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# Employees' Financial Insecurity and Health: The Underlying Role of Stress and Work–Family Conflict Appraisals

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## **Abstract**

Data from two longitudinal samples were utilized to elucidate underlying mechanisms of the well-established relationship between financial insecurity and health outcomes, stemming from the theoretical rationale of conservation of resources and cognitive appraisal theories. Study 1 ( $n = 80$ ) consisted of low-wage food manufacturing employees working full time, while Study 2 ( $n = 331$ ) was consisted of a larger, heterogeneous sample of full-time workers representing multiple occupations. Respondents were surveyed on financial insecurity, work-to-family conflict (WFC), stress, and health outcomes at two time periods, 3 months apart. Results across our studies provided support for the direct effects of financial insecurity on WFC and stress. In addition, appraisals of WFC and stress serve as significant mediators of the relationship between financial insecurity and health outcomes, including a significant overall lagged effect across time, and perceived stress accounting for the largest proportion of variance in the lagged relationship among Time 1 financial insecurity and Time 2 health outcomes. Besides support for conservation of resources and cognitive appraisal theories, practically, our studies suggest that workplace initiatives to reduce financial insecurity could positively influence employees' work–family, stress, and health experiences.

## **Keywords**

Occupational health, financial insecurity, work-family conflict, stress

## **Disciplines**

Business | Management Sciences and Quantitative Methods

Running head: FINANCIAL INSECURITY AND HEALTH

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## Abstract

Data from two longitudinal samples were utilized to elucidate underlying mechanisms of the well-established relationship between financial insecurity and health outcomes, stemming from the theoretical rationale of conservation of resources and cognitive appraisal theories. Study 1 (n = 80) consisted of low-wage food manufacturing employees working full-time, while Study 2 (n = 331) was consisted of a larger, heterogeneous sample of full-time workers representing multiple occupations. Respondents were surveyed on financial insecurity, work-to-family conflict (WFC), stress, and health outcomes at two time periods, three months apart. Results across our studies provided support for the direct effects of financial insecurity on WFC and stress. In addition, appraisals of WFC and stress serve as significant mediators of the relationship between financial insecurity and health outcomes, including a significant overall lagged effect across time, and perceived stress accounting for the largest proportion of variance in the lagged relationship among Time 1 financial insecurity and Time 2 health outcomes. Besides support for conservation of resources and cognitive appraisal theories, practically, our studies suggest that workplace initiatives to reduce financial insecurity could positively influence employees' work-family, stress, and health experiences.

*Keywords:* financial insecurity, worker health, work-family conflict, stress, low-wage workers, cognitive appraisals

**Practitioner Points:**

- When workers experience financial insecurity, it can have detrimental effects on their health.
- The effect of financial insecurity on worker health appears to occur because of increased work-family conflict and stress associated with financial insecurity.
- Direct interventions related to addressing financial insecurity may be challenging, but data suggests there may be a meaningful return-on-investment.

Employees' Financial Insecurity and Health:

Running head: FINANCIAL INSECURITY AND HEALTH

### The Underlying Role of Stress and Work-Family Conflict Appraisals

The economic downturn that began in 2007 has resulted in more families struggling financially. In the US, for example, the number of low-income working families, defined as living below 200% of the poverty line (a household income of \$46,100 for a family of four, US Dept. of Health & Human Services, 2012) reached 10.6 million in 2012 (Working Poor Families Project, 2012). In 2011, 32% of all working families fell in this “low-income” category (Working Poor Families Project, 2012), and in 2013, 45% of US children were living in low-income households (National Center for Children in Poverty, 2013). These experiences are not limited to the US, as the proportion of people in the European Union at risk for falling into poverty has increased from 16.7% in 2013 to 17.3% in 2015 ([ec.europa.eu/eurostat/](http://ec.europa.eu/eurostat/)). Yet, financial insecurity, or being worried that one’s income is not sufficient to cover expenses or future financial goals (Quicken, 2017), is not limited to low-income workers. In a recent survey of 1,010 middle-class American households, 48% reported they worry about their household financial situation at least once per week and 40% reported doing so while at work (Mass Mutual, 2017). Moreover, 37% reported feeling “not very” or “not at all” financially secure, with 63% saying they are not financially prepared for retirement and 35% saying they struggle to make ends meet. Thus, feeling insecure about one’s financial situation is a common occurrence among low and middle-income families.

These working families experience myriad risks associated with financial insecurity. Unequivocal associations between financial insecurity and health have been established across multiple disciplines. Research in sociology has found low-income mothers and their children have high rates of physical and mental health problems (Burton, Lein, & Kolak, 2005). Public health scholars have established relationships between poverty and negative effects on children’s

Running head: FINANCIAL INSECURITY AND HEALTH

physical health (e.g., Aber, Bennet, Conley, & Li, 1997), and using county-level data, economists have determined that poverty is a substantial risk factor for negative health outcomes (Rettenmaier & Wang, 2013), such as high levels of mortality and morbidity. Beyond objective indicators of financial distress, studies in the US have linked parents' perceived financial stress with their adolescent children's' behavior (Ponnet, 2014). In the EU, perceived financial insecurity (e.g., self-reported difficulties paying bills) has been associated with lower vitality and mental health (Rajani, Giannakopoulos, & Filippidis, 2016).

Despite the accumulating evidence in other disciplines, the field of applied psychology has yet to examine the psychological processes through which financial insecurity relates to various health outcomes. Given the increasing number of financially insecure working families (e.g., Seidman, 2017) and the dearth of attention to mechanisms linking financial insecurity to worker health in the applied psychology literature, it is important theoretically and practically to extend beyond knowledge that the relationship exists, to a more thorough understanding of *how* and *why* the relationship occurs. Thus, the primary goal in this paper is to begin to address the “black box” of psychological processes that explain the relationship between financial insecurity and health. We designed two studies using two leading theories of stress (Hobfoll, 2010): Hobfoll's (1989) conservation of resources (COR) theory and Lazarus and Folkman's (1984) theory of cognitive appraisal. As an initial starting point, we measure cognitive evaluations of *financial insecurity* in which participants appraise their degree of uncertainty or inability to meet financial responsibilities. Further, as explained later, these theories converge to point to perceived stress and work-family conflict as potential explanatory mechanisms. Although work-family conflict is a theoretically relevant process variable, surprisingly, the relation between financial insecurity and the work-family interface has been neglected. Yet when applied

Running head: FINANCIAL INSECURITY AND HEALTH

psychologists are able to elucidate underlying mechanisms that explain how exposure to negative experiences (such as financial insecurity) relate to important outcomes (such as health), we are better able to inform theoretical models where psychological processes play a pivotal, potentially causal role. This knowledge also advances practical interventions aimed at improving overall health and well-being.

Furthermore, COR theory (Hobfoll, 1989) suggests it is important that scholars move beyond cross-sectional designs (e.g., Ponnet, 2014) that prohibit conclusions regarding temporal order, underlying processes, or whether effects occur over time. Rather, COR theory suggests that though there are immediate negative effects of financial insecurity on appraisals of work-to-family conflict (WFC), stress, and health, these effects also likely occur over time. Despite these theoretical propositions from COR theory, research has relied heavily on cross-sectional designs, limiting our theoretical understanding of these phenomena. Accordingly, we advance theoretical understanding by incorporating methodologies that test propositions regarding how two mechanisms, perceptions of WFC and stress, explain the established relationship of financial insecurity with health *over time* in two separate, longitudinal samples. One sample consists of low-wage food manufacturing employees whereas the second sample consists of individuals across multiple occupations with varying levels of job wages. We test the direct effects as well as lagged relationships among financial insecurity and WFC at one point in time with perceived stress and health at a later time. We chose a three month time lag to allow for the assessment of any delayed effects of financial insecurity on stress and health, recognizing that health outcomes have the potential to emerge in a delayed fashion, and can accumulate over time. The substantial contributions of our research stem from our theoretical approach that introduces a cognitive psychological perspective which has not been considered to date, and methodologically,

Running head: FINANCIAL INSECURITY AND HEALTH

incorporates the tests of specific mechanisms to understand *how* and *why* financial insecurity impairs health, namely appraisals of WFC and stress *over time*. We provide an explicit test of the theoretically proposed primary appraisal aspect of the appraisal process (Lazarus & Folkman, 1987) by accounting for perceived stress as a primary appraisal. We also theoretically test the resource loss cycle corollary proposed by Hobfoll (2011) in that we contend that financial insecurity is a resource loss that leads to additional loss of means by which people manage work and family responsibilities (i.e., child care costs, food and housing costs). Importantly, relative to a cross-sectional design, our methodological approach provides stronger inferences about the presumed temporal order and processes linking these variables.

### **Operationalization of financial insecurity and health**

Aside from our theoretical basis, our focus on the construct of perceived financial insecurity stems from concern surrounding the measurement of financial well-being. The operationalization of “financial well-being” has been conceptualized both subjectively (e.g., perceptions of employment uncertainty, perceived ability to pay bills or unexpected expenses) and objectively (e.g., personal income, unemployment, household income; Sinclair & Cheung, 2016). The varying strategies for measuring financial well-being can become problematic when attempting to understand how financial situations influence health. For instance, a family whose household income is just barely above the poverty line, an objective indicator of financial well-being, will not be categorized as living in poverty. Yet, their ability to financially deal with unexpected costs (e.g., car repairs, medical expenses), a subjective indicator of financial insecurity, can be a valid source of negative outcomes. In addition, Sinclair and Cheung (2016) note the importance of distinguishing between cognitive evaluations of, and emotional or affective reactions to, financial situations.

Running head: FINANCIAL INSECURITY AND HEALTH

Within our program of research, we emphasize subjective ratings of financial insecurity that ask participants to assess their perceived ability to meet financial responsibilities (e.g., “we have little or no trouble paying our bills on time”) to better understand the cognitive evaluations of the family’s economic status, rather than objective household income. Assessing perceptions of financial insecurity is in line with Lazarus and Folkman’s (1987) theory emphasizing the importance of cognitive appraisals. Therefore, we deem perceived financial insecurity as allowing us to best ascertain the role that financial experiences play in subsequent health.

We also focus on the construct of health in both of our studies. The World Health Organization defines health as “a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity” ([WWW.who.int/about/mission](http://WWW.who.int/about/mission)). Thus, health can be operationalized in myriad ways. For instance, physical health can be measured in objective terms, such as blood pressure or heart rate, as well as subjectively, such as perceptions of pain or recall of past injuries and sickness. Mental indicators are another dimension of health, which also can be measured in objective and subjective ways. For the purposes of our research, given our theoretical focus, we again rely on subjective indicators of multiple types of health outcomes. This includes the use of both positive and negative indicators of health, as well as multiple types of health outcomes in order to capture as much of the content domain as possible. With these goals in mind, we operationalize health in three separate ways: self-reported perceptions of holistic, general health (coded so that a high score indicates perceptions of excellent health in general), physical health (musculoskeletal symptoms), and sleep disturbance symptoms, with higher scores on the latter two representing more health symptoms, or perceptions of poorer physical and sleep health.

### **Conservation of Resources Theory: Financial Insecurity’s Relation to Health**

Running head: FINANCIAL INSECURITY AND HEALTH

COR theorists propose that individuals strive to obtain, maintain, and protect their resources (Hobfoll, 1989). These resources can include material objects (e.g., home, car, food) which are linked to socioeconomic status, conditions (e.g., financial or job security), energies (e.g., money, time, or knowledge), and personal traits. The first three resources are most relevant to our focus on financial insecurity in that individuals experiencing financial insecurity may have fewer object, condition, and energy resources than their financially secure counterparts (Hobfoll, 2011). When these resources become perceived to be threatened or lost, stress accumulates and negatively affects the individual, such as his/her health (Hobfoll, 2011).

There are two important principles of COR theory when considering a framework linking financial insecurity and health. First, resource loss is experienced as a more potent situation than resource gain, in that the effects of resource loss are felt much more so than the effects of resource gain (Hobfoll, 1989). This is formally referred to as the “primacy of resource loss.” For example, a person who loses his or her job, and the income associated with it, will likely feel the negative effects of this loss more rapidly and intensely compared to the positive effects felt when one gains employment (where financial resources take some time to accumulate). Principle two of COR, referred to as “resource investment,” states that individuals need to invest in their resources in order to protect against resource loss and obtain resource gains. This principle implies that resource loss has negative effects over time, because the investment of resources can prevent resource loss that occurs in the future. For example, someone experiencing financial insecurity may not have the resources (e.g., time or money) to “invest” (e.g., taking time to exercise, purchasing healthy food or exercise equipment) which may contribute to poor health over time. Overall, experiencing resource loss at one time tends to carry over to the future (Hobfoll, 2001).

Running head: FINANCIAL INSECURITY AND HEALTH

A critical corollary of these two principles regarding resource loss is also informative to the theoretical development of our research. Specifically, individuals experiencing resource loss can suffer resource loss cycles, where the loss of one resource leads to a downward spiral of subsequent losses (Hobfoll, 2011). Thus, financial insecurity represents a significant resource loss that undoubtedly contributes to subsequent poor health. Not surprisingly, others have relied on COR to guide understanding of financial insecurity as a loss of resources. For instance, Ennis, Hobfoll, and Schroder (2000) found that material losses associated with poverty predicted depressive mood in a sample of low-income women. In the current study, we measure financial insecurity as a resource loss at Time 1, and based on COR theory and the corollary of resource loss cycles, expect financial insecurity to be a prominent, negative experience for participants that is systematically related to subsequent poorer health at Time 2.

Considering the empirical evidence establishing the link between financial insecurity with health, in conjunction with theoretical rationale predicting negative outcomes that stem from financial insecurity over time, we propose the following:

*Hypothesis 1:* Financial insecurity at Time 1 is systematically related to health outcomes at Time 2.

### **Linking Financially Insecurity and Health: Stress as an Explanatory Mechanism**

While COR provides a backdrop for our predictions of financial insecurity's *direct* links to poor health over time, COR emphasizes objective, observable, environmental conditions that create resource loss rather than individual or personal appraisals of loss (Hobfoll, 2001).

Cognitive appraisal theorists, however, have emphasized the importance of individual, psychological appraisals of one's circumstances as the *mechanism* by which objective resource loss predicts outcomes (Lazarus & Folkman, 1984). In other words, people are active agents in

Running head: FINANCIAL INSECURITY AND HEALTH

the cognitive construction of meaning of resource losses they experience, such as those that create financial insecurity. Lazarus and Folkman (1987) outlined a larger process of appraisal, stress, and coping, where both primary appraisals (evaluation of harm, a threat, or a challenge to well-being) and secondary appraisals (evaluation of whether something can be done to improve the situations, and how to cope) occur. In particular, we see the primary appraisal process as relevant to the evaluation of an experience of financial insecurity. This cognitive interpretation of resource loss (in this case, financial insecurity) is important to outcomes (i.e., health). Thus, in our effort to explain *how* perceived financial insecurity results in negative health outcomes, we account for perceived stress as a primary, theoretically-relevant cognitive process.

While stress is central to both COR and cognitive appraisal theories (Hobfoll, 1989; Lazarus & Folkman, 1984), with cognitive appraisal theory stress occurs after an individual appraises the environment as significant to his/her well-being (i.e., “this is stressful”) and exceeds available coping resources. This environmental condition will only be significant to the person if the condition creates vulnerability for the individual, or one that prevents the person from achieving a goal (Lazarus & Folkman, 1984). Financial insecurity as an environmental condition, then, becomes quickly relevant to one’s evaluation of their well-being. As financial security allows individuals to obtain goals, alleviates dependence and vulnerability, and is a substantial motivating factor (Ennis et al., 2000), it becomes a critical resource to obtain, protect, and maintain. When financial insecurity is perceived and evaluated as a challenge or harmful, as happens during the primary appraisal process according to Lazarus and Folkman’s cognitive appraisal theory, there is the potential for negative outcomes. Personal appraisals explain why, despite objectively equivalent environments, individuals differ in the quality, intensity, and duration of their emotional reactions (Krohne, 2001). Given our focus on individual mechanisms,

Running head: FINANCIAL INSECURITY AND HEALTH

we consider personal, primary appraisals of stress as a critical factor linking financial insecurity and health over time.

When resource loss is appraised as stressful, this can create a negative state of being, such as poor health (Grandey & Cropanzano, 1999). This appraisal of stress after resource loss acts as an explanatory mechanism to predict health, and echoes cognitive appraisal theory. In fact, applied psychology researchers have provided evidence of stress appraisals acting as a mechanism between negative experiences and outcomes (e.g., Gomes, Faria, & Goncalves, 2013). Research from the medical field has demonstrated that when negative experiences occur, psychological distress increases, and subsequent impacts on health are felt, such as increased risk for respiratory infections and autoimmune diseases (Cohen et al., 2007).

A well-established, direct link between stress and health has been documented across studies and disciplines (e.g., Cohen, Janicki-Deverts, & Miller, 2007; Cooper, 2005, Turner, 2010), consistently predicting illness, disease, and injuries. Some researchers have suggested that the link between financial status, as a specific resource loss, and health is associated with the presence of chronic stressors. For example, individuals from disadvantaged socioeconomic classes and those who experience low income levels typically suffer from a greater number of chronic stressors, including financial insecurity, crowding, crime, noise pollution, discrimination, and WFC (Baum, Garofalo, & Yali, 1999; Ford, 2011). A recent review of 19 articles on the effects of the economic crisis that began in 2007 found that problems associated with the crisis, such as lowered wages or increased unemployment, were not only linked with increased mood disorders, but also to increased cardiovascular and respiratory diseases (Mucci, Giorgi, Roncaioli, Perez, & Arcangeli, 2016). One argument is that the psychological strain and perceived stress associated with the loss of financial resources leads to biochemical and

Running head: FINANCIAL INSECURITY AND HEALTH

physiological changes, such as increased blood pressure, which in turn, lead to pathological consequences (i.e., health problems), such as heart disease (Vogel, 1985). Indeed, chronic work and non-work stressors have been shown to have a meaningful and persistent influence on a variety of health indicators (Leitner & Resch, 2005).

In our two studies, financial insecurity is the negative experience or environmental condition, which we contend accumulates stress across time, thereby impacting one's health. Further, Folkman and Lazarus's theory of cognitive appraisal suggests that the systematic relationship between financial insecurity and poor health is due, at least in part, to heightened appraisals of stress. As such, we hypothesize that:

*Hypothesis 2:* Financial insecurity at Time 1 is positively related to perceived stress at Time 2.

*Hypothesis 3:* Perceived stress at Time 2 is systematically related to health outcomes at Time 2.

*Hypothesis 4:* The relation of financial insecurity at Time 1 and health outcomes at Time 2 is mediated by perceived stress at Time 2.

### **Linking Financial Insecurity, Stress, and Health: Work-Family Conflict as an Explanatory Mechanism**

Another potential mechanism linking financial insecurity and health outcomes is WFC. WFC is the bi-directional, negative effect experienced by individuals when the time, strain, and/or behavior from one role negatively interferes with one's ability to perform in another role (work-to-family and family-to-work conflict; Greenhaus & Beutrell, 1985). Friedman and Greenhaus (2000) proposed three main components that influence WFC: involvement in work and family domains, emotional gratification from each domain, and the focus of the current

Running head: FINANCIAL INSECURITY AND HEALTH

paper, the resources obtained or withheld from work and family domains. Importantly, Friedman and Greenhaus (2000) recognize the importance of *financial* resources from both work (e.g., income) and family (e.g., partner financial support) domains, and in particular, the removal of financial resources, as prominent influences on WFC. Whereas researchers have established the relation of WFC to greater stress and poorer health (e.g., Grandey & Cropanzano, 1999; Kramer & Chung, 2015), applied psychologists have not often assessed the relationship between financial insecurity and work-family experiences. This is surprising given that, according to the American Psychological Association, money is reported by individuals as the greatest source of stress (<http://www.apa.org/monitor/2011/01/stressed-america.aspx>). Because managing work and family responsibilities requires people to rely on numerous resources, *especially* financial resources, it is important to understand how financial insecurity, or a loss of financial resources, relates to one's ability to manage work and family, and whether WFC helps explain the relationship between financial insecurity and health over time.

In an exception to the shortage of research on financial insecurity and work-family experiences, Ford (2011) found that for low-income compared to high-income individuals, there were stronger relationships between WFC and family strain, as well as between family-to-work conflict (FWC) and family strain. Additionally, perceptions of a negative economic impact on one's life have been found to be related to greater WFC (Lauzen, Major, & Jones, 2012). Recall that the resource investment principle for COR states that individuals need to invest in resources to protect against resource loss and obtain resource gains (Hobfoll, 1998). Yet, a financially insecure working family does not have financial resources to invest. For instance, these families may be limited in their options for quality child care. Because they have fewer caregiving resources to deal with conflicting work and family demands, they experience greater WFC.

Running head: FINANCIAL INSECURITY AND HEALTH

Relying on COR theory, we expect that when financial insecurity is experienced, because there is a decrease or lack of financial resources, individuals are less able to manage the work-family interface (i.e., wellness/health costs, child care, elder care, extracurricular activities, food, and shelter costs), generating greater conflict between work and family.

In terms of the direction of conflict, meta-analyses indicate that people tend to report higher levels of WFC than FWC and that the work-to-family direction has a stronger negative effect on work (e.g., satisfaction, commitment) and general outcomes (e.g., life satisfaction, health, depression, anxiety), and is more commonly studied (Amstad, Meier, Fasel, Elfering, & Semmer, 2011). For these reasons, particularly its relation to health outcomes, we focused on the work-to-family conflict (WFC) direction. As noted above, when people experience an absence of financial resources (in the form of perceived financial insecurity) to manage work and family, they experience greater WFC. Further, work can be a primary source of financial resources and health benefits, such that when people experience financial insecurity, they may feel the need to engage in more work responsibilities that may interfere with family. Thus, when people perceive greater financial insecurity, they also report greater WFC.

*Hypothesis 5:* Financial insecurity at Time 1 is positively related to WFC at Time 1.

As with the relationships among financial insecurity and stress across time, the associations of WFC with stress across time are undeniable (Matthews, Wayne, & Ford, 2014). Applying COR theory, Grandey and Cropanzano (1999) employed a time-lagged design to assess a model of WFC and various types of psychological distress, finding WFC to predict job and life distress across time. Meta-analytic evidence has shown WFC to be significantly related to perceptions of stress in work and family domains (Byron, 2005). Also relying on COR theory, Turner, Hershcovis, Reich, and Totterdell (2014) found both directions of WFC to be

Running head: FINANCIAL INSECURITY AND HEALTH

significantly related to psychological distress across time in two samples. Thus, COR posits and empirical evidence supports that WFC is associated with greater stress across time.

*Hypothesis 6:* WFC at Time 1 is positively related to perceived stress at Time 2.

Empirical evidence has also shown WFC to be associated with subsequent health outcomes. In their time-lagged study, Grandey and Cropanzano (1999) used path analysis to show that WFC predicted poor physical health across time (Grandey & Cropanzano, 1999). COR has also been used to theorize that when resources are allocated to meeting work and family demands, they are unavailable for health-promoting behaviors such as healthy eating, sleeping, and exercising (Kramer & Chung, 2015). In fact, Kramer and Chung found that work and family demands have small, but significant negative effects on long-term physical health (i.e., body mass index). Beyond that, they noted that this small effect may be due to their “high functioning” dual-earner sample that did not experience significant job, financial, or marital loss. Nevertheless, WFC has been linked with other physical health outcomes such as self-reported health, hypertension, and alcohol abuse (Amstad et al., 2011; Frone, Russell, & Cooper, 1997; Leineweber, Baltzer, Hanson, & Westerlund, 2013). Not only has WFC been associated with self-reported physical health symptoms, but it has also most recently been linked with cardiometabolic risk in nursing employees, which was calculated based on body mass index, blood pressure, cholesterol levels, tobacco use, and glycosylated hemoglobin (Berkman et al., 2015). Therefore, rooted in COR theory as well as previous empirical studies, we expect that in our two studies, when respondents report experiencing WFC, this will be associated with higher instance of poorer health outcomes across time.

*Hypothesis 7:* WFC at Time 1 is systematically related to health outcomes at Time 2.

Running head: FINANCIAL INSECURITY AND HEALTH

## **WFC as an Explanatory Mechanism: Linking Financial Insecurity, Stress, and Health Across Time**

Although the direct, lagged relationship between financial insecurity and health is well established, as are bivariate associations among WFC, stress, and health, descriptions of the literature become muddled when trying to disentangle the processes involved or the temporal order among financial insecurity, WFC, appraisals of stress, and health. Recall that we have proposed financial insecurity is an experience of resource loss that concurrently generates greater WFC (Hypothesis 5), and that WFC is theorized to temporally precede appraisals of stress (Hypothesis 6), which we propose is associated with poor health outcomes (Hypothesis 3). Below, we turn to the goal of unpacking these relationships from an applied psychological perspective by incorporating cognitive appraisal theory (Lazarus & Folkman, 1984) to elucidate psychological processes that explain how financial insecurity can create burdens on one's health across time.

Both COR and cognitive appraisal theories suggest that financial insecurity is likely related to ensuing stress and health through the intersection of people's work and nonwork lives (Hobfoll, 1989; Lazarus & Folkman, 1984). Because one of the reasons most employed individuals work is to financially support themselves and their families, COR suggests that financial insecurity represents resource loss that concurrently reduces resources available for resolving conflict between work and family roles, and ultimately, has negative outcomes such as increased stress and poorer health (Grandey & Cropanzano, 1999) accumulating over time. Also recall that a corollary of the resource investment principle of COR is that of resource loss cycles (Hobfoll, 2011), which is germane to understanding how financial insecurity can affect a family system. Thus, COR theory, and specifically the resource loss cycle corollary, suggests that a

Running head: FINANCIAL INSECURITY AND HEALTH

person's appraisals of WFC are relevant to the link between events experienced (i.e., financial insecurity) and resulting outcomes over time (i.e., stress and health).

Empirical research has shown that low-income experiences are associated with WFC (Ford, 2011), and that conflict between work and family roles is associated with poorer physical health (Grandey & Cropanzano, 1999). And, evidence indicates that greater WFC is associated with increased stress (e.g., Byron, 2005). Yet, despite the empirically demonstrated individual linkages, to our knowledge no studies have examined the theorized processes by which financial insecurity relates to stress and health within the context of appraisals of WFC over time (Sinclair, Probst, Hammer, & Shaffer, 2013). Tying these streams of research together, we expect that financial insecurity predicts stress over time, in part, because it creates greater WFC.

Conceptually, Lazarus and Folkman's (1987) theory of cognitive appraisal would suggest that a person's primary cognitive appraisal (i.e., perceived WFC) that stems from a particular environmental condition (i.e., financial insecurity) is what explains, or mediates, the relationship between the environmental condition and resulting stress. Merging this line of research on WFC and stress with Lazarus and Folkman's theory of cognitive appraisal, we expect that when individuals experience financial insecurity, this is related to concurrent appraisals of WFC, which in turn predicts perceptions of stress over time.

*Hypothesis 8:* WFC at Time 1 mediates the relationship between financial insecurity at Time 1 and perceived stress at Time 2.

In sum, we proposed two mediating processes (WFC and perceived stress) to explain how financial insecurity predicts health across time which we position in a theorized temporal ordering. Empirically, Turner et al. (2014) demonstrated that psychological distress was a mechanism that explained the relationship among environmental conditions that created WFC

Running head: FINANCIAL INSECURITY AND HEALTH

and subsequent workplace injuries. Thus, we predict a model where financial insecurity indirectly predicts poor health across time, through WFC which predicts appraisals of stress (see Figure 1):

*Hypothesis 9:* Financial insecurity at Time 1 has a significant indirect effect on health outcomes at Time 2, due to a link with WFC at Time 1 that predicts stress at Time 2.

#### Study 1: Method

##### *Participants, Procedure, and Measures<sup>1</sup>*

Employees of a food manufacturing company in the mid-Atlantic US were given the opportunity to complete paper surveys at two time periods, approximately three months apart. Out of 139 employees, 106 agreed to participate at Time 1 (response rate = 76%). Respondents were 61% female ( $M$  age= 40), 54% married/cohabitating with a significant other, with 59% having at least one child under 18 in the home, from multiple ethnic backgrounds (71% white, 3% black, 22% Latino). At Time 2, response rate was 81%, and respondents were 56% female ( $M$  age = 42), 56% married/cohabiting with a significant other, and 45% had at least one child under 18 in the home. The racial and ethnic breakdown was similar to Time 1 (81% white, 4% black, 16% Latino). In this organization, employees begin working at a pay rate of \$9.27 per hour, and the average hourly wage is \$10.77, situating the employees as low-wage workers as the cost of living for a family of four in that particular geographic location requires two working adults to be making \$14.94 per hour (<http://livingwage.mit.edu/>). Participants were provided with \$10 gift cards to a local grocery store for filling out the survey at each time. A total of 80 participants participated at both time points and were included in the analysis. This final sample was 56% female ( $M$  age= 43), 56% married/cohabitating with a significant other, with 45%

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<sup>1</sup> Measures are detailed in Table 1.

Running head: FINANCIAL INSECURITY AND HEALTH

having at least one child under 18 in the home, and with a racial/ethnic breakdown where 81% of participants were white, 4% were black, and 16% were Latino.

### Study 1: Results and Discussion

#### *Descriptive Statistics*

Means, standard deviations, and inter-correlations for Study 1 measures are reported in Table 2. Given data collection occurred at more than one time point, we address one of the major concerns related to common method variance (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Preliminary support can be found in Table 2 for several of our hypotheses. Consistent with Hypothesis 2, financial insecurity at Time 1 was positively related to stress appraisals ( $r = .31, p < .01$ ) at Time 2. Interestingly though, contrary to Hypotheses 1 and 5, at the bivariate level, financial insecurity at Time 1 was not significantly related to physical health symptoms ( $r = .17, p > .05$ ) at Time 2 nor WFC ( $r = .12, p > .05$ ) at Time 1. However, consistent with Hypothesis 6, WFC at Time 1 was positively related to stress ( $r = .34, p < .01$ ) at Time 2. However, we did not find support for Hypothesis 7 at the bivariate level, in that WFC at Time 1 was not related to physical health symptoms ( $r = .12, p > .05$ ) at Time 2. Finally, stress at Time 2 was not positively related to physical health symptoms ( $r = .22, p > .05$ ) at Time 2.

#### *Model Assessment*

Structural equation modeling (AMOS, 2012) was used to test the conceptual model (Figure 1) and provide a more rigorous test of our hypotheses. In light of sample size considerations, a path analytic approach was used wherein each construct was modeled as directly observed. Furthermore, we only examined our direct effect hypotheses in this model; testing for indirect effects (Hypotheses 4 and 9) requires a larger sample size (Stone & Sobel, 1990). The model demonstrated good fit [ $\chi^2(2) = 1.87, p = .39, CFI = 1.00, RMSEA = .00$ ].

Running head: FINANCIAL INSECURITY AND HEALTH

Standardized estimates for the path model are reported in Figure 1. While the direct effect of financial insecurity on WFC was not significant, there is a significant direct effect of financial insecurity on perceived stress across time. In addition, WFC at Time 1 is significantly linked with stress at Time 2, which in turn, is significantly related to health at Time 2. Study 1 provides preliminary support for our proposed direct effects hypotheses; however as previously noted sample size considerations prevented us from testing our mediational hypotheses. Furthermore, as a field, concern over the replicability of research persists (Gilbert, King, Pettigrew, & Wilson, 2016). These two factors were the primary drivers for conducting Study 2.

### Study 2: Method

#### *Participants and Procedure*

For Study 2, we recruited a heterogeneous sample of employed participants, who had a direct supervisor, using Amazon.com's Mechanical Turk. To ensure data quality, only U.S. participants with a 96% approval and who had previously completed 1000+ tasks were allowed to participate. We included four effortful responding questions (e.g., "Leave this question blank"); respondents who failed to correctly complete at least three of the four questions were excluded. Data were collected at two time points with a three-month lag between assessments. Respondents who completed the Time 1 survey were paid \$1.40 and respondents who completed the Time 2 survey were paid an additional \$1.50. Reminder emails were sent one week after the initial invitation for each time point.

The Time 1 survey had 604 respondents; 53 were removed for careless responding or for not meeting inclusion criteria. The Time 2 survey had 348 participants (response rate = 63.1%); however, an additional 19 respondents were excluded for careless responding and 28 were excluded because they were no longer in the same job since the previous survey. To be retained

Running head: FINANCIAL INSECURITY AND HEALTH

for analysis, respondents had to participate in both waves of data collection. This resulted in a final analysis sample of 331 respondents. The sample was 48% female and 67.4% were married or living with a partner. The sample was primarily Caucasian (80.7%) with an average age of 38.7 years ( $SD = 10.74$ ), and organizational tenure of 7.61 years ( $SD = 6.21$ ). On average, respondents worked 41.1 hours a week ( $SD = 6.76$ ), and 78.2% worked a day shift. Less than 15% of the sample reported an annual household income level of more than \$100,000; 41.7% of the sample reported an annual household income of under \$50,000.

### *Measures*

All measures used in Study 2 – financial insecurity, WFC, perceived stress, and physical health symptoms – were the same measures used in Study 1 (see Table 1). Two additional health outcomes were included in Study 2 – sleep disturbance symptoms and general health (positively worded).

### Study 2: Results & Discussion

Table 3 includes means, standard deviations, and inter-correlations, at the construct level (item level results are available upon request). Consistent with Hypothesis 1, Time 1 financial insecurity was systematically related with all three health outcomes at Time 2 (see Table 2).

### *Conceptual Model and Hypotheses Testing*

We used structural equation modeling (Mplus 7, Muthén & Muthén, 2013) to test the hypotheses; we calculated a separate model for each health outcome<sup>2</sup>. We modeled all constructs as a latent factor with items as indicators, except for physical health symptoms and general health; to reduce model complexity, the nine physical health symptoms items were parceled into two indicator variables based on an initial exploratory factor analysis, and general health, as a

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<sup>2</sup> Based on feedback from anonymous reviewers, we included three separate measures of health in our analysis of Study 2.

Running head: FINANCIAL INSECURITY AND HEALTH

single item measure, was modeled as directly observed. As reported in Table 4, all three models fit the data well. Standardized path estimates for the structural model are reported in Table 5.

Consistent with Hypothesis 2, and reported in Table 5, for all three models, Time 1 financial insecurity was positively related to Time 2 perceived stress. And consistent with Hypothesis 3, Time 2 perceived stress predicted physical health symptoms ( $\beta = .53, p < .01$ ), sleep disturbance symptoms ( $\beta = .51, p < .01$ ), and general health ( $\beta = -.48, p < .01$ ).

To extend our Study 1 results, we formally tested our mediational hypotheses using maximum likelihood bootstrapping within Mplus 7 to estimate standard errors and confidence intervals (95%) for all relevant effects (5,000 samples were drawn) for all three health outcomes. Table 5 includes standardized indirect effects of financial insecurity. Consistent with Hypothesis 4, Time 1 financial insecurity had a total overall indirect effect of .29 on physical health symptoms, .27 on sleep disturbance symptoms, and -.24 on general health. Specific to Hypothesis 4, when this overall indirect effect was decomposed to examine the specific pathways through which financial insecurity impacted health, the majority of the variance, for all three outcomes, was through the Time1 financial insecurity  $\rightarrow$  Time 2 perceived stress  $\rightarrow$  T2 health outcome pathway.

As reported in Table 5, Hypothesis 5 was supported for all three health outcome models; Time 1 financial insecurity predicted Time 1 WFC ( $\beta = .18, p < .01$ , respectively). In turn, consistent with Hypothesis 6, Time 1 WFC was positively related to Time 2 perceived stress (standardized estimates ranged from .32 to .34,  $p < .01$ ).

While not tested directly in our structural models (per results from Study 1), as reported in Table 3, with our more heterogeneous sample, T1 WFC was systematically related to all three health outcomes. To this end, consistent with Hypothesis 8, and reported in Table 5, Time 1

Running head: FINANCIAL INSECURITY AND HEALTH

WFC partially mediated the relationship between Time 1 financial insecurity and Time 2 perceived stress; the indirect effect was .06 for all three models. Finally, in support of Hypothesis 9, Time 1 financial insecurity had a significant indirect effect on all three health outcomes at Time 2, through the deconstructed path way of Time 1 financial insecurity → Time 1 WFC → Time 2 perceived stress → T2 health outcome (see decomposed path 2 estimates in Table 5).

### General Discussion

Based on well-established negative effects of financial insecurity on worker health and well-being (e.g., Mucci et al., 2016), in conjunction with the substantial number of working families who feel financially insecure (Mass Mutual, 2017), the objective of this research was to explicate mechanisms of *how* financial insecurity negatively impacts worker health. Our research contributes to the literature by answering the call for scholars to focus on theoretically-derived process models (Matthews, Wayne, & McKersie, 2016). We tested a model across two distinct samples, over time, to provide further evidence of the negative effects of financial insecurity on three types of health outcomes. In addition, building from COR (Hobfoll, 1989) and Folkman and Lazarus's (1984) cognitive appraisal theories, we tested two psychological processes by which these negative effects occur: cognitive appraisals of WFC and stress. Indeed, across Studies 1 and 2, our results supported several of our predicted direct effects of financial insecurity including significant relationships with perceptions of WFC and stress. Further, our results provide evidence that appraisals of WFC and stress serve as significant processes by which financial insecurity negatively impacts health, including an overall significant lagged effect across time. Uncovering these mechanisms not only benefits conceptual understanding of how financial insecurity affects health but can also provide guidance for future applied opportunities for improving worker health associated with financial insecurity.

Running head: FINANCIAL INSECURITY AND HEALTH

Beyond these theoretical and applied contributions of our research, it is also important to recognize that we tested our model with two separate lagged samples that supplement each other in terms of the external validity they provide. Although COR and cognitive appraisal theories posit that the processes (WFC and perceived stress) linking financial insecurity and health unfold over time, most work-family research is conducted using cross-sectional designs (Lapierre & McMullan, 2016). The fact that we test our process model using two lagged samples is noteworthy. Further, Study 1 was conducted with low-wage employees working at a food manufacturing company, where based on the average hourly pay rate, the yearly income would be approximately \$22,400. Compared with national averages, these employees are more likely to experience financial insecurity given the low wages they earn. We augmented the results from Study 1 with experiences from a more heterogeneous group of participants, in terms of both the range of income and occupation, in Study 2. Thus, our findings appear to be robust across samples. Next, each of our findings is discussed further.

### **Theoretical Contributions**

The direct effects found in the current study, specifically financial insecurity's relationship with WFC and stress (across time), as well as the direct effect of WFC on stress, and stress on health, add to the abundance of support for conservation of resources theory (Hobfoll, 1989). This pattern of concurrent and lagged direct effects was proposed theoretically based on COR, and as such, the results from our studies contribute to further validation of this theory in line with the robust research supporting its various premises. In particular, our findings support the premise that individuals strive to obtain and maintain resources, and that when financial resources become lost or threatened, workers perceived greater stress. Whereas Study 1 did not provide support for direct effects predicted in Hypothesis 5 (the relationship between financial

Running head: FINANCIAL INSECURITY AND HEALTH

insecurity and WFC) or Hypothesis 7 (the relationship between WFC and health), Study 2 did reveal support for these relationships, both in the bivariate results and when tested in the overall model (see Table 5). One possible explanation for these disparate findings is that Study 1 consisted of a relatively small sample, making these relationships more difficult to uncover. Notably, the food manufacturing employees in Study 1 reported higher financial insecurity on average ( $M = 3.02$  on a five-point scale) than the occupationally heterogeneous sample in Study 2 ( $M = 2.51$ ), as well as more physical health symptoms (sample 1  $M = 2.25$ ; sample 2  $M = 1.86$ ). Whereas we did not observe statistically significant direct effects for all our hypotheses in Study 1, examination of the means indicate a clear presence of financial insecurity and physical health symptoms for these low-wage workers.

Beyond this, however, is the theoretical contribution where we demonstrate financial insecurity is an experience of lost resources that results not only in WFC and stress, but subsequent health outcomes. These relationships also provide support for the primacy of resource loss outlined by principle two of COR, in that financial insecurity is experienced intensely as seen in the effects on health through WFC and stress. We additionally observe support for the resource investment corollary of COR, because the indirect effects of financial insecurity on health occur across time, demonstrating that a lack of financial resources available to invest at Time 1 leads to health symptoms at Time 2. Thus, there is potential for a resource loss cycle that is occurring over time (Hobfoll, 2011), where the loss of financial resources results in subsequent health symptoms.

Another central theoretical contribution of this paper is our test of the underlying cognitive processes by which financial insecurity predicts health, under the premises of cognitive appraisal theory. Specific to the work-family literature, while there have been numerous calls to

Running head: FINANCIAL INSECURITY AND HEALTH

test for underlying cognitive processes that explain why experiences have the outcomes that they do (Kossek, Baltes, & Matthews, 2011; Matthews et al., 2016), the response has been limited. In addition, the studies that have been conducted to assess cognitive processes often do not incorporate lagged designs. Using two lagged samples allows us to provide a more rigorous test of potential cognitive appraisal processes, and our results provide support for both WFC and stress as temporal explanations of the effects of financial insecurity on health outcomes. Specifically, when testing for evidence of indirect effects in Study 1, there was preliminary evidence that WFC and stress are explaining some variance in that financial insecurity and WFC significantly predicted stress, which in turn, predicted subsequent health. When directly testing the mediated model in the larger, more heterogeneous sample from Study 2, we found a significant overall indirect effect of financial insecurity on health outcomes, over time, through both WFC and perceived stress.

Individually, both proposed mediators explained significant variance of the indirect effect of financial security on health outcomes in study 2. In terms of the work-family interface, these results suggest that when employees experience financial insecurity, this can directly impact their appraisal of WFC. Not only is WFC affected, but so are one's perceptions of stress. According to cognitive appraisal theory, we could interpret this to mean that experiences of financial insecurity are affectively significant and create vulnerability for individuals, as manifested in appraisals of WFC and stress. Across these two samples, these appraisals appear to be two cognitive mechanisms that explain the link between financial insecurity and health.

In addition, these studies provide insight into how cognitive appraisal processes can be critical in understanding how negative experiences can have long-term effects. Knowing that financial insecurity is directly linked with negative health outcomes across time has important

Running head: FINANCIAL INSECURITY AND HEALTH

implications. Our evidence that cognitive evaluations at *two distinct time periods* (WFC at Time 1, perceived stress at Time 2) explain the effects of financial insecurity gives applied psychologists insight into how individual appraisals may temporally evolve in between lived experience and subsequent effects on the individual. Here, cognitive appraisal theory becomes important for interpretation. While COR theory would provide a focus on the objective environment where financial insecurity is experienced in a shared manner for all in the environment, cognitive appraisal theory allows us to consider the individual evaluation of vulnerability that may or may not be experienced by every individual within one “objective” environment. In other words, regardless of experiences that may appear to be equivalent across individuals, cognitive appraisal theory would suggest, and these data support, that individual appraisals of stress are a more robust predictor of outcomes than objective environmental conditions.

Importantly, our data revealed that when fully decomposing the overall indirect effect of financial insecurity on each of the three health outcomes over time, we see that Time 2 perceived stress accounts for the majority of the variance. So although the work-family interface helps explain the relationship of financial insecurity and health, the most meaningful appraisal process occurs through perceptions of stress. Our research answers the call from Sinclair and Cheung (2016) to explicitly test the cognitive appraisal framework in a way that sheds light on the unique effects that cognitive evaluations - in our research, evaluations of stress in particular - have on physical and psychological health in a financial context. Thus, occupational health researchers can rely on the evidence from our studies that empirically establish the importance of cognitive evaluations of stress when linking financial insecurity to worker health.

Running head: FINANCIAL INSECURITY AND HEALTH

Another contribution from these studies stemmed from analysis of the three separate health outcomes we measured in Study 2 (physical health symptoms, sleep disturbances, and general health). As depicted in Table 3, these three indices are systematically related both concurrently and over time, but were not redundant, suggesting they cover a relatively broad scope of the construct. Nevertheless, all three health outcomes were consistently predicted both directly and indirectly by financial insecurity. The replicability of our findings across a broad, enduring measure of general health as well as two specific and episodic health measures (i.e., sleep and musculoskeletal symptoms over “the past week”), demonstrates the robustness of the relationship of financial insecurity with one’s health. Further, our results are consistent with claims that health and well-being are stable across episodic (i.e., MSD symptoms and sleep disturbances) and enduring (e.g., general health perceptions) experiences (e.g., Warr, 2013).

### **Practical Implications**

Beyond the theoretical contributions of our research, as applied psychologists we also are interested in creating opportunities for improving the health and well-being of employees. Understanding these potential linking mechanisms between financial insecurity and health are of great importance, as they could identify potential interventions for employees experiencing financial insecurity. The clear link from financial insecurity to worker health is one with numerous effects for employees and their employers. Health-related outcomes cost organizations in missed workdays, productivity, etc. For example, analysis of a random sample of over 28,000 U.S. workers revealed an estimated cost of \$225 billion/year due to lost productive work time (Stewart, Ricci, Chee, & Morganstein, 2003). As such, workplace interventions that aim to curb health symptoms are advantageous for workers, their employers, their families, and their communities.

Running head: FINANCIAL INSECURITY AND HEALTH

Based on the results of our studies, several avenues of potential intervention applications exist. One option is to focus on the sources of financial insecurity. An intervention of this type would rely theoretically on COR, and focus on protecting or minimizing the loss of financial resources. A recent study demonstrated that an intervention to reduce financial insecurity through learning basic fundamentals of personal finance can be successful (Postmus, Hetling, & Hoge, 2015). Providing training to victims of domestic violence, Postmus et al. (2015) focused on several components: mastering credit basics, building financial foundations, and creating budget strategies. Authors showed success through improvements over time of financial knowledge, intentions to perform financial behaviors, and the participants' actual financial behaviors. Such interventions may also be successful in workplaces where various constraints may prevent employers from raising wages, and can be conducted in a cost-effective way. If employers are concerned about their employees' health, and ascertain that there are also financial apprehensions when it comes to providing for family members, based on our data, this type of intervention could be warranted.

Another option is to focus on the cognitive appraisal aspect of financial insecurity. According to COR theory, the *secondary* appraisal of the process includes evaluation of whether strategies can be used to improve the environment that is causing the stress, as appraised during the primary appraisal (Lazarus & Folkman, 1984). Consequently, interventions could revolve around cognitive strategies that alter the interpretations of financial insecurity and the extent to which it is appraised as stressful and/or as contributing to WFC. Researchers have shown that when stress is viewed as helpful, as opposed to harmful, it is associated with positive health benefits (McGonigal, 2015). Three protective beliefs that employees might learn are to view the body's stress response as energizing rather than debilitating, view themselves as able to handle

Running head: FINANCIAL INSECURITY AND HEALTH

and learn from stress, and view stress as a normal part of everyone's life. Further, research on stress suggests an inoculation response and that successful coping involves drawing on strengths and confidence developed from previous stressors (McGonigal, 2015). Therefore employees could be coached that when they experience financial insecurity they could interpret their stressful reactions differently and/or draw from previous stressful experiences, particularly related to financial insecurity, that might be helpful. Of course, these types of interventions do not address the larger economic, social, and political forces that contribute to the potential for financial insecurity. While an intervention that weaves both resources and cognitive adaptation potentially could provide even more benefits to worker health, there is also a need to recognize that these experiences are often complex and reach beyond the need for individual level intervention.

### **Limitations and Future Research**

One limitation of this research is the small sample size for Study 1. However, the information gained from Sample 1 allows us to tap into experiences of low-wage workers, an understudied population in the work-family literature, who were experiencing higher levels of financial insecurity compared to Sample 2. While the small sample size limited our ability to fully test our predicted model, we addressed this by conducting a second study with a larger sample that consisted of individuals from many occupation types and varying degrees of financial insecurity. Future research that includes larger samples of low-wage workers can further supplement the results of our studies.

Although our measurement strategy for assessing financial insecurity was driven by theory (i.e., cognitive appraisal theory; Lazarus & Folkman, 1984), our findings using subjective ratings may not generalize to more objective measures of financial insecurity (i.e., income, debt).

Running head: FINANCIAL INSECURITY AND HEALTH

Though our focus was on cognitive appraisals, it is important to note that subjective ratings of financial insecurity are still grounded in objective realities, and for many individuals are likely particularly stable. When individuals experience financial insecurity, this is likely an ongoing problem that may not vary much over time. For example, research using Census Bureau data shows that geographic concentrations of people living in poverty have increased; 7.2 million people were living in high poverty neighborhoods in 2000, and 13.8 million were living in these neighborhoods in 2013 (Jargowsky, 2015). Our operationalization of financial insecurity as subjective perceptions would capture experiences of on-going financial insecurity, and could also explain why financial insecurity consistently predicted all three health outcomes in Study 2, which consisted of *both* general and episodic measures of health. It is possible that both objective and subjective financial experiences are important and should be considered in conjunction with one another. That is, although working families across income levels can experience financial insecurity (Mass Mutual, 2017), it may be that lower-income, financially insecure workers have access to fewer resources such as social capital or transportation than do higher-income, financially insecure workers. We encourage future research to examine whether the relation of financial insecurity with health is moderated by objective income.

What our operationalization may be missing are episodic experiences of heightened financial insecurity, such as those that occur when unexpected financial strains occur (e.g., unexpected medical expenses). It could be the case that these episodic experiences have different types of impacts on WFC, stress, and health than do more enduring experiences of financial insecurity. Creating ways to measure episodes of financial hardships as they occur could shed additional light on the relationships among financial insecurity and health.

Running head: FINANCIAL INSECURITY AND HEALTH

Relatedly, the time lag used in both studies (three months) may not fully capture and best represent the lagged effects of financial insecurity. Specific to the work-family interface, Matthews et al. (2016) advise that the time lag be long enough to let the intended process unfold but not so long that the effect window closes. But again, there exist limited longitudinal research to provide guidance as to the optimal window for changes in financial status. Research by Matthews et al. suggests that three months is a reasonable time lag for examining the relationship between WFC and stress but it is less clear as to the appropriate time lag for studying financial insecurity and health. We do not know if the relationships might differ if we had a longer (or shorter) time lag. Additional studies comparing our model tested across three months to other time periods are warranted and may shed light on other cognitive processes at work while also allow for the opportunity to examine episodic fluctuations in financial insecurity.

### **Conclusion**

Given the rising number of financially insecure working families, our research aimed to elucidate the psychological processes by which financial insecurity relates to health. Using two longitudinal samples, each at two time periods across three months, we provide support for COR and cognitive appraisal theories in that we demonstrate that WFC and stress serve as key mechanisms of the financial insecurity-health relationship. The fact that there was general consistency in the results across two separate samples from multiple work contexts speaks to the external validity of these relationships and processes. We hope that other scholars will continue to examine the mental and physical health of workers who experience financial insecurity and the mechanisms by which they occur, including consideration of the work-family interface.

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## Running head: FINANCIAL INSECURITY AND HEALTH

Table 1.

*Measures used in Studies 1 and 2*

Construct	Source	Scale	Example Items
Financial Insecurity	McCubbin & Comeau (1991)	<ul style="list-style-type: none"> <li>• 3 items</li> <li>• 5-point scale</li> <li>• Coded such that high scores represent perceived financial insecurity</li> </ul>	<p>“We seem to have little or no trouble paying our bills on time.”</p> <p>“We feel we have enough money to cover small unexpected expenses (under \$100).”</p>
Work-to-Family Conflict (WFC)	Grzywacz, Frone, Brewer, & Kovner (2006)	<ul style="list-style-type: none"> <li>• 3 items</li> <li>• 4-point scale</li> <li>• Frequency of experiencing WFC in past three months</li> </ul>	<p>“My job kept me from spending the amount of time I would like to spend with my family.”</p> <p>“My job interfered with my home-life.”</p>
Perceived Stress	Cohen, Kamarch, & Mermelstein (1983)	<ul style="list-style-type: none"> <li>• 4 items</li> <li>• 4-point scale</li> <li>• Frequency of feeling a certain way in the past month</li> </ul>	<p>“In the last month, how often have you felt confident about your ability to handle your personal problems?”</p> <p>“In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?”</p>
Physical Health	Adapted version of Kuorinka et al. (1987)	<ul style="list-style-type: none"> <li>• 9 items</li> <li>• 5-point scale</li> <li>• Frequency of experiencing musculoskeletal symptoms (previous week)</li> </ul>	<p>“Neck”</p> <p>“Upper back”</p> <p>“hips/thighs”</p> <p>“knees”</p>
Sleep Disturbance*	Jenkins, Stanton, Niemcryk, and Rose, (1988)	<ul style="list-style-type: none"> <li>• 5 items</li> <li>• 5-point scale</li> <li>• Frequency of experiencing sleep disturbance symptoms (previous week)</li> </ul>	<p>“Had trouble falling asleep.”</p> <p>“Woke up several times during the night.”</p>
General Health*	Pejtersen, Kristensen, Borg, & Bjorner (2010)	<ul style="list-style-type: none"> <li>• 1 item</li> <li>• 5-point scale</li> <li>• Level of perceived health in general (positively worded)</li> </ul>	<p>“In general, my health is: poor, fair, good, very good, excellent.”</p>

Note: \* indicates these measures were only included in Study 2

Table 2

*Study 1 Means, Standard Deviations, and Correlations Among Measured Variables*

Variable	M	SD	Correlations		
			1.	2.	3.
1. T1 Financial Insecurity	3.02	.94	1.00	.	.
2. T1 Work-to-Family Conflict	2.68	1.57	.12	1.00	.
3. T2 Perceived Stress	2.65	.70	.31*	.34*	1.00
4. T2 Physical Health Symptoms	2.25	.92	.17	.18	.22

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Note:  $n = 80$ . \*  $p < .01$

Running head: FINANCIAL INSECURITY AND HEALTH

Table 3

*Study 2 Means, Standard Deviations, and Correlations Among Measured Variables*

	Mean	SD	1	2	3	4	5
1. T1 Financial Insecurity	2.51	0.82					
2. T1 Work-to-Family Conflict	2.87	0.98	.17**				
3. T2 Perceived Stress	2.28	0.85	.51**	.33**			
4. T2 Physical Symptoms	1.86	0.79	.26**	.36**	.43**		
5. T2 Sleep Disturbances	2.39	1.03	.23**	.41**	.46**	.56**	
6. T2 General Health	3.45	0.89	-.30**	-.19**	-.42**	-.40**	-.41**

Note:  $n = 331$ . \*\* $p < .01$

Table 4

*Study 2 Primary Model Analysis*

<u>Primary Analysis</u>	$\chi^2$	DF	CFI	RMSEA	SRMR	$\Delta\chi^2$	$\Delta DF$
Physical Health Symptoms	217.51**	86	.94	.07	.06	--	--
Sleep Disturbances	282.41**	115	.94	.07	.08	--	--
General Health	173.49**	74	.95	.06	.05	--	--

Note: \*  $p < .05$ , \*\*  $p < .01$

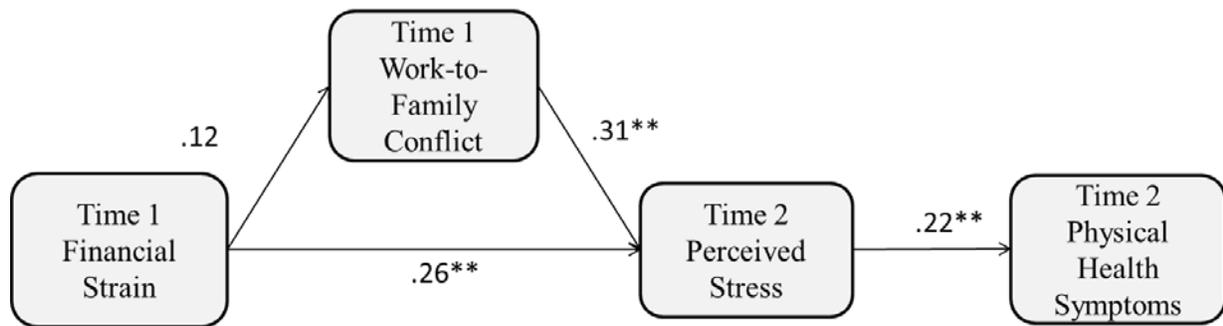
Table 5

*Test of Indirect Effects on Three Health Outcomes*

<u>Standardized Structural Path Estimate</u>	<u>Health Outcome Model</u>		
	<u>Physical Health Symptoms</u>	<u>Sleep Disturbance Symptoms</u>	<u>General Health</u>
T1 Financial Insecurity to T1 WFC	.18**	.18**	.18**
T1 Financial Insecurity to T2 Perceived Stress	.48**	.48**	.49**
T1 WFC to T2 Perceived Stress	.34**	.35**	.32**
T2 Perceived Stress to T2 Health Outcome	.53**	.51**	-.48**
<u>Standardized Indirect Effect</u>			
T1 Financial Insecurity --> T1 WFC --> T2 Perceived Stress	.06** S.E. = .03 95% C.I. = .01, .11	.06** S.E. = .03 95% C.I. = .01, .11	.06* S.E. = .02 95% C.I. = .01, .10
T1 Financial Insecurity on T2 Health Outcome (total indirect effect)	.29** S.E. = .04 95% C.I. = .21, .37	.27** S.E. = .04 95% C.I. = .19, .36	-.27** S.E. = .04 95% C.I. = -.35, -.19
T1 Financial Insecurity --> T2 Perceived Stress --> T2 Health Outcome (decomposed path 1)	.26** S.E. = .04 95% C.I. = .18, .34	.24** S.E. = .04 95% C.I. = .17, .32	-.24** S.E. = .04 95% C.I. = -.32, -.17
T1 Financial Insecurity --> T1 WFC --> T2 Perceived Stress --> T2 Health Outcome (decomposed path 2)	.03* S.E. = .04 95% C.I. = .01, .06	.03* S.E. = .02 95% C.I. = .00, .06	-.03* S.E. = .01 95% C.I. = -.05, -.01
T1WFC --> T2 Perceived Stress --> T2 Health Outcome	.18** S.E. = .04 95% C.I. = .10, .26	.18** S.E. = .04 95% C.I. = .09, .26	-.15** S.E. = .03 95% C.I. = -.21, -.10

Note: \*  $p < .05$ , \*\*  $p < .01$ .

**Figure 1. Model of Financial Insecurity Predicting Physical Health Across Time**



*Figure 1.* Proposed model of process by which financial insecurity predicts physical health, via perceptions of WFC and stress; results of Study 1. \*  $p < .05$ , \*\*  $p < .01$ .