21.1	2,760
Previously married	0,1	19.5	2,760
Economic measure[b]	-1.20-4.09	.00 (1.00)	2,769
Family income (in tens of thousands of US dollars)	0-650	8.86 (16.34)	2,578
Education			
Less than high school diploma	0,1	.05	2,769
High school diploma or some college (including Associate's degree)	0,1	.64	2,769
Bachelor's Degree or higher	0,1	.31	2,769

Notes: Means (and standard errors) or proportions for weighted *N*'s; unweighted *N*'s are shown.
a. Survey was limited to people employed as wage or salaried workers.
[b] Higher values represent "better" economic condition- lower unemployment and higher GDP growth.

Table 4. OLS Regression of Work-Family Strain Measures

	General Social Survey		National Survey of the Changing Workforce	
DV:	**Work-to-Family Strain (n=4,128**	**Family-to-Work Strain (n=4,128)**	**Work-to-Family Strain (n=3,479)**	**Family-to-Work Strain (n=3,473)**
Monthly unemployment rate	.08***	.11***	.07	.07
Quarterly GDP growth	-.21***	-.22***	-.01	.01
Income (in tens of thousands of US dollars)	.04***	.06***	.00	.00
Income squared	-.00*	-.00**	-.00	-.00
Non-white[a]	-.11***	-.14***	.10*	.12**
Female[a]	.04	-.04	.00	-.06*
Never married[a]	-.12***	-.09*	-.12**	-.10**
Previously married[a]	-.03	-.01	-.09*	-.10*
Number of children	.05**	.02	-.09***	-.09***
Part-time[a]	-.02	-.23***	.40***	.10**
Less than high school[a]	-.20***	-.15**	-.07	-.13**
Bachelor's or higher [a]	.10***	.17***	-.16***	-.17***
Intercept	.81***	1.00***	2.34***	2.84***
R-Square	.09	.11	.05	.03

[a] Reference categories are white, male, married, working full-time, and high school education.
[b] Reference category is 2010.
[c] Reference category is 2008.
$p<.05$. ** $p<.01$.*** $p<.001$.

Table 5. Coefficients (and Odds Ratios) from Logistic Regression of Workers' Health[a] on Independent Variables, All Respondents, General Social Survey 2002, 2006, 2010 (n=6,493)

	Model 1	Model 2	Model 3	Model 4
Monthly unemployment rates	-.03 (.98)	-.03 (.97)	-.02 (.98)	-.03 (.97)
Quarterly GDP growth rates	-.16*** (.85)	-.11* (.90)	-.12* (.88)	-.08 (.93)
Work-family strain				
Work-to-family strain			-.08 (.93)	-.14* (.87)
Family-to-work strain			-.04 (.96)	-.10 (.90)
Occupational Characteristics				
Recognition of work				.03 (1.03)
Family friendly work environment				.03 (1.03)
Utilization of skills				.15* (1.17)
Control Variables				
Age		-.02*** (.98)	-.02*** (.98)	-.02*** (.98)
Female [b]		.00 (1.00)	-.00 (1.00)	-.01 (.99)
Race (non-white) [b]		-.40*** (.67)	-.42*** (.66)	-.42*** (.66)
Never married [b]		-.09 (.91)	-.10 (.91)	-.11 (.90)
Previously married [b]		-.27** (.77)	-.26** (.77)	-.27** (.78)
Number of children		-.03 (.97)	-.02 (.98)	-.02 (.98)
Income (in tens of thousands of US dollars)		.19*** (1.21)	.20*** (1.22)	.19*** (1.21)
Income squared		-.01*** (.99)	-.01*** (.99)	-.01*** (.99)
Less than high school diploma [b]		-.67*** (.51)	-.68*** (.51)	-.67*** (.51)
Bachelors or higher [b]		.58*** (1.80)	.60*** (1.81)	.60*** (1.81)
Part-time [b]		-.10 (.90)	-.11 (.90)	-.12 (.89)
Unemployed [b]		-.42** (.65)	-.52*** (.59)	-.31* (.74)
Non-employed [b]		-.61*** (.54)	-.70*** (.50)	-.50*** (.61)
Intercept	1.32***	2.03***	2.13***	2.04***
Nagelkerke R-Square	.004	.17	.17	.18

[a]. poor/fair (0); good/excellent(1)
[b] Reference categories are male, white, married, high school education, and working full-time,.
$p<.05$. ** $p<.01$.*** $p<.001$.

Table 5a. Coefficients (and Odds Rations) from Logistic Regression of Workers' Health on Independent Variables Including Interaction Terms, All Respondents, General Social Survey 2002, 2006, 2010 (n=6,493)

Work-to-family strain*monthly unemployment	-.01 (.99)																			
Family-to-work strain*monthly unemployment		-.03 (.97)																		
Work-to-family strain*income			.01 (1.01)																	
Family-to-work strain*income				.00 (1.00)																
Monthly unemployment*income					.00 (1.00)															
Work-to-family strain*female						-.18** (.83)														
Family-to-work strain*female							-.06 (.94)													
Work-to-family strain*college								.01 (1.01)												
Work-to-family strain* less than high school								.02 (1.02)												
Family-to-work strain*college									-.05 (1.06)											
Family-to-work*less than high school									.06 (1.06)											
Work-to-family strain*family-friendly										.12** (1.13)										
Work-to-family strain*utilization of skills											.08 (1.09)									
Work-to-family strain* recognition												.12* (1.13)								
Family-to work strain*family-friendly													.10* (1.11)							
Family-to work strain*utilization of skills														.25** (1.28)						
Family-to Work Strain*recognition															.14** (1.15)					

p<.05. ** *p*<.01.***p*<.001.

Table 6. Coefficients (and Odds Ratios) from Logistic Regression of Health[a] on Independent Variables, National Survey of the Changing Workforce 2002 & 2008 (N=4,488)[b]

	Model 1	Model 2	Model 3	Model 4
Monthly unemployment rates	.23	.39**	.34*	.32
	(1.26)	(1.48)	(1.40)	(1.38)
Quarterly GDP growth	.11	.07	.09	.12
	(1.12)	(1.07)	(1.10)	(1.12)
Work-family strain				
Work-to-family strain			-.36***	-.26***
			(.70)	(.77)
Family-to-work strain			-.28***	-.30***
			(.76)	(.74)
Occupational Characteristics				
Family-friendly work environment				.23**
				(1.26)
Utilization of skills				.07
				(1.07)
Autonomy				-.07
				(.93)
Recognition of work				.19**
				(1.21)
Control Variables				
Age		-.01*	-.02**	-.02**
		(.99)	(.99)	(.98)
Female[c]		-.30**	-.29**	-.31**
		(.74)	(.74)	(.73)
Never married[c]		-.28*	-.26	-.26
		(.75)	(.77)	(.77)
Previously married[c]		-.23	-.16	-.13
		(.79)	(.85)	(.87)
Race (non-white)[c]		-.22	-.27*	-.26**
		(.80)	(.76)	(.75)
Number of children		-.02	.02	.02
		(.98)	(1.03)	(1.01)
Income (in tens of thousands of US dollars)		.04***	.05**	.06**
		(1.04)	(1.05)	(1.05)
Income squared		.00**	.00**	.00**
		(1.00)	(1.00)	(1.00)
Less than high school[c]		-1.17***	-1.15***	-1.20***
		(.31)	(.32)	(.30)
Bachelor's or higher[c]		.50***	.56***	.54***
		(1.64)	(1.76)	(1.71)
Part-time[c]		.13	-.01	-.01
		(1.14)	(.99)	(.99)
Intercept	1.19***	1.57***	3.20***	1.60***
Nagelkerke R-square	.01	.09	.13	.15

[a] poor/fair(0); good/excellent(1)
[b] Survey included only the employed.
[c] Reference categories are male, white, married, high school education, and working full-time,.
$p<.05$. ** $p<.01$.*** $p<.001$.

Table 6a. Coefficients (and Odds Ratios) from Logistic Regression of Workers' Health on Independent Variables Including Interaction Terms, National Survey of the Changing Workforce (N=4,496)[a]

Work-to-family strain*monthly unemployment	-.02 (.98)																					
Family-to-work strain*monthly unemployment		.14 (1.15)																				
Work-to-family strain*income			.00 (.91)		.												-					
Family-to-work strain*income				-.02 (1.02)																		
Monthly unemployment*income					.04 (1.04)																	
Work-to-family strain*female						-.01 (.96)																
Family-to-work strain*female							-.12 (.88)															
Work-to-family strain*less than high school								.33* (1.39)														
Work-to-family strain*bachelor's or higher								-.04 (1.04)														
Family-to-work strain*less than high school									-.32 (.73)													
Family-to-work*bachelor's degree or higher									.10 (1.10)													
Work-to-family strain*autonomy										.04 (1.04)												
Work-to-family strain*utilization of skills											-.04 (.96)											
Work-to-family strain* family-friend environment												.10 (1.01)										
Work-to-family strain*recognition													.01 (1.01)									
Family-to work strain*autonomy													.	.08 (1.08)								
Family-to work strain*utilization of skills															-.03 (.97)							
Family-to work strain*family friendly environment																.01 (1.01)						
Family-to-work strain*recognition																	.09 (1.09)					

[a] Survey included only the employed.
p<.05. ** *p*<.01.***p*<.001.

Table 7. Coefficients (and Odds Ratios) from Logistic Regression of Workers' Health[a] on Independent Variables Including Health Behaviors, 2008 National Survey of the Changing Workforce (N=2,230)

	Model 1	Model 2	Model 3	Model 4	Model 5
EconomicConditions[a]	.17*	.16*	.18*	.19*	.18*
	(1.19)	(1.17)	(1.20)	(1.21)	(1.20)
Work-Family Strain					
Work-to-family strain			-.37***	-.27**	-.26**
			(.69)	(.76)	(.77)
Family-to-work strain			-.22**	-.24*	-.25**
			(.80)	(.79)	(.78)
Occupational Characteristics					
Family-friendly work environment				.24*	.24*
				(1.27)	(1.27)
Utilization of skills				-.03	-.02
				(.97)	(.98)
Autonomy				-.06	-.07
				(.94)	(.93)
Recognition of work				.21*	.22*
				(1.28)	(1.25)
Health Behaviors					
Smoker[c]					-.66***
					(.52)
Alcohol consumption					.08
					(1.09)
Exercise					.02**
					(1.02)
Controls					
Age		-.01	-.01*	-.01	-.01
		(.96)	(.99)	(.99)	(.99)
Female[c]		-.12	-.12	-.15	-.15
		(.93)	(.88)	(.86)	(.86)
Race (non-white)[c]		-.44**	-.48**	-.48**	-.54***
		(.64)	(.62)	(.61)	(.58)
Never married[c]		-.26	-.24	-.27	-.27
		(.77)	(.79)	(.76)	(.77)
Previously married[c]		-.20	-.15	-.13	-.06
		(.81)	(.86)	(.88)	(.94)
Number of children		-.04	-.02	-.03	-.02
		(.96)	(.98)	(.97)	(.98)
Income (in tens of thousands of US dollars)		.03*	.04*	.04*	.03*
		(1.03)	(1.04)	(1.04)	(1.04)
Income squared		.00	.00	.00	.00
		(1.00)	(1.00)	(1.00)	(1.00)
Less than high school[c]		-1.01**	-1.03**	-.98**	-.74*
		(.36)	(.34)	(.38)	(.48)
Bachelor's or higher[c]		.51***	.56**	.53**	.41*
		(1.66)	(1.76)	(1.70)	(1.50)
Part-time[c]		.29	.20	.18	.12
		(1.33)	(1.22)	(1.20)	(1.13)
Intercept	1.29***	1.61***	3.16***	1.74**	1.63*
Nagelkerke R-square	.006	.08	.12	.14	.16

[a] poor/fair(0); good/excellent(1)
[b] Factor scale of lower unemployment rate and higher GDP.
[c] Reference categories are non-smoker male, white, married, high school education, and working full-time,.
$p<.05$. ** $p<.01$.*** $p<.001$.

Table 7a. Coefficients (and Odds Ratios) from Logistic Regression of Health on Independent Variables Including Health Behaviors and Interaction Terms, 2008 National Survey of the Changing Workforce (N=2,234)[a]

Family-to-work strain*smoker	-.22 (.81)					
Work-to-family strain*smoker		.14 (1.15)				
Family-to-work strain*alcohol consumption			.09 (1.10)			
Work-to-family strain*alcohol consumption				-.09 (.92)		
Family-to-work strain*exercise					.00 (1.00)	
Work-to-family strain*exercise						.00 (1.00)

[a] Survey included only the employed.
p<.05. ** *p*<.01.***p*<.001.

Table 8. Summary of Findings

Hypothesis	**General Social Survey**	**National Survey of the Changing Workforce**
Primary Stressor->Secondary Stressor		
Hypothesis 1: Work-family strain will be higher during the Great Recession measured by periods of higher unemployment and lower quarterly gross domestic product growth compared to non-recessionary periods.	Support	R
Primary Stressor ->Health		
Hypothesis 2: Health will be better during non-Great Recession periods, measured by periods of lower unemployment and quarterly gross domestic product growth compared to recessionary periods.	C	R
Hypothesis 3: People who report lower work-family strain will experience better health than people who report higher work-family strain..	Support	Support
Hypothesis 3a: People who experience work-family strain during non-recessionary periods will experience better health than people who experience work-family strain during the Great Recession (measured by periods of higher unemployment and quarterly gross domestic product growth)	R	R
Social Characteristics->Secondary Stressor		
Hypothesis 4: Women will experience higher levels of work-family strain than men.	R	C
Hypothesis 4a: Men who experience higher levels of work-family strain will experience better health than women who experience higher levels of work-family strain.	Support	R
Hypothesis 5: Work-family strain will be greater for people with more children compared to people with fewer or no children.	Support	C
Hypothesis 6: People employed full-time will experience higher levels of work-family strain than people employed part-time.	Support	C
Moderating Resources		
Hypothesis 7: People with higher incomes will experience better health compared to people with lower incomes.	Support	Support
Hypothesis 7a: Higher income will be more strongly related to better health during the Great Recession, measured by periods of higher unemployment and quarterly gross domestic product growth, than during nonrecessionary periods	R	R
Hypothesis 8: People with higher levels of education will experience better health compared to people with lower levels of education.	Support	Support
Hypothesis 8a: People who have higher education levels will have better health when exposed to work-family strain compared to people with lower levels of education.	R	C

Occupational Characteristics and Health

Hypothesis 9: People who receive higher levels of occupational rewards in the form of recognition for work well done will experience better health than people who receive lower levels of recognition.	R	Support
Hypothesis 9a: People who receive more recognition for work well-done will have better health during a recession (measured by monthly unemployment) compared to people who receive less recognition.	Support	R
Hypothesis 10: People employed in more family-friendly work environments will experience better health than people employed in less family-friendly work environments	R	Support
Hypothesis 10a: People employed in more family-friendly work environments who experience higher work-family strain will have better health than people employed in less family-friendly environments.	Support	R
Hypothesis 11: People who feel their job utilizes their skills more will experience better health than people who feel their job utilizes their skills less.	Support	R
Hypothesis 11a: People who feel their job is utilizing their skills more will experience better health during a recession (measured by monthly unemployment) compared to people who feel their job utilizes their skills less.	Support	R
Hypothesis 12: People who experience higher levels of job autonomy will report better health than people who experience lower levels of job autonomy.	------	R
Hypothesis 12a: People who have higher job autonomy will report better health when exposed to work-family strain compared to people with lower levels of job autonomy.	------	R
Health Behaviors		(2008 Data Only)
Hypothesis 13: Non-smokers will experience better health than smokers.	------	Support
Hypothesis 13a: People who do not smoke will experience better health when exposed to work-family strain than people who smoke.	------	R
Hypothesis 14: Lower levels of regular alcohol consumption will be associated with better health compared to higher levels of alcohol consumption.	------	R
Hypothesis 14a: Work-family strain will have a greater negative impact on the health of people who consumer higher levels of alcohol than those who consume less.	------	R
Hypothesis 15: People who exercise more frequently will have better health than people who exercise less frequently.	------	Support
Hypothesis 15a: People who exercise more frequently will report better health when exposed to work-family strain compared to people who exercise less frequently.	------	R

Notes: "Support"=Hypothesis supported; "R"=Hypothesis rejected (no relationship); "C"=Hypothesis contradicted by significant findings.