Financial strain and worry about retirement income adequacy

by

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BSc, University of the Witwatersrand, 1996
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AN ABSTRACT OF A DISSERTATION

submitted in partial fulfillment of the requirements for the degree

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School of Family Studies and Human Services
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Abstract

Worry about running out of money in retirement (hereinafter referred to as retirement worry) is Americans' number one financial worry since 2001 (Gallup, 2018a, 2018b, 2019). Increasing frequency and intensity of worry is associated with negative psychological outcomes and impaired cognitive functioning. The overall aim of the present study was to advance the conceptual and empirical understanding of retirement worry. Drawing from worry and stress literature, and theoretically grounded in the Tallis and Eysenck (1994) worry model, the present study utilized partial proportional-odds cumulative logit models and positioned financial strain, financial resources, personal resources, coping strategies (i.e., calculating retirement savings and foregoing medical care), and "coping strategy × financial strain" interactions as key variables in understanding the psychological mechanisms behind retirement worry. Cross-sectional data consisted of survey responses from a nationally representative sample of 13,919 non-retired adults, aged 18 to 64 drawn from the 2018 National Financial Capability Study State-by-State survey.

The results surprisingly indicated that financial resources were positively associated with retirement worry while personal resources were negatively associated with retirement worry. Coping strategies had significant but mixed associations with retirement worry. Specifically, calculating retirement savings was negatively associated with retirement worry while foregoing medical care was positively associated with retirement worry. The results underscored the moderating role of coping strategies in the retirement worry process. First, calculating retirement savings exacerbated the effects of financial strain on retirement worry at higher levels of financial strain and mitigated the effects of financial strain on retirement worry at lower levels of financial strain. Second, foregoing medical care exacerbated the effects of financial strain on

retirement worry at all levels of financial strain. The conceptual model for retirement worry developed was largely supported which helps to advance the conceptual and empirical understanding of retirement worry. Results from the present study contribute to the literature on retirement worry and financial well-being and should be of interest to policymakers, financial and mental health professionals, companies, and other researchers.

Keywords: Financial mastery, Financial self-efficacy, Financial strain, Foregoing medical care, Retirement income worry, Retirement savings calculation

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Approved by:

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Table of Contents

List of Figures xi
List of Tables xii
Acknowledgements xiii
Dedication xiv
Chapter 1 - Introduction 1
Statement of the Problem 1
Worry 4
What is Worry? 4
Pathological Versus Normal Worry 7
Measuring Worry 8
What is Financial Worry? 9
Predictors of Interest 11
Financial Strain 11
Financial Mastery 14
Financial Self-Efficacy 15
Calculating Retirement Savings Needs 16
Foregoing Medical Care 17
Brief Literature Review 18
Theoretical Models of Worry 20
Wells (1995) Model of Worry 21
Theoretical Framework 22
Lazarus and Folkman's (1984) Transactional Theory of Stress and Coping 22
Tallis and Eysenck's (1994) Model of Worry 24
Research Purpose and Questions 25
Hypotheses 25
Primary Appraisal 26
Secondary Appraisal: Financial Resources 26
Secondary Appraisal: Personal Resources 26
Secondary Appraisal: Coping strategies 26
Population of Interest 27
Potential Implications 27
Summary 28
Chapter 2 - Theoretical Framework and Literature Review 30
Introduction 30
Theoretical Framework 31
Threat Appraisal 31
Worry Activation 36
Coping 36
Overview of Financial Worry 38
Review of Empirical Findings 45
Primary Appraisal: Perceived Threat 45
Secondary Appraisal: Personal Resources 50
Financial Mastery 51

Financial Self-Efficacy 52
Financial Knowledge 54
Financial Resources 56
Secondary Appraisal: Coping Strategies 59
Calculating Retirement Savings Needs 63
Foregoing Medical Care 64
Coping Strategies as Moderators 67
Adaptive Versus Maladaptive Coping 67
Demographic Variables 68
Summary and Purpose of Current Study 71
Research Questions 72
Conceptual Model and Hypotheses 73
Conceptual Model 73
Hypotheses 75
Hypothesis Relating to the Primary Appraisal 75
Hypotheses Relating to the Secondary Appraisal: Financial Resources 75
Hypotheses Relating to the Secondary Appraisal: Personal Resources 76
Hypotheses Relating to the Secondary Appraisal: Coping strategies 77
Hypotheses Relating to the Secondary Appraisal: Moderated Effects 78
Chapter 3 - Methodology 81
Data and Sample 81
The National Financial Capability Study 81
Study Sample 82
Measurement 84
Dependent Variable 84
Independent Variables 85
Financial Strain 85
Financial Resources 87
Personal Resources 88
Coping Strategies 92
Control Variables 93
Statistical Analysis 93
Subgroup Analyses 102
Chapter 4 - Results 104
Descriptive Statistics 104
Missing Data 104
Sample Characteristics 109
Retirement Worry 109
Financial Strain 110
Financial Resources 110
Personal Resources 111
Coping Strategies 111
Sample Characteristics Results by Age Groups 111
Retirement Worry 114
Financial Strain 114
Financial Resources 115

Coping Strategies 116
Personal Resources 117
Multivariate Results 118
Multicollinearity 119
Factor Analysis 121
Primary Analysis 123
Model One (Threat Appraisal and Worry Activation) 128
Financial Strain 129
Financial Resources 129
Personal Resources 130
Demographic Variables 131
Model Two (Coping) 132
Model Three (Interaction Terms) 134
Secondary Analysis 141
Age 141
Younger Adults Versus Older Adults 145
Gender 146
Summary of Results 146
Primary Research Question 146
Secondary Research Question 1 147
Secondary Research Question 2 149
Chapter 5 - Discussion and Implications 151
Discussion of Results 152
Retirement Worry 156
Primary Appraisal: Perceived Threat 157
Secondary Appraisal: Financial Resources 158
Household Income 158
Health Insurance Coverage 159
Short-Term Savings 160
IRA/Keogh Plans 161
Employer-Sponsored Retirement Plan 161
Secondary Appraisal: Personal Resources 162
Objective Financial Knowledge 162
Subjective Financial Knowledge 163
Financial Self-Efficacy 164
Financial Mastery 164
Secondary Appraisal: Coping Strategies 165
Demographic Variables 167
Contributions to the Literature 170
Implications of Findings 171
Limitations of the Study 176
Recommendations for Future Research 179
References 182
Appendix A - Missing Data Analysis (Correlation) 217
Appendix B - Subgroup (Gender) Analysis Regression Results 222

List of Figures

Figure 2.1. Pictorial Representation of the Tallis and Eysenck (1994) Model of Worry..... 32
Figure 2.2. Percentage of Americans Reporting High or Moderate Financial Worry. 39
Figure 2.3. Percentage of Americans Worried About Not Having Enough Money for Retirement. 40
Figure 2.4. Illustration of the Conceptual Model for Retirement Worry. 74

List of Tables

Table 2.1 Summary of Research on Financial Worry 42
Table 2.2 Measures of Financial Strain 47
Table 2.3 Expected Relationships Between Independent Variables and Retirement Worry 80
Table 3.1 Deriving the Analytic Sample 83
Table 3.2 Objective Financial Knowledge Questions 89
Table 3.3 Measurement of All Variables 94
Table 4.1 Missing Data Analysis 105
Table 4.2 Sample Characteristics Before and After Listwise Deletion 107
Table 4.3 Sample Characteristics of Categorical Variables 112
Table 4.4 Sample Characteristics of Continuous Variables 116
Table 4.5 Variables with Variance Inflation Factors > 2.50 121
Table 4.6 Factor Analysis Results 122
Table 4.7 Cumulative Logistic Regression for Higher Retirement Worry (N = 13,919) 125
Table 4.8 Summary of AIC Scores for the Models Estimating Retirement Worry 135
Table 4.9 Odds Ratios for Financial Strain 138
Table 4.10 Odds Ratios for Retirement Savings Calculation (RSC) 140
Table 4.11 Odds Ratios for Foregoing Medical Care (FMC) 141
Table 4.12 Cumulative Logistic Regression for Higher Retirement Worry (by age) 143
Table 5.1 Hierarchical Regression Analysis in the Prediction of Retirement Worry 153
Table 5.2 Summary of Expected Versus Actual Effects 155
Table A.1 Unweighted Correlations for Key Variables (Before Listwise Deletion) 218
Table A.2 Unweighted Correlations for Key Variables (After Listwise Deletion) 219
Table A.3 Weighted Correlations for Key Variables (Before Listwise Deletion) 220
Table A.4 Weighted Correlations for Key Variables (After Listwise Deletion) 221
Table B.1 Cumulative Logistic Regression for Higher Retirement Worry (by gender) 223

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Dedication

For my mother, who never went beyond primary school but encouraged me to pursue a Ph.D. soon after I got my undergrad degree in 1996.

Chapter 1 - Introduction

Statement of the Problem

A major challenge in the United States is that Americans are experiencing high levels of financial worry (Gallup, 2019) and financial stress (American Psychological Association, 2018). According to the Gallup Personal Financial Worry Index, 51% of Americans were highly or moderately worried about their finances from 2001-2007, but that spiked to 61% in 2012 (Gallup, 2019). In 2019, this fell to 46% with 54% of Americans reporting not having enough money for retirement as their number one financial worry (Gallup, 2019). Other data also highlight the high levels of worry about not having enough money for retirement. For example, nearly half (48%) of American workers aged 50 and older fear outliving their savings and investments (Transamerica, 2019) while nearly two-thirds (63%) of American adults fear running out of money in retirement (Allianz Life Insurance Company, 2017). In addition to financial worries, American adults are experiencing financial stress with nearly two-thirds (64%) reporting money as a source of significant stress (American Psychological Association, 2018). Similarly, in a recent national survey of employee financial wellness (PwC (US), 2019), nearly six-tenths (59%) of employees reported that financial matters caused them the most stress in their lives. This is not surprising because the fundamental activities of everyday life are associated with financial resources and their management (Pearlin & Radabaugh, 1976).

For individuals who fail to cope with financial stressors, the consequences are negative physical and psychological health and diminished personal functioning (Lazarus & Folkman, 1984; Pearlin, Menaghan, Lieberman, & Mullan, 1981). Similarly, increasing frequency and intensity of worry is associated with negative psychological outcomes. For example, worry has been associated with the tendency to view difficulties as threats (Robichaud, Dugas, & Conway, 2003), lower levels of life satisfaction (Boehnke, Schwartz,

Stromberg, & Sagiv, 1998) and higher levels of depression (Andrews & Borkovec, 1988; Molina, Borkovec, Peasley, & Person, 1998; Skarborn & Nicki, 2000; Starcevic, 1995; Stöber & Joormann, 2001), decreased confidence in problem solving (Davey, Jubb, & Cameron, 1996), intolerance of uncertainty (Dugas, Gosselin, & Ladouceur, 2001), self-handicapping and low self-esteem (Meyer, Miller, Metzger, & Borkovec, 1990), and decisional procrastination (Spada, Hiou, & Nikcevic, 2006). Among individuals in nonclinical populations, the negative aspects of worry fall into four categories: "pessimism and negative outlook, problem exaggeration, performance disruption, and emotional discomfort" (Tallis, Davey, & Capuzzo, 1994, p. 84). Furthermore, worry is associated with some impairment of day to day functioning at home, at work, and in other social domains (Tallis et al., 1994). Finally, there are negative associations between everyday worry on topics such as finances, work, and relationships, and life satisfaction (Fakouri & Lyon, 2005; Heidemeier & Staudinger, 2012; Taormina & Gao, 2013).

Beyond the aforementioned negative psychological outcomes associated with worry, a key feature of worry that makes it important to study is its repetitive nature and focus on potential negative events (Borkovec, Robinson, Pruzinsky, & DePree, 1983). Repetitive thoughts focused on negative events bias information processing resulting in selective attention to perceived threats (Mathews, 1990; Matthews & Wells, 2000; Metzger, Miller, Cohen, Sofka, & Borkovec, 1990; Tallis et al., 1994), maintenance of distress (Segerstrom, Tsao, Alden, & Craske, 2000), and increased levels of anxiety (Davey, Hampton, Farrell, & Davidson, 1992). In a small-scale experimental study Shapiro and Burchell (2012) established a link between attention bias and financial anxiety, defined as an unhealthy attitude towards personal financial management. In a similar experimental study, Gutierrez and Hershey (2013) established a link between biased information processing and retirement anxiety, defined as retirement-linked financial fears and worries. In an experimental study

with a nonclinical sample, Mathews and Mackintosh (2000), found that inducing attentional and interpretive bias increased subsequent anxiety. Finally, a study by Zalta and Chambless (2008) showed that high levels of attentional and interpretive bias were significantly associated with increases in worry.

Taken together, these studies provide evidence of the influence of selective information processing and the resultant attention and interpretive bias on worry and anxiety. Worry and anxiety are separate but correlated constructs (Davey, 1994; Davey et al., 1992; Gana, Martin, & Canouet, 2001). An implication of these studies is that biased information processing of financial strain (e.g., difficulty to pay bills) and repetitive thoughts about running out of money in retirement may negatively influence retirement planning. Research has shown that retirement planning is positively associated with greater financial security and well-being in retirement (Elder & Rudolph, 1999; Noone, Stephens, & Alpass, 2009). This is important, as research has shown that, financial worry has a negative influence on voluntary retirement savings contributions even in the presence of strong financial goals and high financial motivation (Neukam & Hershey, 2003).

Unlike excessive worry, which is associated with maladaptive consequences, normal worry has been associated with adaptive functions by some researchers. These adaptive functions include: problem solving (Borkovec et al., 1983; Davey et al., 1992; Davey, 1994; Freeston, Rhéaume, Letarte, Dugas, & Ladouceur, 1994; Tallis et al., 1994), and coping (Davey et al., 1992; Davey, 1993; Tallis et al., 1994; Wells, 1995; Wells, 1999).

Despite the prevalence of worry and its apparent link with negative psychological outcomes, few studies have examined the predictors of worry (Boehnke et al., 1998; Kelly, 2008; Keogh, French, & Reidy, 1998; Tallis & Eysenck, 1994). A few studies have established a relationship between personal finances and worry (Grulke et al., 2006; Lindesay

et al., 2006; Neukam & Hershey, 2003; Skarborn & Nicki, 2000). Even fewer studies have investigated the predictors of financial worry (Hershey, Henkens, & van Dalen, 2010).

Over the past two decades, there has been substantial growth in the knowledge about worry and its consequences (Borkovec, Ray, & Stober, 1998). However, still less known is the relationship between stress and worry (Kelly, 2008). Also, very little is known about financial worry (Hershey et al., 2010; Litwin & Meir, 2013). The current research fills this void. I have selected financial strain as the key predictor of interest for the study for four reasons. First, there are similarities between worry and stress with these concepts associated with negative physical health outcomes as well as psychological well-being. Also, both concepts are regarded as largely cognitive activities with the cognitive activity influenced by perception of environmental demands and resources. Second, Kelly (2008) noted that "fewer studies have reported the relationship between worry and stress" (p. 148), while Matthews and Funke (2006), observed that including stress processes in worry research may contribute to greater understanding of worry processes. Third, worrying is a common response to stressors (Brosschot, Gerin, & Thayer, 2006; Kelly, Markos, & Ashley, 2005). Finally, in this study, the trigger for the worry process is financial strain that is conceptualized as a psychological appraisal that demands (e.g., monthly bill payments) exceed available resources (Lazarus & Folkman, 1984). The primary goal of this study was to investigate the predictors of retirement worry with financial strain as the key predictor of interest. To lay the foundation for this substantial goal, a brief historical overview of the construct of worry is warranted.

Worry

What is Worry?

Thomas (1974) stated that "We [humans] are, perhaps uniquely among the earth's creatures, the worrying animal. We [humans] worry away our lives, fearing the future,

discontent with the present…" (p. 14). Yet, according to Mathews (1990), "common-sense has it that worry is pointless" (p. 455), and among self-help literature, a common theme is "don't worry, be happy." This begs the question "what is worry?" Worry is a normal psychological phenomenon that is experienced by most people to some degree at some point in their lives (Davey et al., 1992; Dupuy, Beaudoin, Rhéaume, Ladouceur, & Dugas, 2001; Tallis et al., 1994). Worry is a pervasive and important construct (Joormann & Stöber, 1997; Kelly & Paolini, 2014; Lehto, 2014; McCaul & Mullens, 2003) that in its normal state facilitates the detection and management of future threats (Borkovec et al., 1998; Tallis & Eysenck, 1994) and can be an adaptive strategy for coping with stressful life events (Davey, 1994; Endler & Parker, 1990). Worry can be characterized into various domains (Levy & Guttman, 1975; Tallis, Eysenck, & Mathews, 1992) including worry about finances.

Since the 1980s, researchers have systematically investigated the characteristics and functions of worry (Borkovec et al., 1998). However, the concept only gained popularity in the 1990s when some studies (e.g., Davey, 1994; Davey et al., 1992) determined that worry was an independent construct from anxiety possessing "its own unique sources of variance" (Davey, 1994, p.40). Some studies (e.g., Zebb & Beck, 1998) have reported correlation coefficients between these two constructs to be in the .60s to .70s range in nonclinical populations. Although high, these correlation coefficients do not tell us whether the association between worry and anxiety is a causal one. Gana et al. (2001) provided evidence for the directional relationship between worry and anxiety. Using path analysis, they found no significant direct effect in the anxiety-to-worry path, and a significant direct effect in the worry-to-anxiety path. In other words, the relationship between worry and anxiety is not bidirectional.

Anxiety is the anticipation of a non-specific threat (Rachman, 2004), and involves a perception of lack of control over future events (Barlow, 2004). Another definition links

worry to anxiety by defining anxiety as “a state of apprehension and worry, often associated with inability to cope with true or imaginary hardships” (Wolman & Stricker, 1994, p. 11). At the beginning of the research on worry, the principal debate was about the definition of the concept. As the number of worry researchers grew, so did the definitions of worry. Some of these definitions are presented next. According to Borkovec and colleagues' (1983) frequently cited definition of worry:

> Worry is a chain of thoughts and images, negatively affect laden and relatively uncontrollable. The worry process represents an attempt to engage in mental problem solving on an issue whose outcome is uncertain but contains the possibility of one or more negative outcomes. Consequently, worry relates closely to fear process. (p. 10)

After studying a number of definitions of worry, MacLeod, Williams and Bekerian (1991), proposed that: “worry is a cognitive phenomenon, it is concerned with future events where there is uncertainty about the outcome, the future being thought about is a negative one, and this is accompanied by feelings of anxiety” (p. 478).

Davey (1994) argued that the definition is essential to the advancement of knowledge about worry and that the clinically oriented definitions of worry by both Borkovec et al. (1983) and MacLeod et al (1991) limit the understanding of nonclinical worry. Citing the advances in knowledge about worry, Wells (1999) proposed this revised definition of worry:

> Worry is a chain of catastrophizing thoughts that are predominantly verbal. It consists of the contemplation of potentially dangerous situations and of personal coping strategies. It is intrusive and controllable although it is often experienced as uncontrollable. Worrying is associated with a motivation to prevent or avoid potential danger. Worry may itself be viewed as a coping strategy but can become the focus of an individual's concern. (p. 87)

The three definitions of worry put forward by Borkovec et al. (1983), MacLeod et al. (1991), and Wells (1999), all emphasize the potential coping function of worry based on a categorical distinction between normal and pathological worry. According to researchers (Roemer, Molina, & Borkovec, 1997; Ruscio, 2002), in much of the worry literature, there is an implicit assumption that only these two types of worry exist. Ruscio (2002) describes the two types of worry as ""normal worry," which is mild, transient, generally limited in scope, and experienced by the majority of individuals; and "pathological worry," which excessive, chronic, pervasive, and experienced only by individuals with GAD" (p. 378). Generalized Anxiety Disorder (GAD) is a psychological disorder with chronic, excessive worry as its core feature (Barlow, 2004). In the present study, I consider the experience of nonpathological worry (henceforth referred to as normal worry) about running out of money in retirement. While the dataset that I used provides the severity (i.e., low to high) of retirement worry, there is no cut-off score to establish if the respondent's retirement worry is excessive to qualify as pathological worry. Given the preceding discussion, it is useful to discuss pathological and normal worry.

Pathological Versus Normal Worry

Worry is defined as pathological when it occurs with such frequency and intensity that it interferes with everyday functioning and well-being (Borkovec, Shadick, & Hopkins, 1991). The treatment of normal and pathological worry as discrete phenomena has persisted in most of the extensive worry literature, largely ignoring calls by Davey (1994) and Freeston et al. (1994) for researchers to conceptualize normal and pathological worry as existing on a continuum. However, some researchers took up this call and designed studies to investigate the latent structure of worry.

Ruscio, Borkovec, and Ruscio (2001) used statistical analyses that evaluate the latent structure of constructs (i.e., taxometric analyses), to provide evidence that "worry is better

represented by a single severity continuum with normal and pathological extremes" (p. 418). In other words, normal and pathological worry are not discrete constructs, but rather opposite ends of a continuum based on the degree of worry severity. Recently, Olatunji, Broman-Fulks, Bergman, Green, and Zlomke (2010) conducted two studies on the latent structure of worry using taxometric analyses and concluded that "the heterogeneity of worry (normal vs. pathological) is best conceptualized as reflecting quantitative rather than qualitative differences among individuals" (p. 224). Like Ruscio and colleagues (2001), Olatunji and colleagues (2010) also concluded that worry is most validly assessed by instruments that yield continuous worry scores. But how is worry measured? Are there reliable and valid measures? These questions will be addressed next.

Measuring Worry

Frequency, which is how often an individual worries and content, which is what they worry about are the two frequently used self-report worry measures (Tallis, Davey, & Bond, 1994). In the worry literature, content is also referred to as domains of worry. The Penn State Worry Questionnaire (PSWQ; Meyer et al., 1990) is a measure of the frequency and intensity of pathological worry while the Worry Domains Questionnaire (WDQ; Tallis et al., 1992) is a domains-based measure of normal worry (Davey, 1993). The domains of the WDQ represent what most people worry about and include relationships, lack of confidence, aimless future, work incompetence, and financial (Tallis et al., 1992).

The PSWQ has 16 items that are rated on a scale from "not at all typical of me" (1) to "very typical of me" (5). Eleven items are worded in the direction of pathological worry, with higher numbers indicating more worry, while the remaining five items are worded to indicate that worry is not a problem, with higher numbers indicating less worry. The eleven items include statements such as: (a) "Once I start worrying, I cannot stop," (b) "When I'm under pressure, I worry a lot," and (3) "My worries overwhelm me." The latter five items include

statements such as: (a) “I never worry about anything,” and (b) “I find it easy to dismiss worrisome thoughts.” The total score is calculated by summing the first 11 items and the reverse-scores of the latter 5 items. Scores range from 16–80, with higher scores reflecting a greater degree of pathological worry.

The WDQ has 25 items that are rated on a scale from “not at all” (0) to “extremely” (4). The prefix “I worry . . .” is followed by a list of 25 worries that cover the five worry domains discussed above. The financial domain has five worries: (1) “That my money will run out” (2) “That I am not able to afford things,” (3) “That financial problems will restrict holidays and travel,” (4) “That my living conditions are inadequate,” and (5) “That I can’t afford to pay bills.” The total WDQ score is obtained by summing up the domain scores and gives an indication of worry frequency, while the domains provide information with respect to worry content.

Both the PSWQ and the WDQ offer important conceptualizations of measuring worry. The PSWQ emphasizes the frequency and intensity of worry while the WDQ emphasizes the content of worry. Furthermore, while the WDQ has five items considered financial worries, the authors do not provide an explicit definition of the concept of financial worry. A definition of financial worry is however implied in the construction of the WDQ’s financial domain as being worry about an individual’s financial situation. How is financial worry defined and measured in literature? These questions will be addressed next.

What is Financial Worry?

Financial worry is a derivative of the broader construct of worry while retirement worry can be considered a subconcept of financial worry. A review of prior literature revealed that the majority of studies (e.g., Grulke et al., 2006; Hershey et al., 2010; Litwin & Meir, 2013) in the sparse literature on financial worry examined financial worry without offering a definition of the concept. However, the studies somewhat conceptually discussed

financial worry beyond the operational measures used or a definition could be implied. The common denominator in the implied definitions is worry or concern about one's current or future financial situation. For example, Hershey et al. (2010) defined retirement worry as "worry about one's future retirement finances" (p. 302). One study, however offered a formal definition of financial worry based on Borkovec and colleagues' (1983) definition of worry. de Bruijn and Antonides (2019) defined financial worry as "repeated and negative thinking about the uncertainty of one's (future) financial situation" (p. 9).

In some studies, financial worry was defined as a subjective indicator of financial well-being (Garðarsdóttir & Dittmar, 2012; Salignac, Hamilton, Noone, Marjolin, & Muir, 2019; Tay, Batz, Parrigon, & Kuykendall, 2017; Vlaev & Elliott, 2014), while in others as a subjective indicator of financial or economic stress (Keith, 1993; Prawitz et al., 2006; Voydanoff, 1984). Also, the review of prior literature revealed that other than the financial subscales of standard worry questionnaires such as Worry Domains Questionnaire (Tallis et al., 1992) or the Worry Scale of Older Adults (Wisocki, 1988), there are no standardized measures of financial worry.

The nature of the dataset employed in this study informed in several ways the approach I could take regarding retirement worry, the dependent variable of the present study. First, there was only one question in the dataset about retirement worry. Specifically, for the present study, retirement worry was defined as worry about running out of money in retirement. Second, the question on retirement worry in the dataset did not treat worry as a coping response. Finally, since the dataset is based on a nonclinical population, the dependent variable in the present study specifically measures normal retirement worry.

Predictors of Interest

Financial Strain

Stress is an integral part of life that cannot be avoided (Selye, 1973, 1976). How people manage or cope with stress influences their well-being (Pearlin & Schooler, 1978). There is some ambiguity about what stress means (Lazarus, 1993; Pearlin & Schooler, 1978; Selye, 1973; Wheaton, 1994). Because of this ambiguity some researchers (Mason, 1975; Pollock, 1988) have described the concept of stress as too vague and called for its abandonment altogether while others (Monat & Lazarus, 1991) have argued that stress needs to be understood as a general organizing concept for a wide range of phenomena across three domains: physiological, psychological and social. Despite some ambiguity on the term stress, there is consensus that stress refers to internal dysfunctions that result from stressors (Pearlin & Bierman, 2013). In preparation for the discussion on financial stress, I first provide one of the most cited definitions of psychological stress. According to Lazarus and Folkman (1984), stress involves a transaction between the person and the environment in which the person appraises their resources as inadequate to meet the demands of the environment. Put differently, stress stems from a discrepancy between perceived demands (i.e., stressors) and perceived resources.

Stressors are environmental, social, or internal demands that require resources to manage (Holmes & Rahe, 1967; Lazarus & Folkman, 1984); they change with aging and the life course (Pearlin & Skaff, 1996), and "can impose deleterious effects on emotions, cognitions, behavior, physiological functioning, and well-being" (Pearlin & Bierman, 2013, p. 326). Financial stressors include difficulty in paying bills, expenses exceeding income, postponing medical care, borrowing money from friends or relatives, bankruptcy, contact by creditors, financial worries, and excessive debt (Aldana & Liljenquist, 1998; Conger et al., 1990; Northern, O'Brien, & Goetz, 2010; Pearlin et al., 1981). According to Pearlin (1989),

distinguishing between acute and chronic stressors is important because chronic stressors require different coping strategies and resources. Chronic stressors represent enduring problems in people's daily lives while acute or event stressors are discrete life events that occur unexpectedly (Thoits, 1995; Wheaton, 1994).

The terms financial stress, and financial strain are often used interchangeably in the literature. However, they are inconsistently defined. According to Northern et al. (2010), researchers have defined financial stress as the inability to meet one's economic responsibilities (e.g. paying bills), and is influenced by psychological factors (e.g., attitudes, beliefs). Aldana and Liljenquist (1998) defined financial strain as the cognitive, emotional, and behavioral response to the perceived inadequacy of income for meeting financial responsibilities. In other words, financial strain is the subjective assessment of income as inadequate relative to needs. Based on these definitions, it follows that self-reports of financial strain are a manifestation of financial stress.

Northern et al. (2010) provided an excellent review of the literature on the deleterious effects of financial stress. According to Northern et al. (2010) researchers have found associations between high financial stress and: (1) poor physical health outcomes such functional impairment and elevated levels of reported pain, (2) poor health behaviours such as poor diet and reduced exercise, (3) poor psychological health outcomes such as low self-esteem, depression, and high anxiety, and (4) poor interpersonal outcomes such as personal and marital conflict. This robust body of literature on the deleterious effects of financial stress demonstrates that there is a big literature gap on the relationship between financial stress and financial worry. Thus, the purpose of this study was to investigate the predictors of retirement worry with financial strain as the key predictor of interest.

Before moving on to the next section, one more aspect of stress, eustress or "good stress" warrants a discussion. The debilitating aspects of stress are frequently reported in

popular and scholarly literature, so much so that it is hard to associate stress with any positive outcomes (Crum, Salovey, & Achor, 2013; Le Fevre, Kolt, & Matheny, 2006; McGowan, Gardner, & Fletcher, 2006). Yet, decades ago Selye (1976) distinguished distress (or stress in common terminology) from eustress, describing it as associated with positive effects. More recently, eustress has been defined as a "positive psychological response to a stressor, as indicated by the presence of positive psychological states" (McGowan et al., 2006, p. 93) and is a result of the process of cognitive appraisal that classifies situations as threatening, harmful, or challenging (Lazarus & Folkman, 1984).

Nelson and Simmons (2003) describe eustress as reflecting "the extent to which cognitive appraisal of a situation is seen to either benefit an individual or enhance his or her well-being" (p. 104). According to McGowan et al. (2006), if a stressor is perceived as a challenge and the individual has the abilities to overcome the demands, eustress can develop. An example of eustress may the choice by a homeowner in foreclosure to seek free mortgage counselling services that are intended to decrease the number of foreclosures. Homeowners already experiencing the financial and emotional stress of foreclosure may perceive the benefits of counseling as less than the effort required to attend counseling (Collins & Nafziger, 2018).

Consider Homeowner A and Homeowner B facing foreclosure. Homeowner A considers the free counseling as a threat in that attending the free counseling affects their time, a resource and does not make use of the free service. On the other hand, Homeowner B considers it as a challenge in that the time investment is worthwhile because they have an opportunity to try to avoid losing their home and makes use of the free service. Homeowner B experienced eustress by perceiving a threat to their time and appraising that threat as a challenge with positive benefits.

Eustress is a significant predictor of life satisfaction (O'Sullivan, 2011), and is associated with positive physiological and cognitive outcomes such as better cardiovascular functioning, and reduced attention for threat-related information (Jamieson, Nock, & Mendes, 2012). Jung (2017) reported that induced financial eustress and financial distress, both had negative influence on saving intentions. Because there are no widely accepted measures for eustress, most studies use proxy measures such as physiological data (e.g., heart rate, blood pressure, and cortisol levels), the presence of positive psychological states (e.g., positive affect, hardiness, and hope), and scales based on self-report items such as the eustress scale developed by O'Sullivan (2011). Because the dataset utilized in the present study did not have variables capturing the concept of eustress, I was not able to investigate eustress as one of the predictors of retirement worry.

Financial Mastery

A dimension of self-concept that is a major moderator in the stress process is mastery (Pearlin & Bierman, 2013), defined by Pearlin and Schooler (1978) as "the extent to which one regards one's life-chances as being under one's own control in contrast to being fatalistically ruled" (p. 5), and is developed from personal successes and failures in social and environmental encounters (Bandura, 1997; Turner & Lloyd, 1999). Simply put, mastery is a sense that one is in control of the forces that affect one's life (Pearlin et al., 1981). Based on this definition, in the personal finance domain, financial mastery can be thought of as a sense of control over one's financial situation. While there is consensus that mastery is an essential personal resource in the stress process, the mechanisms underlying how mastery moderates stress are less understood (Pearlin & Bierman, 2013; Turner & Lloyd, 1999). A few possible explanations have been suggested.

First, since mastery is developed from personal successes and failures in social and environmental encounters (Bandura, 1997; Turner & Lloyd, 1999), those high in mastery

have learned to identify, and avoid or prevent stressful events (Turner & Lloyd, 1999). Second, since mastery influences the appraisal process (Lazarus & Folkman, 1984), those high in mastery may appraise events as less threatening and thus experience less stressful events, compared to those low in mastery (Pearlin & Bierman, 2013; Turner & Lloyd, 1999). Finally, experiencing less stressful events as a result of high mastery provides confidence in one's abilities to deal with stressors and such confidence is associated with attempts and persistence to resolve one's problems (Pearlin & Bierman, 2013; Turner & Lloyd, 1999). Whatever the underlying mechanisms, the moderating role of mastery is substantially established in literature. Thus, in the present study, my focus was on financial mastery, a sense of control over one's financial situation as a personal resource that individuals experiencing financial strain can draw upon, and the degree to which financial mastery predicted retirement worry.

Financial Self-Efficacy

Bandura (1986) defined self-efficacy as "people's judgments of their capabilities to organize and execute courses of action required to attain designated types of performances" (p. 391) and further stated that during threatening situations, self-efficacy is essential in stress reactions and subsequent quality of coping. Based on this definition, financial self-efficacy can be loosely defined as an individual's judgment of their capability to manage their personal finances to achieve their goals. Perceived self-efficacy varies across domains and is influenced by mastery experiences (Bandura, 1997). In other words, a high level of self-efficacy in one domain (e.g., relationships) does not predict high level in another domain (e.g., personal finance). However, according to Bandura (1997), domain self-efficacy is influenced by general self-efficacy beliefs. Unsurprisingly, some studies have found that general self-efficacy and not only domain-specific financial self-efficacy is applicable to the domain of personal finance. For example, Kuhnen and Melzer (2018) found that high general

self-efficacy earlier in life is associated with lower loan delinquency, and reduced likelihood of asset repossessions, and property foreclosure. Furthermore, high self-efficacy individuals were found to prepare more for adverse financial shocks by having emergency savings, purchasing insurance, and planning for retirement (Kuhnen & Melzer, 2018). In another study that applied general self-efficacy in the personal finance domain, Chatterjee, Finke, and Harness, (2011), found that general self-efficacy was positively associated with financial asset ownership. The domain-specific concept of financial self-efficacy has been linked to a higher likelihood of investment and savings product ownership (Farrell, Fry, & Risse, 2016). According to Benight and Bandura (2004), self-efficacy can be manifested through human behaviors such as resilience to adversity and perseverance in the face of difficulties. In the present study, my focus was on financial self-efficacy as a resource that individuals can draw upon when they are experiencing financial strain, and the degree to which financial self-efficacy predicted retirement worry.

Calculating Retirement Savings Needs

Mayer, Zick, and Marsden (2011) described calculating retirement savings needs as an essential, yet under-researched activity in the retirement planning process. The authors cited research showing that less than half of US households have attempted calculating their retirement savings needs. The authors suggested that the lack of evidence of the benefits of the retirement savings calculation explains why a majority of US households had not attempted the calculation. This seems plausible. According to Helman and Paladino (2004) in their review of the 2004 Retirement Confidence Survey findings, a "substantial portion" of the 421 individuals (42%) who did the calculation reported obtaining little value from the process. Based on the findings of the 2019 Retirement Confidence Survey, the Employee Benefits Retirement Institute (EBRI) reported that 4 in 10 workers (42%) have attempted the retirement needs calculation (Employee Benefit Research Institute, 2019). The EBRI further

reported that people who have calculated their retirement needs are more likely than those who have not (86% vs. 53%) to report higher overall retirement confidence and also feel less stressed (49% vs. 66%). It seems that while some people report finding no value in calculating their retirement savings needs, others benefit from the calculation.

Only a handful of studies have investigated the benefits associated with calculating the amount of money required for a financially comfortable retirement. Calculating retirement savings needs is associated with increased retirement savings (Bi, Finke, & Huston, 2017; Mayer et al., 2011), attitude toward retirement (Mutran, Reitzes, & Fernandez, 1997), perceived savings adequacy (Hershey, Henkens, & Van Dalen, 2007; Hershey, Henkens, & Van Dalen, 2010), and confidence about having financially comfortable retirement (Kim, Kwon, & Anderson, 2005). Coping strategies that are intended to manage or alter the experience of financial strain are categorized as problem-focused (Lazarus & Folkman, 1984). In the present study, my focus was on the problem-focused strategy of calculating retirement savings needs that individuals experiencing financial strain can adopt, and the degree to which this coping strategy moderated the effect of financial strain on retirement worry.

Foregoing Medical Care

Medical literature (e.g., Ford, Bearman, & Moody, 1999) suggests two types of foregoing medical care: (1) inability to access medical care and (2) purposeful avoidance. Numerous research studies have identified purposeful foregoing medical care as one of the strategies households adopt to improve their financial situation when experiencing financial strain studies (Altice, Banegas, Tucker-Seeley, & Yabroff, 2017; Elder, Conger, Foster, & Ardelt, 1992; Kalousova & Burgard, 2013; Prawitz, Kalkowski, & Cohart, 2013; Yabroff, Zhao, Han, & Zheng, 2019). Hence, the present study identified foregoing medical care because of the cost as a coping behavior that individuals adopt to manage their medical care

when they are experiencing financial strain. A handful of studies have reported a strong association between financial strain and foregoing medical care (Baughman et al, 2015; Bazin, Parizot, & Chauvin, 2005; Elofsson, Unden, & Krakau, 1998). The review of the literature revealed only one study that examined the direct relationship between foregoing medical care and worry. Queen (2009) reported a strong positive association between worry and foregoing medical care. In the present study, my focus was on the problem-focused strategy of foregoing medical care that individuals experiencing financial strain can adopt, and the degree to which this coping strategy moderated the effect of financial strain on retirement worry.

Brief Literature Review

Little empirical research has investigated financial strain as a predictor of retirement worry. In fact, I could only find a handful of studies, that used United States data to establish this relationship. Owen and Wu (2007) reported that financial strain caused older persons to worry about their future retirement income. This longitudinal study was based on a nationally representative sample of older persons in the United States. Another study, based on a nationally representative sample of adults in the United States but with a sample of only working women, reported a positive association between financial strain and worry about running out of money in retirement (Lusardi & de Bassa Scheresberg, 2017). A study based on a sample representative of the German population, found that chronic stress was positively associated with worries about one's financial situation (Grulke et al., 2006). Another study based on data from the United Kingdom, found that financial strain was positively associated with worrying about debt problems (Lenton & Mosley, 2008).

A common theme among the studies in the preceding review, and in the literature on financial worry in general, is that they are atheoretical and descriptive. As such, they lack a theoretical framework within which hypotheses could be developed and tested. While such

studies can contribute to the understanding of a phenomenon (Hambrick, 2007), they cannot, in the absence of a theoretical framework, explain the underlying processes of the phenomenon (Sutton & Staw, 1995). Thus, the extant financial worry literature lacks studies on the psychological mechanisms underlying financial worry (de Bruijn & Antonides, 2019).

Only a few studies have specifically investigated the influence of financial strain on retirement worry, but past studies have found a significant association between stress and normal worry. For example, a few studies have found a positive association between stress and normal worry (Chang, 2000; Iijima & Tanno, 2013; Kelly, 2008; Kelly & Daughtry, 2011; Russell & Davey, 1993; Szabó, 2011).

Research specifically linking mastery and worry about running out of money in retirement has been limited, but a few studies have examined the relationship between mastery and normal worry as well as between mastery and anxiety. Since worry and anxiety are separate but correlated constructs (Davey, 1994; Davey et al., 1992; Gana et al., 2001), results from these studies are relevant for the present study. A sense of mastery has been found to be negatively associated with anxiety (Drentea & Reynolds, 2015; Pudrovska, Schieman, Pearlin, & Nguyen, 2005; Zalta & Chambless, 2012), worry (Zalta & Chambless, 2008), financial stress (Britt, Canale, Fernatt, Stutz, & Tibbetts, 2015; Britt, Mendiola, Schink, Tibbetts, & Jones, 2016) and moderated the adverse effects of financial strain on anxiety (Pudrovska et al., 2005).

Research specifically linking financial self-efficacy and retirement worry has been limited, but past studies have examined the relationship between general self-efficacy and normal worry. Because general self-efficacy beliefs influence domain-specific self-efficacy (Bandura, 1997), results from these studies are relevant for the present study. These studies found that low self-efficacy was associated with high levels of worry (Awang-Hashim, O'Neil Jr, & Hocevar, 2002; Kelly & Daughtry, 2011; Malpass, O'Neil, & Hocevar, 1996).

Research specifically linking calculating retirement savings needs and retirement worry has been limited, but past studies have examined the relationship between calculating retirement savings needs and retirement savings or retirement confidence. Calculating retirement savings needs has been shown to be associated with increased retirement savings (Bi et al., 2017; Mayer et al., 2011), perceived savings adequacy (Hershey et al., 2007; Hershey et al., 2010), and confidence about having a financially comfortable retirement (Kim et al., 2005). Because it is reasonable to assume that most individuals with high retirement savings or high confidence about having a financially comfortable retirement may worry less about running out of money in retirement, these studies established an indirect link between calculating retirement savings needs and retirement worry. Research specifically linking foregoing medical care and retirement worry has been limited. The review of the literature revealed only one study that examined the direct relationship between foregoing medical care and worry. Queen (2009) reported a strong positive association between worry and foregoing medical care.

Theoretical Models of Worry

Because worry independent of generalized anxiety (GAD) disorder is understudied (Ruscio, 2002; Tallis et al., 1994), there is little research on theoretical models of worry (Tallis & Eysenck, 1994). However, worry is integrated into the major theoretical models of generalized anxiety disorder (Behar, DiMarco, Hekler, Mohlman, & Staples, 2009). Although these models provide insights into the development and maintenance of worry, it is from the perspective of the nature of worry in generalized anxiety disorder. As such, these models do not provide the appropriate theoretical framework for investigating the predictors of retirement worry. However, the Cognitive Model of Generalized Anxiety Disorder developed by Wells (1995) provides a description of the process for the development of normal worry that provides useful insights. Another description of the process for the development of

normal worry was provided by Tallis and Eysenck (1994) as part of their cognitive model of the worry process. Although, the present study utilized Tallis and Eysenck's (1994) model of worry as the guiding theoretical framework, a brief overview of the Wells (1995) process of the development and maintenance of normal worry is warranted.

Wells (1995) Model of Worry

Worry is initiated by triggers, negative intrusive thoughts, typically in the form of a 'what if' question; but triggers can also be a negative image or memory (Wells, 1995). For example, after watching a news bulletin about the number of people facing financial difficulties during retirement, an individual may think "what if I run out of money in retirement?" These triggers activate positive beliefs about worrying which in turn initiate worrying in order to cope with perceived threats. Examples of positive beliefs about worrying include beliefs that worry helps to cope with the future, to keep things in control, to be better prepared, or to avoid making mistakes.

The consideration of the 'what if' scenarios is referred to as Type 1 worry, defined by Wells (1995) as "general worries concerned with life events" (p. 304). Thus, Type 1 worry is normal worry, described by Wells (2006) as a "covert coping strategy" (p. 261) characterized by verbal catastrophizing. According to Wells (2006), positive beliefs about worry maintain the Type 1 worry process in which "a range of potential calamities and coping strategies are contemplated" (p. 261). That is, in this process of normal worrying, triggered by the 'what if' question or a negative image, the individual considers a range of potential coping strategies and outcomes. Wells (2006) suggests that this process continues until the individual reaches a state of 'feeling' that they can cope with the perceived threat, or a state of 'knowing' that they have considered all options.

Theoretical Framework

The present study used the Tallis and Eysenck (1994) model of worry to guide the hypotheses and provide a foundation to investigate the predictors of retirement worry. The literature review identified the Tallis and Eysenck (1994) as the only theoretical model on the development and maintenance of worry independent of generalized anxiety disorder. Davis and Montgomery (1997) described this model as comprehensive and supported by results from experimental studies. According to Tallis and Eysenck (1994), their model draws on two concepts from Lazarus and Folkman's (1984) theory of stress and coping: cognitive appraisal and coping. Therefore, I will first provide a brief overview of Lazarus and Folkman's (1984) theory of stress and coping before describing the Tallis and Eysenck (1994) model.

Lazarus and Folkman's (1984) Transactional Theory of Stress and Coping

As described earlier, psychological stress refers to a person-environment relationship that is based on demands and resources (Lazarus, 1990; Lazarus & Folkman, 1984). Stress is experienced when there is a discrepancy between demands and an individual's resources. Central to the transactional theory of stress and coping are two mediating processes: cognitive appraisal and coping. Appraisal is a dynamic cognitive process that consists of two interdependent processes: primary and secondary appraisal. Primary appraisals describe the process of determining the dangers in an encounter while secondary appraisals describe the process of determining the availability of coping resources and options to deal with the danger.

In the primary appraisal, individuals define a specific person-environment relationship in one of three ways: no significance, positive appraisal, or a stressful appraisal with the later divided into harm or loss (already-occurred damage), threat (yet-to-occur damage), and challenge (opportunity for mastery or gain) (Folkman & Lazarus, 1985). According to

Lazarus and Folkman (1984), the determinants of appraisals are personal (i.e., motivational dispositions, goals, values, and generalized expectancies) and situational factors (i.e., predictability, controllability, and imminence of a potentially stressful event). If the person-environment encounter is appraised as threatening, individuals engage in secondary appraisal to determine what resources are required to manage the threats. When perceived demands outweigh perceived resources, the person-environment encounter is appraised as stressful. Consequently, when situations are appraised as stressful, individuals with high perceptions of available resources are more likely to believe that they will be able to cope with perceived demands. Therefore, high perceptions of available resources are an essential part of coping with stress. Lazarus and Folkman (1984) define coping as "the process through which the individual manages the demands of the person-environment relationship that are appraised as stressful" (p. 19). According to Lazarus (1990), the coping processes vary over time in response to changing appraisals (i.e. reappraisals) of the demands imposed by the person-environment encounter.

Folkman and Lazarus (1980) provided a broad framework for understanding the concept of coping by distinguishing two major functions of coping styles: problem-focused coping, which involves directly removing or lessening the effects of stressors, and emotion-focused coping, which involves attempts to regulate the emotional impact of stressors without affecting the stressors. Problem-focused coping strategies are likely to be utilized more often when conditions are appraised as amenable to change whereas emotion-focused coping strategies are more likely to be utilized when there has been an appraisal that nothing can be done to modify the conditions (Lazarus & Folkman, 1984). I will now discuss the Tallis and Eysenck (1994) model of worry.

Tallis and Eysenck's (1994) Model of Worry

The Tallis and Eysenck (1994) model has three stages: (1) threat appraisal, (2) worry activation, and (3) coping, all of which interact to initiate and maintain worry. To worry requires the ability to conceptualize and reason about future events (Vasey, 1993). According to Tallis and Eysenck (1994), in order to worry, a person associates these future events with undesirable outcomes which can be thought of as potential threats to their well-being. Thus, in this model, the initiation of worry is based on two steps: (1) an estimate of the severity of the potential threat (e.g., inadequate income or too much debt) is made (primary appraisal), and (2) an estimate of the coping resources is made (secondary appraisal). If the coping resources are deemed adequate to manage the potential threat, the person may not feel threatened. However, if the coping resources are deemed inadequate, according to this model, the potential threat becomes a perceived threat, and *worry is the mechanism through which the threat is brought to the attention of the person*. According to this model, this process is greatly influenced by perceived self-efficacy. According to this model, the sustained awareness of threats is attributable to poor problem solving and explains the subsequent maintenance of worry. Finally, Tallis and Eysenck (1994), argue that poor problem-solving manifests through the failure to select an appropriate coping strategy which preserves threats, and as a consequence worry will persist until the threats are addressed.

In sum, Tallis and Eysenck's (1994) model of worry proposes that threats (primary appraisal) are evaluated against coping resources (secondary appraisal), and if the coping resources are deemed inadequate, worry is initiated, and persists until the threat is addressed through the selection of coping strategies. The Tallis and Eysenck (1994) model of worry has several attractive features. First, the initiation of worry is central to the model. Second, the model incorporates key concepts from Lazarus and Folkman's (1984) theory of stress and

coping which allows it to capture worry as a person-environment transaction (Lazarus & Folkman, 1984). Finally, the model provides parsimonious explanations of the worry process.

Research Purpose and Questions

The primary purpose of the present study was to determine the degree to which financial strain predicted retirement worry. The secondary purpose was to determine the degree to which financial resources (i.e., household income, health insurance coverage, IRA/Keogh plans, short-term savings, employer-sponsored retirement plans), personal resources (i.e., objective and subjective financial knowledge, financial self-efficacy, and financial mastery), and coping strategies (i.e., calculating retirement savings needs and foregoing medical care) predicted retirement worry. Based on a strong theoretical foundation, the present study sought to answer the following research questions. The long list of research questions indicates that retirement worry research is still in its infancy with limited knowledge of the predictors of retirement worry.

1. Is financial strain a significant predictor of retirement worry?
2. Are financial resources significant predictors of retirement worry?
3. Are personal resources significant predictors of retirement worry?
4. Are coping strategies significant predictors of retirement worry?
5. Does calculating retirement savings needs moderate the relationship between financial strain and retirement worry?
6. Does foregoing medical care moderate the relationship between financial strain and retirement worry?

Hypotheses

The hypotheses tested in the present study investigate the associations financial strain, financial resources, personal resources, and coping strategies have with retirement worry. Specifically, to answer the above-mentioned research questions, the present study addressed

the following hypotheses, with the Tallis and Eysenck's (1994) model of worry serving as the theoretical framework.

Primary Appraisal

H1: There is a positive relationship between financial strain and retirement worry.

Secondary Appraisal: Financial Resources

H2: There is a negative relationship between household income and retirement worry.

H3: There is a negative relationship between having health insurance coverage and retirement worry.

H4: There is a negative relationship between short-term savings and retirement worry.

H5: There is a negative relationship between IRA/Keogh plan ownership and retirement worry.

H6: There is a negative relationship between employer-sponsored retirement plan ownership and retirement worry.

Secondary Appraisal: Personal Resources

H7: There is a negative relationship between objective financial knowledge and retirement worry.

H8: There is a negative relationship between subjective financial knowledge and retirement worry.

H9: There is a negative relationship between financial self-efficacy and retirement worry.

H10: There is a negative relationship between financial mastery and retirement worry.

Secondary Appraisal: Coping strategies

H11: There is a negative relationship between calculating retirement savings needs and retirement worry.

H12: There is a positive relationship between foregoing medical care and retirement worry.

H13: The relationship between financial strain and retirement worry is moderated by calculating retirement savings needs.

H14: The relationship between financial strain and retirement worry is moderated by foregoing medical care.

Population of Interest

Because worry (Davey et al., 1992; Tallis et al., 1994) and stress (Lazarus & Folkman, 1984; Selye, 1973, 1976) are experienced by nearly everyone, the population of interest was nonretired households with respondents aged 18 to 64. Furthermore, the experience of retirement may influence retirement worry, hence the focus on nonretired households. Also, individuals working past age 65 are likely to be receiving retirement benefits but still working for pay. This phenomenon is referred to as "bridge employment" (Dingemans, Henkens, & Solinge, 2016) and may influence retirement worry, hence individuals working past age 65 are excluded from the population of interest. The survey data used for this study came from the 2018 National Financial Capability Study (NFCS). The goal of the NFCS is to monitor and better understand financial capability in the US (Mottola & Kieffer, 2017). The 2018 data was collected cross-sectionally and was weighted to be representative of each state. The 2018 NFCS included 27,091 U.S. adults older than 18 years.

Potential Implications

Research on retirement worry is important for policy, research, and practice. Policymakers are increasingly taking life satisfaction as a meaningful indicator of social progress alongside gross domestic product (GDP) per capita (Hicks, Tinkler, & Allin, 2013; Stiglitz, Sen, & Fitoussi, 2009; Veenhoven, 2008). Financial worry is an important subjective indicator of financial well-being (Garðarsdóttir & Dittmar, 2012; Joo, Sohyun, 2008;

Salignac et al., 2019; Tay et al., 2017; Vlaev & Elliott, 2014), and financial well-being is an important component of overall life satisfaction (Cummins, 1996; Diener & Oishi, 2000; Easterlin, 2006; Flanagan, 1978; van Praag, Frijters, & Ferrer-i-Carbonell, 2003; Wan & Zhao, 2018). Therefore, more research on financial worry will assist policymakers in their efforts to use life satisfaction as one of the measures for social progress.

From a practice perspective, because financial well-being is the target outcome for financial planning (CFP Board, 2017), it is important that practitioners understand the concept of retirement worry for practice. Also, for practitioners, understanding the concept of retirement worry may have implications for interventions which promote effective coping strategies for financial strain and retirement worry as part of holistic financial planning.

From a clinical perspective, excessive worry about one's financial situation maybe a symptom of disordered money behaviors, defined as "as maladaptive patterns of financial beliefs and behaviors that lead to clinically significant distress, impairment in social or occupational functioning, undue financial strain or an inability to appropriately enjoy one's financial resources" (Klontz, Bivens, Klontz, Wada, & Kahler, 2008, p.29). An understanding of the concept of retirement worry may help financial mental health professionals to adapt or tailor their therapeutic approach to client levels of retirement worry.

Summary

The primary purpose of the present study was to determine the degree to which financial strain predicted retirement worry. The secondary purpose was to determine the degree to which financial resources, personal resources, and coping strategies predicted retirement worry. The previous literature has primarily examined the influence of financial stress on outcomes such as financial satisfaction, financial well-being, physical health, or psychological health. To date, there has been little research on the relationship between financial strain and retirement worry. This study sought to fill that gap and add to the sparse

literature on retirement worry. Tallis and Eysenck's (1994) model of worry served as the theoretical framework for the study. Utilizing data from the 2018 National Financial Capability Study, the present study used hierarchical partial proportional odds cumulative logistic regression to investigate the degree to which financial strain, financial resources, personal resources, coping strategies, and "coping strategy × financial strain" interactions predicted retirement worry. The results from the present study should be of interest to policymakers, researchers and financial and mental health professionals. The next chapter provides: (1) a comprehensive review of the sparse financial worry literature, (2) a selective review of relevant studies from the vast worry literature, and (3) an in-depth discussion of the Tallis and Eysenck (1994) model of worry.

Chapter 2 - Theoretical Framework and Literature Review

Introduction

This study is based on Tallis and Eysenck's (1994) model of worry and Barlow's (2004) definition of worry. As discussed earlier, the Tallis and Eysenck's model utilizes the appraisal and coping concepts from Lazarus and Folkman's (1984) transactional theory of stress and coping while Barlow's (2004) loose definition of worry as a focus on potential future threat and on the resources available to cope with that threat captures the fundamental aspect of worry as an anticipatory process relating to future threats. This aspect of worry is a common theme in the three definitions of worry discussed in Chapter 1.

Because the primary goal of the study was to investigate the degree to which financial strain predicted retirement worry, and the secondary goal was to investigate the degree to which financial resources, personal resources, and coping strategies predicted retirement worry, this chapter will review literature related to both financial and retirement worry. Furthermore, an in-depth discussion of retirement worry through the lens of the Tallis and Eysenck (1994) model is undertaken.

There has been little research on both financial and retirement worry. A fundamental problem with much of this limited literature is its failure to utilize a theoretical framework for examining these concepts. In addition, while providing a foundation for this study through identifying some correlates of financial and retirement worry, past studies have suffered from lack of diverse samples and small sample sizes. The present study attempts to fill the gaps in literature by investigating the concept of retirement worry using the Tallis and Eysenck (1994) model of worry as the theoretical framework and taking advantage of a new question on retirement worry that was added to the 2015 National Financial Capability Study, a large national data set.

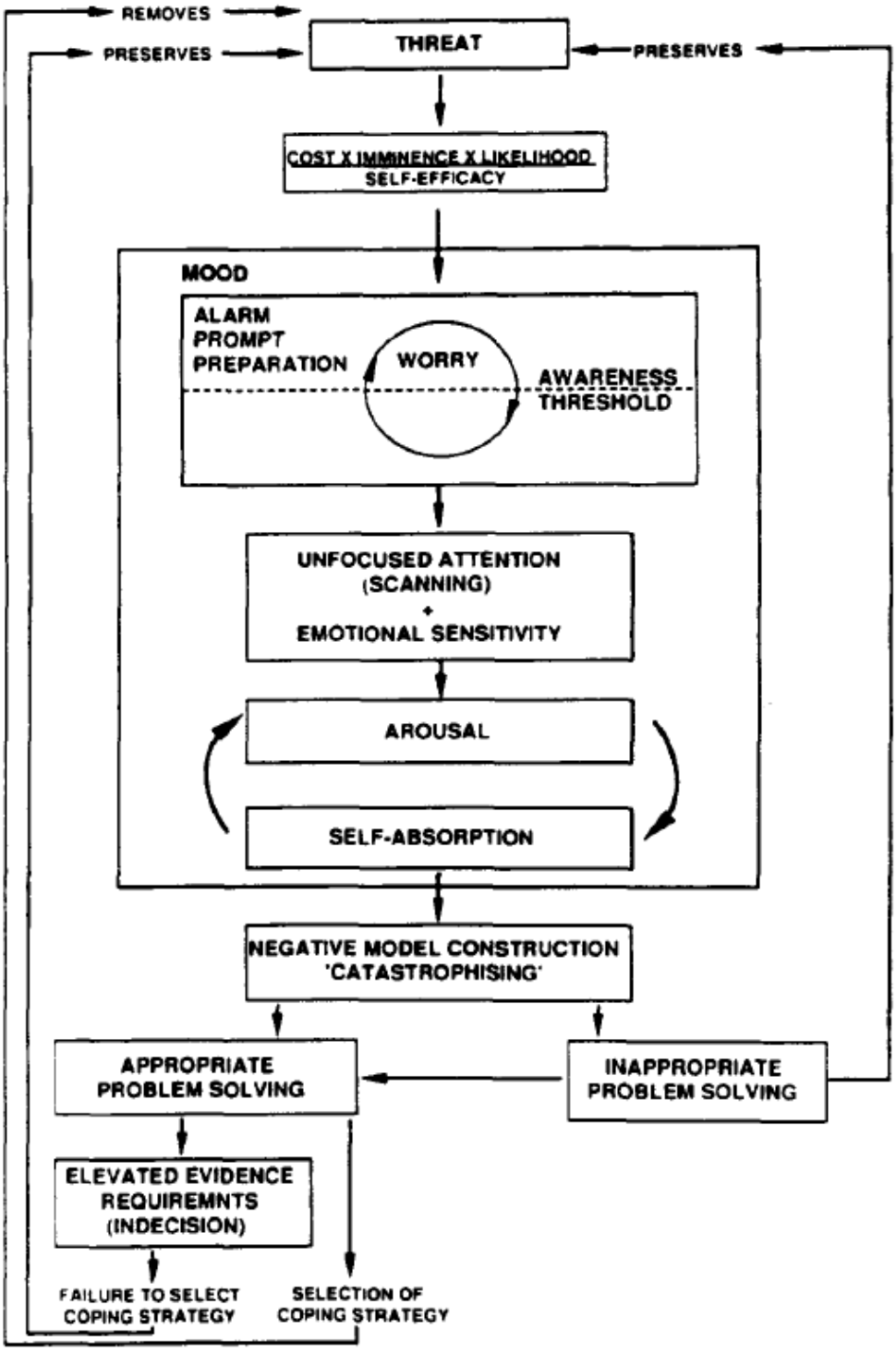
Theoretical Framework

Tallis and Eysenck's (1994) model of worry (see Figure 2.1) provided the theoretical framework for the present study. The application of Tallis and Eysenck's model to retirement worry provides a framework not only for examining how financial strain influences retirement worry but also for conceptualizing the mechanism underlying retirement worry. This model states that worry is activated when the severity of a perceived threat exceeds the estimated coping resources. I will now provide an explanation of the model, including its main concepts to promote a better understanding of its application in the present study. Because the model utilizes constructs from Lazarus and Folkman's (1984) stress theory, I will also provide the most relevant explanations of these constructs in relation to Tallis and Eysenck (1994) model. The model has three stages: threat appraisal, worry activation, and coping.

Threat Appraisal

There seems to be a consensus on the definition of threat among researchers. Lazarus (1993a) defined threat as "the anticipation of harm that has not yet taken place but maybe imminent" (p. 5). Lazarus and Folkman (1984) defined threat as "harms or losses that have not yet taken place but are anticipated" (p. 32). Lastly, Tallis and Eysenck (1994) defined threats as "anticipated events, associated with the violation of one or more goals" (p. 38). Common to these definitions are these attributes of threat: potential, future-oriented, negative cognitive perception, and negative affective emotions (Scholtz, 2000).

Figure 2.1. Pictorial Representation of the Tallis and Eysenck (1994) Model of Worry.



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Threats originate from the external environment (e.g., being reminded of an upcoming bill) or within the individual (e.g., remembering to pay an outstanding bill) (Lazarus, 1993), and individuals anticipate threats through cognitive appraisal (Lazarus & Folkman, 1984). Because the cognitive appraisal process is complex, threats are influenced by several related factors. An individual's commitments and beliefs work interdependently with situational demands (e.g., paying bills or mortgage payments) to create the potential for threat (Lazarus & Folkman, 1984). The perception of threat depends on an event's "novelty, predictability, clarity of meaning, and temporal factors such as imminence, timing, and duration" (Lazarus, 2001, p. 45).

Cognitive appraisal is an evaluation of what is happening and its significance for one's well-being. According to Lazarus and Folkman (1987), cognitive appraisal addresses the question "What does it mean for me personally?" (p. 145) and consists of primary and secondary appraisals. Referring to the appraisals as "primary" or "secondary" does not imply that primary appraisal necessarily precedes secondary appraisal in time; instead, primary appraisal is "primary" because it establishes the personal relevance of the person-environment encounter (Lazarus, 2001; Smith & Lazarus, 1990). In fact, for a perceived threat, Lazarus (1999) suggests that a person may simultaneously make a primary and a secondary appraisal to cope with the threat.

Primary appraisal is the process of assessing the impact of the situation or event on one's well-being. The secondary appraisal is concerned with evaluating what actions the individual can take to address the appraised threat, and if so, which coping strategies might work. Primary and secondary appraisal are not separate processes; instead, they are interdependent and influence each other and the perception of the situation or demand placed on an individual (Lazarus & Folkman, 1984; Lazarus, 2001).

According to Lazarus and Folkman (1984), there are three types of primary appraisal: challenge, threat, and harm/loss. Because threat is the type of primary appraisal most directly related to worry, Tallis and Eysenck (1994) only consider the primary appraisal of threat, referring to it as "an estimate of threat significance" (p. 39). They propose that the primary appraisal is determined by three factors: cost, imminence, and likelihood.

Tallis and Eysenck posited that individuals determine the cost of a potential threat by considering three factors: the number of goals threatened, the importance of each goal, and the degree to which the goals can be attained after the threatened event has occurred. The imminence of threat is the second consideration in the primary appraisal of threat, with an imminent threat considered more severe than a threat perceived to be distant. The third consideration is the likelihood of a threat occurring, with high severity attached to threats perceived as more likely. Consider, the threat of foreclosure to the major life goal of homeownership among most Americans (Rohe, Van Zandt, & McCarthy, 2002). Such a threat with the potential to affect a major goal, and that is likely to occur, typically within a few months will be assigned a high level of severity. In sum, during the primary appraisal of a threat, the severity attached to the threat depends on the estimates of cost, imminence, and likelihood.

After the primary appraisal of a threat and its attached severity, the appraisal process shifts to the secondary appraisal stage that "concerns the person's resources and options for coping with the encounter" (Smith & Lazarus, 1990, p. 618). During the secondary appraisal, if coping resources are deemed adequate, even if a threat was assigned high severity, it remains a potential threat. Only when coping resources are deemed inadequate, does a high severity threat become a perceived threat. In such a case, according to the model, worry is the mechanism that brings the perceived threat to the attention of the individual. A useful conceptualization of this secondary appraisal process is provided by Bandura's (1998)

description of threat as "a relational property concerning the match between perceived coping capabilities and potentially hurtful aspects of the environment" (p. 78).

In summary, according to the model, a perceived threat in relation to perceived lack of resources (e.g., perceived self-efficacy) during the secondary appraisal triggers worry. Tallis and Eysenck's (1994) model that provides a mechanism by which threat appraisals trigger worry is supported by evidence linking threat appraisals to worry and anxiety (e.g., Folkman & Lazarus, 1985; Folkman & Lazarus, 1988a; Skinner & Brewer, 2002).

Tallis and Eysenck (1994) proposed that perceived self-efficacy was a significant (and primary) determinant of worry, and further suggested that perceived self-efficacy moderated the emotional impact of perceived threats. Tallis and Eysenck (1994) used the concept of self-efficacy in a limited sense to refer to the capacity to cope with life problems that provoke anxiety. However, they suggested that a broader definition of self-efficacy would still apply to their model.

The influence of perceived self-efficacy in the secondary appraisal was highlighted by Bandura (1998) as follows: "to understand people's appraisals of external threats and their affective reactions to them it is necessary to analyze their judgments of their coping capabilities" (p. 78). Lazarus (2001) also highlights this influence by giving the following examples of questions that are addressed during the secondary appraisal "Which option is best? Am I capable of carrying it out?" (p. 43). Substantial evidence exists that self-efficacy is an important factor during stress appraisals and can be viewed as a coping resource (e.g., Bandura, 1988; Bandura, 1992; Hevey, Smith, & McGee, 1998; Jerusalem & Schwarzer, 1992; Jerusalem & Mittag, 1995).

Although Tallis and Eysenck (1994) focused only on the role of self-efficacy during the secondary appraisal, in this appraisal stage, individuals identify various personal resources to utilize in addressing the perceived threat from the environment (Lazarus &

Folkman, 1984). Personal resources include "generalized beliefs" such as locus of control, general self-efficacy, trait anxiety, and self-esteem (Jerusalem & Schwarzer, 1992), and financial means, social and problem-solving skills, health, and energy (Folkman & Lazarus, 1988b). It is important to note that, it is the perceived personal resources in relation to the perceived threat that determines the outcome of the secondary appraisal stage (Jerusalem & Schwarzer, 1992; Lazarus & Folkman, 1984).

Worry Activation

The second stage of the Tallis and Eysenck's model focuses on the activation and maintenance of worry as well as the functions of worry. According to this model, worry has three main functions that facilitate the automatic entry of negative information into an individual's awareness: alarm, prompt, and preparation. The alarm function notifies the individual that a threat has been detected. If the individual ignores the threat, the prompt function as the name suggest, prompts the individual through threat-laden images and thoughts, that there are unresolved threats. The preparation function motivates the individual to seek available coping strategies that reduce perceived threat (Matthews & Funke, 2006), as well as to anticipate and prepare for threats (Brosschot et al., 2006). Despite these adaptive functions of worry, Tallis and Eysenck (1994) highlight three maladaptive consequences of worry: (1) unfocused attentional style, (2) high sensitivity to emotional information, and (3) increased arousal which leads to self-absorption. According to this model, the primary and secondary appraisals, together with the maladaptive functions of worry produce a negative mood state and contribute to the initial maintenance of worry.

Coping

The last stage of the Tallis and Eysenck (1994) model considers the maintenance of chronic worry. This stage affords centrality to ineffective problem-solving. Perhaps, unsurprisingly given that various researchers identify the main function of worry as an

attempt to engage in mental problem solving (Borkovec et al., 1983; Davey, 1994; Wells, 1999). According to Tallis and Eysenck (1994), ineffective problem-solving accounts for the preservation of threat perceptions and consequent worry. Thus, only the selection and implementation of effective problem-solving can address the threat and terminate worry. Tallis and Eysenck (1994) suggested four factors that interfere with effective problem-solving, and thus contribute to chronic worry: (1) a negative mood state, (2) the worry activation process interfering with thinking required for effective problem-solving, (3) excessive focus on a negative future that hampers finding solutions, and (4) failure to select an appropriate coping strategy. The notion that worry interferes with effective problem solving through the selection of inappropriate coping strategies is supported by Lazarus (1999) who suggested that for threats perceived as beyond personal control, people tend to adopt emotion-focused (e.g., minimizing threat, seeking emotional support, wishful thinking, self-blame), rather than problem-focused coping strategies (e.g., planning, seeking advice, taking action).

Coping is a dynamic process of cognitive and behavioral efforts to manage psychological stress (Lazarus & Folkman, 1984; Lazarus, 2001). Coping represents how individuals deal with specific stressors in a particular context, as the person-environment transaction evolves over time; is influenced by person and situation variables, stressors, personal resources, and the appraisal process; and serves two functions: managing emotional distress (emotion-focused coping), and altering the situation that is causing distress (problem-focused coping) (Folkman, Lazarus, Dunkel-Schetter, DeLongis, & Gruen, 1986). People use both functions of coping to manage stress (Folkman et al., 1986; Folkman & Lazarus, 1988b; Lazarus, 2001), with each function playing an important role in the total coping effort (Lazarus, 2001). Although the term coping implies effectiveness, actions taken to deal with stressors or their impact may unintentionally worsen the situation (Pearlin & Bierman, 2013).

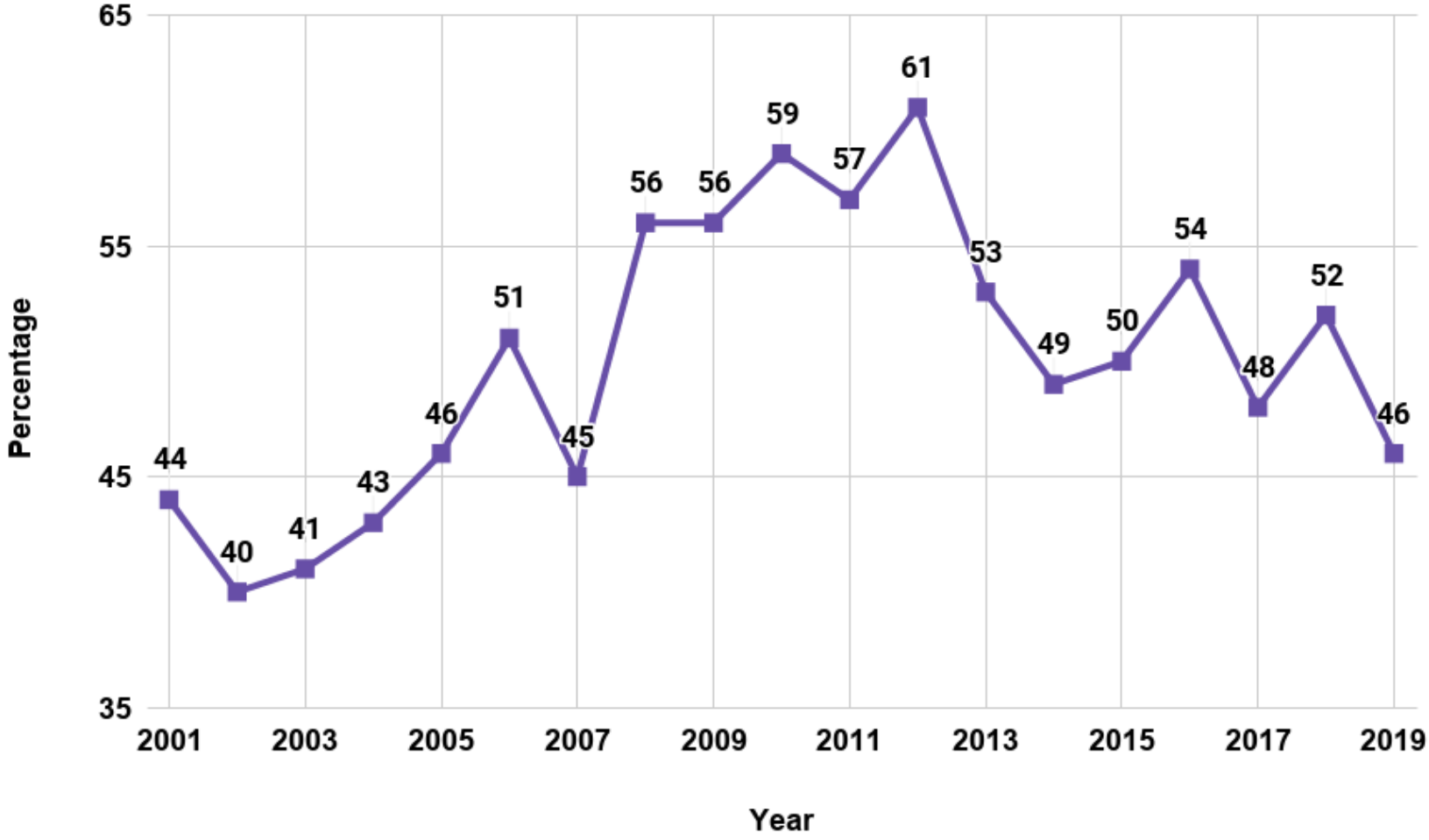
The efficacy of a coping strategy is determined by factors such as the person involved, the threat, the stage of the stressful encounter, and the impact on long-term outcomes such as subjective well-being, social functioning, or somatic health (Lazarus, 2001). It is important to note that some researchers have suggested that the problem-focused versus emotion-focused dichotomy oversimplifies the construct of coping. For example, Skinner, Edge, Altman, and Sherwood (2003) proposed that the problem-focused versus emotion-focused dichotomy be replaced by 12 core families of coping that represent a broader array of strategies people use to deal with stress.

To sum up, Tallis and Eysenck's (1994) model of worry describes the initiation and maintenance of normal worry. In this model, threat evaluation is relatively automatic and considers imminence, likelihood, and cost in relation to coping resources with perceived self-efficacy moderating the emotional impact of threats. Furthermore, worry is only initiated if the outcome of the secondary appraisal is that the individual's coping resources, primarily perceived elf-efficacy, are inadequate to the demands of the perceived threat. Finally, chronic worry is maintained by ineffective problem-solving. It is important to note that although Tallis and Eysenck's (1994) model presented the primary, secondary and coping stages as a linear sequence, these processes are dynamic because of the ongoing appraisals and reappraisals of the person-environment encounter (Folkman & Lazarus, 1988b).

Overview of Financial Worry

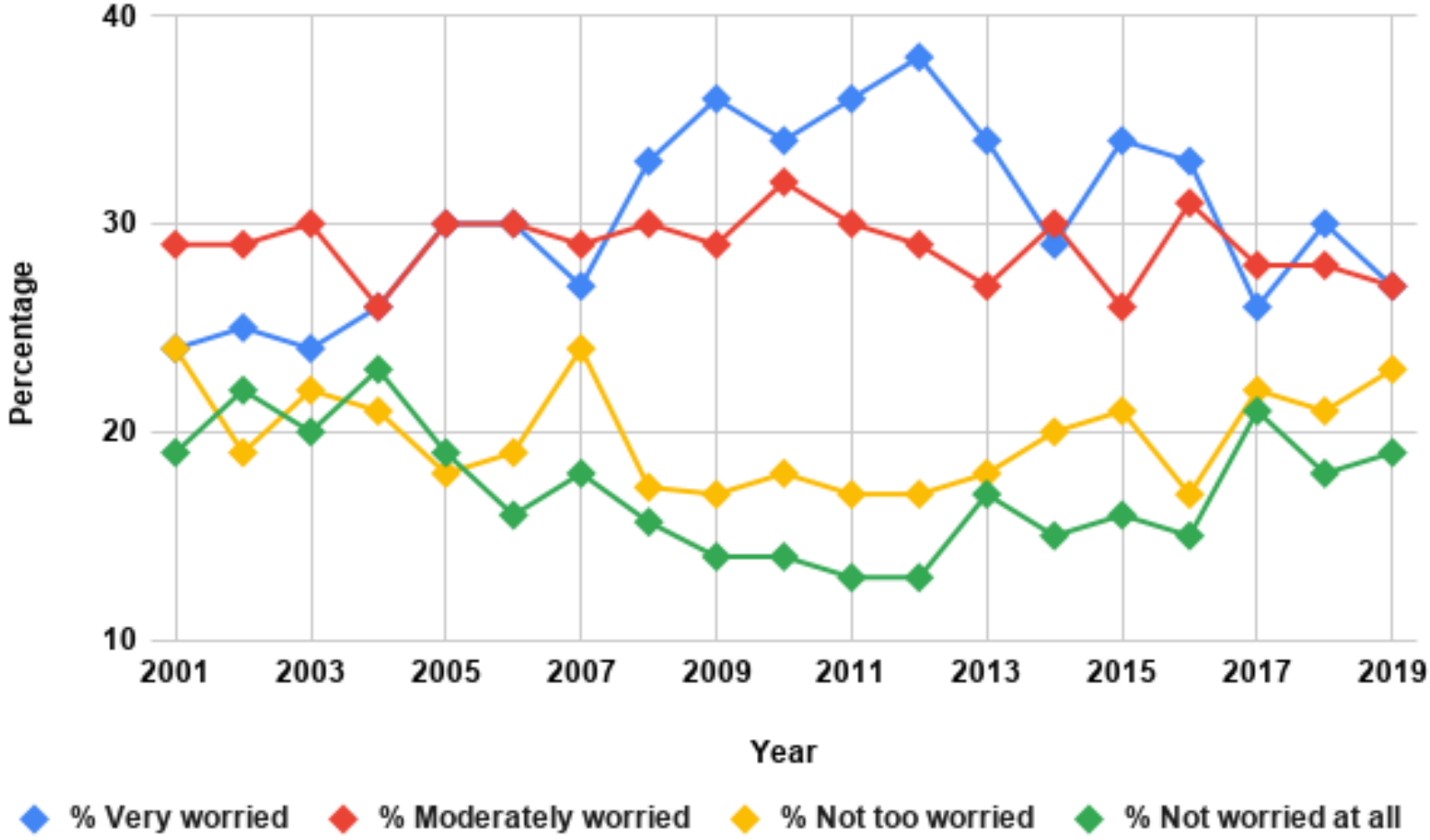
As shown Figure 2.2, financial worry is pervasive among Americans. Gallup has tracked Americans' levels of financial worry since 2001. The annual Gallup poll has identified "not having enough money for retirement" (i.e., retirement worry) as Americans' number one financial worry for every single year since polling on the issue started 18 years ago (Gallup, 2018a, 2018b, 2019). Figure 2.3 shows the percentage of Americans who reported various levels of retirement worry since polling on the issue began in 2001.

Figure 2.2. Percentage of Americans Reporting High or Moderate Financial Worry.



Note. This figure is based on data from Gallup (2018b) and Gallup (2019).

Figure 2.3. Percentage of Americans Worried About Not Having Enough Money for Retirement.



Note. This figure is based on data from Gallup (2018b) and Gallup (2019).

Nine financial worry studies are summarized in Table 2.1. The literature that was reviewed revealed that the majority of studies treated financial worry as an independent variable in models that predict outcomes such as life satisfaction, health behavior, financial well-being, psychological well-being, and financial behavior. Tallis et al. (1992) attributed the earlier neglect in the study of worry to lack of consensus on the definition and difficulty in measurement. These same factors might be the reasons for the scant literature on financial worry as the outcome variable.

According to Pedhazur and Schmelkin (2013) the four criteria for construct validation are construct definition, item content, method of measure and scoring procedure. Based on these criteria, a few observations can be made from the studies in Table 2.1. First, although a definition could be implied, only one study provided an explicit definition of financial worry. Meuris and Leana (2018) defined financial worry as worry about one's financial situation. According to Locke (2007) clearly defining a concept is important for two reasons: (1) it differentiates the concept from other concepts, and (2) it allows for valid measurement of the concept. Second, there is substantial variations in the operationalization of the concept of financial worry through use of different items that share the same name (e.g., financial worries index). Furthermore, unlike, for example the Gallup Financial Worries Index which has broad worry content, the content of both the single and multi-item measures seem to be context specific for the studies and in general, appear not to cover the major financial worries that can be experienced in a person's everyday finances. This diversity in item content indicates that the concept of financial worry may be better understood by examining its sub-concepts such as: worry about debt, worry about not being able to pay monthly expenses, worry about not being able to pay rent, mortgage or other housing costs, worry about not having enough money to pay for your children's college, and worry about retirement income.

Table 2.1 Summary of Research on Financial Worry

Study	Worry about…	Operational Definition	Sample Characteristics	Statistical Method	Key Independent Variables
Rohwedder (2006)	Retirement income adequacy	The question is from the 2000 Health and Retirement Study (HRS). For completely retired respondents, the question reads "Now for things that some people say are bad about retirement. Please tell me if, during your retirement, they have bothered you a lot, somewhat, a little, or not at all. Not having enough income to get by." For not-completely-retired respondents, the question reads "Now for things that worry some people about retirement. Please tell me if they worry you a lot, somewhat, a little, or not at all. Not having enough income to get by." 1992 - 2004 HRS	Age of 50 or above *N* = 1,314 Mean age = 57.8 Female (52.1%) Married/partnered (75%)	Logit model	(+) age (59-61), age (<59), poor health, feeling lonely (-) wealth, married, highest income quartile
Owen & Wu (2007)	Retirement income adequacy	HRS question 1992-1994 HRS	Age of 50 or above *N* = 1,327 (Singles) *N* = 2,087 (Married men) *N* = 2,886 (Married women) Singles mean age (55.96) Husband mean age (57.51) Wife mean age (53.47)	Ordered Probit model	(+) financial shock

(continued)

Study	Worry about…	Operational Definition	Sample Characteristics	Statistical Method	Key Independent Variables
Lenton & Mosley (2008)	Debt	UK Families and Children Survey (FACS) question 2003-2005 FACS "Do you worry about debt problems?" The responses were: "always," "often," "seldom," and "never."	*N* = 5,692 Mean age = 39.4 Male (1%) Couple (73%) Non-white (8%)	Probit model	(+) nonwhite, number of children, debt/assets ratio, credit card debt, bill debt, house arrears, high credit, poor health (-) age, male, couple, low credit, household income, number of hours worked
Hershey et al. (2010)	Retirement income adequacy	European Social Survey (ESS) question 2005 ESS "Are you worried that your income in old age will not be adequate to cover your later years?" The responses were on a 11-point scale: "0 = not at all worried," to "10 = extremely worried."	*N* = 21,416 Mean age = 40.2 Female (49.0%)	OLS	(+) age, gender, health status, income adequacy, future time perspective, hours worked per week (-) education, planning effect
Litwin & Meir (2013)	Financial situation	Five items were used to assess respondents' financial worries: (1) "You will not be able to buy newspapers, books or cable subscriptions," (2) "You will not be able to pay your housing utility bills," (3) "You will become financially dependent on someone else," (4) "You will not know how to manage your pension funds," and (5) "Your pension funds will not suffice for your entire life." The responses were: "0 = not worried at all," "1 = somewhat worried," and "2 = very worried." An index was created (Cronbach's alpha = .90).	*N* = 550 Age of 65 or above Mean age = 74.5 Male (43.3%) Married (62.8%) Jews (72.4%) Arabs (8.1%) Russians (19.5%)	OLS	(+) concern will lack caregiver, concern about having to care for other, concern you will forget important things, concern you will be unable to make decisions (-) age, perceived income adequacy
Tay et al. (2017)	Money	Two items were used to assess financial worry on a five-point scale from ''strongly agree'' to ''strongly disagree'': ''In the last 7 days, I have worried about money,'' and ''I have enough money to do everything I want to do.'' An index was created (Cronbach's alpha = .61).	*N* = 2,781 Age of 18 or older Male (57%) Unmarried (51%)		(+) student loan amount, gender (-) marital status employment status household income

(continued)

Study	Worry about…	Operational Definition	Sample Characteristics	Statistical Method	Key Independent Variables
Lusardi & de Bassa Scheresberg (2017)	Retirement income adequacy	2015 National Financial Capability Study question "On a scale from 1 to 7, how strongly do you agree with the following statement? 'I worry about running out of money in retirement.'" The responses were: "1 = strongly disagree," "4 = neither agree nor disagree," and "7 = strongly agree."	*N* = 6,542 Working women White (69.6%) Asian (5.4%) Black (11.1%) Hispanic (9.8%) Other (4.2%) Single (28.5%) Couple (55.5%)	OLS	(+) Age, single, at least one child, unexpected drop in income, no health insurance, at least two sources of long-term debt (-) basic financial literacy, race (Black), race (Other), self-employed, at least bachelor's degree, income($75-$100k), income($100-$150k), income(>$150K), owns a home
Meuris & Leana (2018)	Financial situation	Four items were used to assess respondents' financial worries: (1) "How often have you been worried about your financial situation?" (2) "How often have you felt satisfied with your financial situation (R)?" (3) "How often have you felt overwhelmed by your financial obligations?" and (4) "How often do you feel that you do not have enough money?" The responses were: "1 = Never," and "5 = Always." An index was created (Cronbach's alpha = .85).	*N* = 1,649 Fill-time truck drivers Mean age = 48	OLS	(+) dependents (-) financial resources (i.e., household income, emergency savings, credit availability) life satisfaction
Kiso, Rudderow, & Wong (2019)	Retirement income adequacy	A single item was used to assess respondents' retirement worry. "How worried are you about adequately financing your retirement?" The responses were: "1 = not at all worried" and "5 = extremely worried."	*N* = 466 Mean age = 39.1 Male (72%)	OLS	(+) number of children, metacognition, childcare financial stress, negative work to family spillover, child as a financial burden (-) female, income, goal clarity

Third, six out of the nine studies utilized single Likert-type items to measure financial worry while the remainder utilized multiple items and created financial worry indexes with the reported Cronbach's alpha ranging from .61 to .90. Finally, in all the studies the instrument scoring procedure was provided explicitly (e.g., a low score means low levels of financial worry) or could be implied.

Taken together, these studies show that in the absence of an agreed-upon definition and operationalization of financial worry, it is imperative that researchers clearly explain their choices of items to measure financial worry and provide justifications for choices made on both conceptual and empirical grounds. The dependent variable for the present study is retirement worry, defined as worry about running out of money in retirement, and in the absence of a standardized measure in the dataset, was operationalized through the only statement about worry in the dataset ("I worry about running out of money in retirement").

Review of Empirical Findings

Primary Appraisal: Perceived Threat

Lazarus and Folkman (1984) identified threat, harm/loss, and challenge as the three types of primary appraisals. Of the three, threat is the primary appraisal type most directly related to worry (Tallis & Eysenck, 1994). Thus, for this study primary appraisal was operationalized as financial strain, a threat to an individual's financial situation including the ability to meet ongoing financial responsibilities (Aldana & Liljenquist, 1998; Northern et al., 2010) and being able to maintain the current standard of living in retirement. In addition, the threat element of financial strain is captured in Pearlin and Schooler's (1978), definition of persistent life strains as "enduring problems that have the potential for arousing threat" (p. 3). The literature review revealed that following the seminal paper of Pearlin et al. (1981), most researchers use measures

of financial strain that are based on items that capture the presence of some difficulty associated with inadequate financial resources in people's daily lives. Table 2.2 shows studies that have used measures of financial strain similar to those used in the present study.

Lazarus (1990) stated that measurement of stress must be theory-based and identified three measurement issues that stem from the view of stress as a person-environment transaction. First, subjective measures are ideal since stress is defined in terms of subjective appraisals. Second, daily hassles, defined as the mundane stressful transactions of everyday living (Kanner, Coyne, Schaefer, & Lazarus, 1981), provide better measures of stress than life events. Finally, the source as well as the intensity of stress should be measured. The literature review focused on studies that utilized financial strain measures that met Lazarus' (1990) criteria for stress measures.

Another measure of financial strain that is not reflected in Table 2.2 is the concept of 'just getting by financially.' For example, the Federal Reserve Board's 2018 Survey of Household Economic Decision-Making (SHED) has an item that assesses a respondent's perceived financial situation ("Overall, which one of the following best describes how well you are managing financially these days?"). The response options are: 4 = "Living comfortably," 3 = "Doing okay," 2 = "Just getting by," and 1 = "Finding it difficult to get by." Based on Aldana and Liljenquist's (1998) definition of financial strain as the subjective assessment of income as inadequate relative to needs, the individuals who report 'just getting by' and 'finding it difficult to get by' would be classified as experiencing financial strain. The Personal Financial Wellness Scale (Prawitz et al., 2006) also has a similar item ("How frequently do you find yourself just getting by financially and living paycheck to paycheck?"). The response options are: 1 = "All the time," 4 = "Sometimes," 7 = "Rarely," and 10 = "Never."

Table 2.2 Measures of Financial Strain

Difficulty in paying bills	Financial Fragility*	Large and unexpected drop in income	Perceived over-indebtedness	Unpaid medical debt	Contact by debt/bill collector
Pearlin et al. (1981)	Northern et al. (2010)	Elder et al. (1992)	Varcoe (1990)	Kalousova & Burgard (2013)	Hill (1994)
Varcoe (1990)	Lusardi, Schneider, & Tufano (2011)	Woodyard & Robb (2016)	Drentea & Lavrakas (2000)	Karpman & Caswell (2017)	Buddin & Do (2002)
Northern et al. (2010)	Woodyard & Robb (2016)	Woodyard et al. (2017)	Northern et al. (2010)	Hasler et al. (2018)	Skinner, Zautra, & Reich (2004)
Woodyard & Robb (2016)	Lusardi & de Bassa Scheresberg (2017)	Lusardi & de Bassa Scheresberg (2017)	Woodyard & Robb (2016)	Kim & Chatterjee (2019)	Northern et al. (2010)
Woodyard, Robb, Babiarz, & Jung (2017)	Hasler, Lusardi, & Oggero (2018)	Hasler et al. (2018)	Lusardi & de Bassa Scheresberg (2017)	Robb et al. (2019)	Thorne (2010)
Robb, Chatterjee, Porto, & Cude (2019)	Robb et al. (2019)	Robb et al. (2019)	Hasler et al. (2018)	Yabroff, et al (2019)	Robb et al. (2019)

Note: *Fragility is the ability to come up with money for emergency expenses within a short period (Hassler et al., 2018).

A review of the literature identified a few studies that established a relationship between financial strain and financial worry. In a sample based on the 1992 and 1994 waves of the Health and Retirement Study, financial shock, as measured by large unexpected expenses or events that made it very difficult to meet financial goals, was positively associated with financial worry, measured by worry about not having enough income to get by in retirement (Owen & Wu, 2007). Similarly, in a study of working women, using data from the 2015 National Financial Capability Study, Lusardi and de Bassa Scheresberg (2017) established a positive association between experiencing an unexpected drop in income and worry about running out of money in retirement. Using data from the United Kingdom's National Families' and Children's Survey, Lenton and Mosley (2008) examined the determinants of worry about debt. Subjective financial strain was measured by bill debt (i.e., arrears on bills) and house arrears (i.e., arrears on mortgage payments). Both bill debt and house arrears were positively associated with worry about debt. Kiso et al. (2019) found a positive relationship between childcare financial stress and retirement worry. Childcare financial stress was measured by a single item: "To what extent has providing childcare coverage been a serious or stressful problem for you during this current (or most recent) school year?" The four-point rating for the responses ranged from "1 = not at all serious/stressful" to "5 = very serious/stressful."

Because of the limited studies that established the relationship between financial strain and financial worry, a broader literature review was performed to identify studies that examined the relationship between stress and normal worry. In a study with 100 undergraduate and postgraduate university students, Russell and Davey (1993) found a significant positive relationship between stress and worry. In this study, stress was measured by the l0-item Student Worry Scale (Davey et al., 1992) which estimated normal worry among students using 10 worry domains including financial concerns. Stress was measured

by the Daily Hassles and Uplifts Scale (Kanner et al., 1981) that assessed the frequency, severity and intensity of the daily hassles and uplifts experienced in the past month.

Using a sample of young adults (n = 270) and older adults (n = 256), Chang (2000) found that stress, measured by a shorter version of The Perceived Stress Scale (Cohen, Kamarck, & Mermelstein, 1983), that measures self-appraised life stress, was positively associated with worry, measured by the Worry Domains Questionnaire (Tallis et al., 1992). Kelly (2008), using a sample of 137 university students and similar measures for both worry and stress, found a positive relationship between stress and worry. Similarly, Kelly and Daughghtry (2011) using a sample of 125 university students, established a positive relationship between stress, measured by a shorter version of the Perceived Stress Scale, and worry, measured by the l0-item Student Worry Scale. Iijima and Tanno (2013) also found a positive relationship between stress and worry. In this longitudinal study, that had a sample of 194 University of Tokyo undergraduates, stress was measured by stressful events while worry was measured using the Japanese version of the Worry Domains Questionnaire (Tallis et al., 1992). Finally, in a study based on a sample of 681 undergraduate students, Zalta and Chambless (2008) found a positive relationship between stress and worry.

Although based on a relatively few studies, the reviewed literature on financial worry, found robust evidence for a positive relationship between financial strain and financial worry. More specifically, acute financial strain (e.g., unexpected drop in income) is significantly positively associated with worry about running out of money in retirement (Lusardi & de Bassa Scheresberg, 2017; Owen & Wu, 2007) while chronic financial strain (e.g., difficulty paying bills) is positively associated with worry about debt (Lenton & Mosley, 2008). Although based on relatively small samples, the studies that examined the relationship between stress and worry found robust evidence for the positive relationship between chronic stress, measured as daily hassles and worry, measured using worry domains (e.g., financial

concerns) questionnaires that capture worrying about everyday problems (Tallis et al, 1994). Taken together, these bodies of literature clearly indicate that both acute and chronic stress are positively associated with worry.

Secondary Appraisal: Personal Resources

Secondary appraisal is concerned with an individual's perceived resources and options to cope with the perceived threat. As discussed earlier, the perceived threat that is the focus of the present study is financial strain, an influential stressor in both economic and noneconomic life domains (Pearlin & Radabaugh, 1976; Pearlin et al., 1981; Pearlin, 1989). During the secondary appraisal, the individual evaluates their competence and other personal resources in order to cope with the demands at hand (Jerusalem & Schwarzer, 1992). Resources are the economic, social, psychological, or physical assets available to deal with perceived threats (Boss, 2002) and are highly predictive of psychological wellness (Hobfoll, 2002). The literature review identified a wide range of studies in the vast literature on coping, that have investigated the resources available to individuals during the second appraisal. These resources include economic security, family relationships, energy, health, intelligence, problem-solving skills, relationship skills, perceptions of situations, and social support (Boss, 2002; Lazarus & Folkman, 1984; Voydanoff, 1990). Psychological resources include personality types, optimism, self-efficacy, self-esteem, locus of control, mastery, and hopefulness. Social support, self-esteem and mastery are the most widely studied psychological resources (Pearlin & Bierman, 2013; Turner & Lloyd, 1999; Voydanoff, 1990). Social resources that take the form of family, friends, coworkers, neighbors, and voluntary associations have been extensively investigated in literature (House & Kahn, 1985; Thoits, 1995). Two broad categories of the resources available to individuals experiencing financial strain were identified in the literature review: personal and financial. The personal resources that are the focus of the present study are financial mastery, financial self-efficacy, financial

knowledge, and demographic variables. The financial resources are short-term savings, IRA/Keogh plans, employer-sponsored retirement plans, household income, and health insurance coverage.

There is a rich body of evidence linking financial strain to psychological distress (Northern et al., 2010). Surprisingly, there are only a few studies on the ways psychological resources moderate and mediate the adverse impact of financial strain on psychological health outcomes, and even fewer studies on the ways psychological resources moderate and mediate the adverse impact of financial strain on worry. Because in the present study the focus is on psychological resources (i.e., financial mastery, financial self-efficacy, and financial knowledge), the present study contributes to this gap in the literature.

Financial Mastery

Evidence of a negative association between mastery and financial strain has been established in the limited literature. In a seminal paper on the stress process, Pearlin et al. (1981), established the mediating role of mastery on the relationship between financial strain and depression. Furthermore, they also found that changes in financial strain were negatively associated with changes in mastery. An important insight from this study is that sustained financial strain is associated with decreased mastery. In two studies based on samples of college students, Britt and colleagues (Britt et al., 2015; Britt et al., 2016) found that college students who possessed higher levels of mastery reported lower financial stress.

In a study of 1,167 older adults, Pudrovska et al. (2005) found that a sense of mastery moderated the effects of financial strain on physical and mental health. That is, older adults with a higher level of mastery experienced fewer negative mental and health effects of financial strain. The study also established a mediating function of mastery. That is, high levels of financial strain were associated with lower levels of mastery, with decreased mastery contributing to more physical and mental health.

A few studies have established a negative association between mastery and anxiety (Drentea & Reynolds, 2015; Pudrovska et al., 2005; Zalta & Chambless, 2012), a separate construct correlated to worry (Davey, 1994; Davey et al., 1992; Gana et al., 2001). The literature review revealed only a few studies that examined the relationship between mastery and worry and none linking mastery to financial worry. In this limited literature it was found that mastery was negatively correlated with worry (Hobfoll, Schröder, Wells, & Malek, 2002; Robichaud & Dugas, 2005; Zalta & Chambless, 2008). Furthermore, regression analyses showed a negative association between mastery and worry (Hobfoll, et al., 2002; Zalta & Chambless, 2008).

In a study of 681 undergraduates, Zalta and Chambless (2008) found that low levels of mastery were associated with high levels of worry. Based on a sample of 336 European American college students, Hobfoll et al. (2002) found a negative association between mastery and worry. In this study worry was measured by the five-item social worry subscale of the Worry Domains Questionnaire (WDQ; Tallis et al., 1992). In another study, based on a sample of 197 university students, Buhr, Kristin and Dugas (2006) found a negative but nonsignificant association between mastery and worry, measured by the Penn State Worry Questionnaire (PSWQ; Meyer et al., 1990). In contrast, in a study based on a sample of 143 university students, Robichaud and Dugas (2005) found a positive but nonsignificant relationship between self-mastery and worry, measured by the Penn State Worry Questionnaire (PSWQ; Meyer et al., 1990).

Financial Self-Efficacy

The literature review revealed that there is limited research on the relationship between general self-efficacy and financial strain as well as between financial self-efficacy and financial strain. The key findings in this limited literature are that: (1) low self-efficacy is associated with high levels of worry, and (2) low self-efficacy is associated with high levels

of financial stress.

Hevey et al. (1998) defined self-efficacy as the individual's perceived ability to perform a specific behavior and argued that self-efficacy is a resource that individuals can draw upon in the secondary appraisal. Bandura (1986) defined self-efficacy as "people's judgments of their capabilities to organize and execute courses of action required to attain designated types of performances" (p. 391) and further stated that during threatening situations, self-efficacy is essential in stress reactions and subsequent quality of coping. The various definitions of financial self-efficacy note confidence to manage finances and making effective financial decisions. For example, Farrell et al. (2016) defined a person's financial self-efficacy as "their self-perceived capacity to manage their finances and their confidence to do so" (p. 88) while Netemeyer, Warmath, Fernandes, and Lynch (2017) defined financial-efficacy as "a domain-specific belief that one has the ability to make effective financial decisions." (p.74).

According to Benight and Bandura (2004), self-efficacy can be manifested through human behaviors such as resiliency to adversity, ways of thinking (i.e., self-enhancing or self-debilitating), and perseverance in the face of difficulties. Therefore, it follows that in the face of difficulties, individuals with higher self-efficacy may behave differently from those with lower self-efficacy in how they perceive and manage perceived threats. Applied to financial strain, this means, individuals who have high beliefs in their efficacy to manage their finances are more likely to behave differently in the face of financial difficulties, perceiving the difficulties as less threatening and taking actions that lead to more positive outcomes.

Economic strain (i.e., financial strain) negatively impacts self-efficacy, resulting in poor coping, thus contributing to higher levels of depression (Pearlin et al., 1981). Similarly, in a study on gender differences in financial strain and psychological distress, Keith (1993), found chronic financial strain to have a negative impact on sense of control, a construct that

has three components including self-efficacy beliefs (Skinner, 1996). Using data from the Ohio Student Financial Wellness Survey (n = 5,729), Heckman, Lim, and Montalto (2014), found that higher financial self-efficacy and optimism about future financial situation were associated with lower odds of reporting financial stress among college students. In a small study, Mistry, Lowe, Benner, and Chien (2008) found that high financial strain was related to lower levels of general self-efficacy.

The literature on the relationship between worry and self-efficacy is limited. Only a few studies were found in the literature review. The first study was based on a sample of 360 Malaysian undergraduates. Students with low perceived self-efficacy had higher levels of worry (Awang-Hashim et al., 2002). The second study was based on a sample of 144 mathematically gifted high school students. Self-efficacy is negatively related to worry (Malpass et al., 1996). The third study had a sample of university students (n = 125). Similar to the other two studies, low self-efficacy was associated with high levels of worry (Kelly & Daughtry, 2011).

Financial Knowledge

The myriad of financial decisions adults must make over a lifetime require financial knowledge (Allgood & Walstad, 2016). Yet, many Americans lack the financial knowledge necessary to make these financial decisions (Bernheim, 1998; Hilgert, Hogarth, & Beverly, 2003; Lusardi & Mitchell, 2014). Researchers have typically measured financial knowledge based on correct answers to objective knowledge tests, however, use of self-assessed or subjective knowledge is now common as well (Allgood & Walstad, 2016). According to Kim, Anderson, and Seay (2019), several studies have shown a robust positive association between financial knowledge and positive financial behaviors including planning for retirement, not carrying credit card balances, making mortgage payments on time, saving, investing and use of financial advisors. Furthermore, in a recent large meta-analysis,

Fernandes, Lynch, and Netemeyer (2014) found a small but significant relationship between objective financial knowledge and financial behaviors such as saving and planning for retirement.

Although the majority of studies have examined the effect of objective financial knowledge on financial behaviors, some studies have investigated the effects of subjective financial knowledge. For example, Allgood and Walstad, (2016) reported that irrespective of the actual level of objective financial knowledge, subjective financial knowledge was positively associated with long-term investment behaviors such as owning stocks, bonds, mutual funds, and individual retirement accounts. Henager and Cude (2016) found a strong and positive association between subjective financial knowledge and long-term investment behaviors as well as with short-term financial behaviors such as spending less than income and having an emergency fund.

In a study of college students, Britt et al. (2016) found no significant relationship between objective financial knowledge and financial stress. However, perceived financial knowledge was positively associated with financial stress. In a study on the financial planning activities of 908 American adults, Kiso and Hershey (2016) reported a significant negative association between perceived financial knowledge and financial worry, measured by the financial worry component of the Financial Inhibition Scale (Neukam & Hershey, 2013). Kiso et al. (2019) found no significant relationship between perceived financial knowledge and retirement worry. Lusardi and de Bassa Scheresberg (2017) reported a negative association between objective financial knowledge and retirement worry. A few studies on worry and aging have found a negative association between objective knowledge about aging and a worry among older adults (Neikrug, 1998; Nuevo, Wetherell, Montorio, Ruiz, & Cabrera, 2009).

In sum, it is plausible that an individual's level of both subjective and objective financial knowledge could influence their effectiveness of coping with financial strain and ultimately with retirement worry. Thus, in the present study, similar to Britt et al. (2016), I considered both objective and subjective financial knowledge as resources available to individuals in the secondary appraisal.

Financial Resources

Household income is often the most important financial resource (Mirowsky & Ross, 1999). Over two decades ago, Thoits (1995), observed that, despite observations that people use their finances as a coping resource, researchers had largely ignored the role of financial resources as stress buffers, treating them "either as an indicator of socioeconomic status or, when resources are scarce, as an indicator of experienced chronic difficulty" (p.63). In their study on the determinants of financial stress, Netemeyer et al. (2017) considered income as a resource to cope with current financial stress. In the present study, different types of financial resources are considered essential for coping with financial strain. The results on the relationship between income and financial strain are inconclusive. Some studies have reported no significant relationship between income and financial stress (Britt et al., 2015; Britt et al., 2016; Joo & Grable, 2004; Xiao, Sorhaindo, & Garman, 2006) while others have found a negative relationship (French, 2018; Gjertson, 2016; Gutman & Eccles, 1999; Mirowsky & Ross, 1999; Mistry et al., 2008; Netemeyer et al., 2017; Ross & Mirowsky, 2000). With regards to financial worry, studies have found a negative association with income. For instance, income was found to be associated with less worry about running out of money in retirement (Kiso et al., 2019; Lusardi & de Bassa Scheresberg, 2017; Rohwedder, 2006); less financial worry (Tay et al., 2017); and less worry about debt (Lenton & Mosley, 2008).

Health insurance is an important non-income financial resource (Mirowsky & Ross, 1999). Americans rely on health insurance for protection against medical bills (Herman, Rissi, & Walsh, 2011; Karpman & Caswell, 2017; Pollitz, Cox, Lucia, & Keith, 2014). However, health insurance does not provide full protection because of factors such as cost-sharing and using practitioners not covered by the health insurance plan (Pollitz et al., 2014). A number of studies have found evidence for a strong and positive association between lack of health insurance coverage and financial strain (Mirowsky & Ross, 1999; Ross & Mirowsky, 2000). The literature review only revealed one study that explored the relationship between health insurance coverage and worry. Based on a sample of 6,542 working women derived from the 2015 NFCS, Lusardi and de Bassa Scheresberg (2017) found a positive association between lack of health insurance coverage and retirement worry.

Liquid financial assets such as emergency funds and other forms of short-term savings act as buffers against financial strain (Despard et al., 2018; Gjertson, 2016; Lusardi et al., 2011; Mistry et al., 2008; Rothwell & Han, 2010). A number of studies have found a robust negative association between liquid financial assets and financial strain. In a longitudinal study ($N = 839$) that used structural equation modeling Rothwell and Han (2010) found a negative association between asset ownership and financial strain. Total assets were the sum of both liquid assets and retirement savings. Liquid assets were measured by balances of checking and savings accounts as well as cash at hand. Retirement savings included balances in various retirement accounts such as IRAs, 401(k), and 403(b) accounts. Because this study was longitudinal, the finding that assets (i.e., short and long-term savings) were negatively related to financial strain four years later after controlling for initial financial strain and other predictors established a robust causal association.

Based on a large study ($n = 2,236$) of college students, Britt et al. (2016) found a positive association between lack of savings and financial stress. However, the type of

savings was not defined in the study. Consistent with prior research, Despard et al. (2018) found that having liquid financial assets (i.e., sum of checking, savings, prepaid card balances, and cash) was negatively associated with financial strain. Finally, Gjertson (2016) in a longitudinal study (n = 1,892) spanning nine years, found that saving for an emergency, education, and retirement was negatively related to financial strain. In this study, respondents only reported the saving motive. Thus, the amount of emergency, education, and retirement savings was not considered in the study.

Research on the links between short or long-term financial asset ownership and financial worry has been limited. However, the literature review revealed studies that explored the relationship between financial management practices and financial worry. In the first study, financial worry was defined as a subjective measure of financial well-being. Financial management practices were measured with a 9-item Money-Management Skills Scale with the statements scored from "never =1" to "always = 5," or from "disagree strongly = 1" to "agree strongly = 5." Sample items from the scale are "I always know exactly how much money I owe," and "I keep an eye on my cash flow." Financial worry was measured with a 9-item scale with the questions scored from "strongly disagree = 1" to "strongly agree = 6." Sample items from the scale are "'I worry about my financial situation," "I never seem to make ends meet," "I owe too much money," and "My spending habits worry me." Positive money-management practices were found to have a strong negative relationship with financial worry (Garðarsdóttir & Dittmar, 2012). In other words, people with good money-management practices reported less worry about their finances.

In another study, the relationship between financial prudence (i.e. financial management practices) and financial worry was investigated using a sample of 537 graduate and undergraduate college students. In this study, Hibbert, Beutler, and Martin (2004) operationalized financial worry with three items that captured worry about: (1) ability to pay

back student debt, (2) future financial situation, and (3) ability to pay regular expenses. Positive financial management practices were found to be negatively associated with financial worry (Hibbert et al., 2004).

In this section, I identified various types of resources available to individuals to use in dealing with financial strain (i.e., perceived threat). But resources only represent a dormant dimension of coping (Gore, 1985). As such, they require action in the form of coping strategies if the individual is to manage financial worry that arises from the dissonance between perceived threat and resources (Tallis & Eysenck, 1994). Two coping strategies (i.e., calculating retirement savings needs and foregoing medical care) that are the focus of this study are presented next. It is important to note that according to Lazarus and Folkman (1984), resources influence the choice of coping strategies and the effectiveness of such strategies can only be determined by their effects in the long term (Lazarus & Folkman, 1984).

Secondary Appraisal: Coping Strategies

The Tallis and Eysenck (1994) model of worry posits that coping strategies are undertaken to manage the perceived threats that contribute to the initiation of worry. In this study, perceived threats stem from financial strain. Thus, the coping strategies that are the focus of this study function to mitigate the effects of financial strain. The two functions of coping are to manage emotional distress (emotion-focused coping) and to alter the situation that is causing distress (problem-focused coping) (Folkman et al., 1986; Lazarus & Folkman, 1984). According to Lazarus and Folkman (1984) a thought or action can have multiple coping functions. Therefore, they caution against a literal attempt to associate problem-focused strategies with only managing stress and emotion-focused strategies with only managing the emotional response to stress.

Individuals and households cope with financial strain in a multitude of ways depending on whether the financial situation associated with the strain is appraised as temporary or permanent (French & Vigne, 2019). For example, various studies (Baek & DeVaney, 2010; Elder et al., 1992; Lusardi et al., 2011; Varcoe, 1990; Waldron & Redmond, 2017) found that individuals and households use the following coping strategies in response to financial strain: use existing savings, use more credit, cut expenses, borrow from family and friends, stop or delay paying bills, sell assets, and get more income. Others postpone or reduce medical care (Elder et al., 1992; Kalousova & Burgard, 2013; Prawitz, et al, 2013; Yabroff et al., 2019) while others take loans or hardship withdrawals from their retirement accounts (Amromin & Smith, 2003; Argento, Bryant, & Sabelhaus, 2015; Butrica, Zedlewski, & Issa, 2010; Ghilarducci, Fisher, Radpour, & Webb, 2016; Lu, Mitchell, Utkus, & Young, 2017; Lusardi et al., 2011).

It is interesting to note that while these coping strategies have been identified in the literature, few studies have examined them in the context of stress process models (e.g., Lazarus & Folkman, 1984; Pearlin et al., 1981) so that the dynamic processes of financial strain are better understood (French & Vigne, 2019). It is also interesting to note that most of the strategies that individuals and households adopt to cope with financial strain identified in the literature are problem-focused. However, this is not surprising since financial strain (e.g., difficulty to pay bills) triggers immediate financial needs that require individuals to initiate efforts that improve the financial situation and reduce the strain (Voydanoff, 1990).

Only a few studies have identified emotion-focused strategies for coping with financial strain. One such strategy is devaluing money (i.e., limiting the importance of money) (Pearlin & Schooler, 1978; Pearlin et al., 1981). In a study that investigated the efficacy of a various coping strategies, Pearlin and Schooler (1978) found that devaluing money was the most effective strategy for coping with financial strain. The authors argued

that this strategy buffered the scarcity associated with financial strain that individuals typically experience because scarcity that occurs in life domains perceived as important is likely to be most stressful.

Another emotional-focused strategy to cope with financial strain is positive comparisons and involves the use of comparison references to derive positive appraisal of their own financial situation (Pearlin et al., 1981). These references are people whose financial situation is worse or the same as their own and one's own past and future financial situation (Pearlin et al., 1981). The authors argued that when one's current financial situation, even though fraught with difficulties, is perceived as better than the past or a foundation for future improvement, the experience of financial strain is reduced. In a seminal paper, Pearlin et al. (1981) found devaluing money and positive comparisons reduced financial strain. It is interesting to note that the concept of positive comparisons draws on Festinger's (1954) social comparison theory that postulates that "when individuals are uncertain about their opinions or abilities, they will compare themselves with others to evaluate their own situation" (Buunk, Collins, Taylor, VanYperen, & Dakof, 1990, p. 1238).

A few other studies have examined coping strategies associated with financial strain in the context of stress process models. Studies by Wadsworth and colleagues (Wadsworth & Compas, 2002; Wadsworth, Raviv, Compas, & Connor-Smith, 2005; Wadsworth & Berger, 2006) involved adolescents and therefore, are not directly relevant for the present study while the other studies (Brougham, Zail, Mendoza, & Miller, 2009; Zepp, Potter, Haselwood, & Britt-Lutter, 2018) involved college students. In a correlational study involving 166 college students, Brougham, et al. (2009) found no significant correlation between coping strategies and financial stress among women while for men, financial stress was positively correlated with use of emotion-focused strategies. In a study involving 3,339 college students, Zepp et al. (2018) examined the relationship between coping strategies and GPA. They found that

problem-focused strategies mitigated the influence of financial stress on GPA, more than emotion-focused strategies.

The relationships between emotion- and problem-focused strategies and worry has largely been ignored in the empirical literature. However, a few studies have investigated the relationship between coping strategies students used to curb the effects of stress and normal worry. The use of problem-focused strategies was found to be positively correlated with normal worry (Davey et al., 1992; Davey, 1993) as well as the use of emotion-coping strategies (Davey et al., 1992; Meyer et al., 1990).

Stress research has traditionally studied coping strategies through self-reported measures based on questionnaires (Endler & Parker, 1990). For example, the Ways of Coping Checklist (Folkman & Lazarus, 1980) is a questionnaire with 68 items covering a wide range of behavioral and cognitive coping strategies individuals use to respond to a specific stressful event. The checklist uses a binary response format and has two main coping strategies subscales: problem-focused coping and emotion-focused. Another widely used questionnaire in the COPE (Carver, Scheier, & Weintraub, 1989), a coping scale that assesses the different strategies individuals adopt to cope with stress. The COPE has five scales on problem-focused coping, five scales on strategies that might be classified as emotion-focused coping, and three scales that assess focusing on and venting of emotions, behavioral disengagement and mental disengagement (Carver et al., 1989).

Unfortunately, a validated scale such as the COPE was not available in the dataset used in the present study. However, two variables were identified to operationalize coping strategies. These coping strategies are intended to manage or alter the experience of financial strain and the subsequent effect on retirement worry. Calculating retirement savings needs and foregoing medical care *because of the cost* are the two problem-focused strategies that were the focus of the present study. I examined three types of foregoing medical care:

foregone prescription for medicines, foregone doctor/clinic visits, and foregone medical test, treatment or follow-up recommended by a doctor.

Calculating Retirement Savings Needs

No research specifically examining calculating retirement savings needs as a coping strategy was identified in the literature. However, findings from studies on this variable support the idea that calculating retirement savings needs can be considered a problem-focused coping strategy to deal with financial strain. Based on the findings of the 2019 Retirement Confidence Survey, the Employee Benefits Retirement Institute (EBRI) reported that 4 in 10 workers (42%) have attempted the retirement needs calculation (Employee Benefit Research Institute, 2019). The EBRI further reported that people who have calculated their retirement needs are more likely than those who have not (86% vs. 53%) to report higher overall retirement confidence and also feel less stressed (49% vs. 66%). Based on these descriptive findings we cannot conclude that calculating retirement needs predicts retirement confidence, however, Kim, Kwon, and Anderson (2005) found that calculating retirement needs predicted retirement confidence, a concept related to retirement worry.

The study by Kim et al. (2005) provides a direct link between calculating retirement savings and worry about running out of money in retirement. The study utilized the 2004 Retirement Confidence Survey and was based on a sample of 1,002 individuals, aged 25 and older. Respondents' retirement confidence was assessed by an index (Cronbach alpha = .90) based on six items with responses on a 4-point Likert-type scale: (1) confidence about having enough money to live comfortably in retirement years (2) confidence about financial preparation, (3) confidence about having enough money to cover medical expenses, (4) confidence about having enough money to take care of basic expenses, (5) confidence about having enough money to support themselves throughout their life, no matter how long they live, and (6) confidence about not outliving retirement savings. Other than the “confidence

about financial preparation" item, the rest of the items assessed the idea of "having enough money during retirement." Other studies have established an indirect link between calculating retirement savings needs and retirement worry.

In a study based on a sample of 988 Dutch and 429 Americans, Hershey, Van Dalen, and Henkens (2007) examined the possible consequences of calculating retirement savings needs. Calculating retirement savings needs was one of the items in a four-item retirement planning activity scale: (1) "The calculations have been made to estimate how much money I (we) will have saved for retirement," (2) "I know how much money I (we) will need to comfortably retire,"(3) "I know how much money I (we) must save each month in order to retire at a comfortable level," and (4)" I am (we are) saving enough each month to retire comfortably." The scale makes it difficult to establish a direct link between the calculation and perceived savings adequacy. Nevertheless, in both samples, Hershey et al. (2007) found a positive association between the retirement planning activity scale and a one-item perceived savings adequacy measure (i.e., I am saving enough to retire comfortably). In a similar study based on a sample of 556 Dutch and 419 Americans, Hershey, Van Dalen, and Henkens (2010) made a similar finding. Based on a study of 3,131 employees at a university, Mayer et al. (2011) found that calculating retirement savings needs enhanced self-reported employer- and non-employer-based retirement savings. Similarly, using data from the 2008 National Longitudinal Survey of Youth 1979 cohort, Bi et al. (2017) found a positive association between calculating retirement savings needs and accumulated self-reported employer-and non-employer-based retirement wealth. Taken together these studies, provide both direct and indirect links between calculating retirement savings needs and retirement worry. Thus, in the present study, problem-focused coping to reduce the negative impact of financial strain was operationalized as calculating retirement savings needs.

Foregoing Medical Care

Numerous research studies (e.g., Altice, et al, 2017; Elder et al., 1992; Kalousova & Burgard, 2013; Prawitz et al, 2013; Yabroff et al., 2019) have identified purposeful foregoing medical care as one of the strategies households adopt to improve their financial situation when experiencing financial strain. Medical literature (e.g., Ford, Bearman, & Moody, 1999) suggests two types of foregoing medical care: inability to access medical care or purposeful avoidance. The present study focused on foregoing of medical care because of the cost (i.e., purposeful avoidance), a coping behavior that individuals adopt to manage their medical care when they are experiencing financial strain (Altice et al., 2017).

While foregoing medical care has been extensively studied in oncology as one of the domains of medical financial hardship (Altice et al., 2017), it is less understood outside oncology, but is prevalent in the U.S. (Yabroff et al., 2019). Based on data from the 2015 to 2017 National Health Interview Survey, a nationally representative dataset, Yabroff et al. (2019), reported that 21.2% of adults aged 18 to 64 years (n = 68,828) reported forgoing medical care in 2017. That is, they took less/skipped medication or delayed/missed a physician visit. These findings are similar to those from the Federal Reserve Board's 2018 Survey of Household Economic Decision-Making (SHED). The SHED reported that in 2018, 24% of adults (n = 11,316) reported foregoing medical care due to financial strain. According to the Federal Reserve Bank (2019), dental care (17%) was the most commonly skipped treatment, followed by visiting a physician (12%), and taking prescription medicines (10%). These findings are supported by research by Burgard and Hawkins (2014). The authors found that during the Great Recession, foregoing care (i.e., foregoing medical, dental, and mental health care, and prescription medicines) increased for working-age adults compared with the pre-recession period. The authors argued that the rise in forgone medical care was a response to the financial strain related to the Great Recession.

Although only a handful, studies have provided robust evidence for the association between financial strain and foregoing medical care. One of the earliest studies on foregoing medical care outside oncology, was based on a sample of 8,200 residents of Sweden. In this study, Elofsson et al. (1998) reported a strong positive association between financial strain (i.e., assessment of financial situation as bad) and foregoing medical care for both men and women. Another early study on foregoing medical care outside oncology was based on a sample 518 people from underprivileged areas in France. In this study, Bazin et al. (2005) found a positive association between money troubles (i.e., financial strain) and foregoing medical care. In a study based on a sample of 914 Michigan residents, Kalousova and Burgard (2013) found a strong and positive association between debt (i.e., credit card and medical) with foregoing medical care. Credit card and medical debt is associated with financial difficulties, both in the short-and long-term, and may signal financial strain (Drentea, 2000; Kalousova & Burgard, 2013). Finally, in a recent study (n = 7,501) based on data from the 2010 Ohio Family Health Survey, Baughman et al. (2015), made similar findings to prior literature. In this study, difficulty paying medical bills was positively associated with both foregoing medical care and foregoing prescription drug care. Foregoing medical care was defined as delaying care, or avoiding care, or not receiving care whereas foregoing prescription drug care was defined as not receiving needed drug prescription or not affording needed drug prescription.

The review of the literature revealed only one study that examined the direct relationship between foregoing medical care and worry. In a study (n = 1,468) that examined healthcare access disparities among the uninsured working-age population in the Texas healthcare system, Queen (2009) reported a strong positive association between worry and foregoing medical care. Worry was measured by a single item: “During the past 30 days, for about how many days have you felt worried, tense or anxious?”

Coping Strategies as Moderators

According to Tallis and Eysenck (1994) coping strategies act as moderators of the relationship between perceived threats and worry. It is important to note that in the stress literature, some studies (e.g., Dunkley, Blankstein, Halsall, Williams, & Winkworth, 2000; Pearlin et al., 1981; Pearlin &Schooler, 1978; Pudrovska et al., 2005) have found that coping can serve as a moderator of the relationship between stress and psychological outcomes while other studies (e.g., Dunkley et al., 2000; Cronkite & Moos, 1984; Pudrovska et al, 2005) have found that coping can serve as a mediator of the relationship between stress and psychological outcomes.

Baron and Kenny (1986), described a moderator as "a qualitative (e.g., sex, race, class) or quantitative (e.g., level of reward) variable that affects the direction and/or strength of the relation between an independent or predictor variable and a dependent or criterion variable" (p. 1174) and further stated that "a basic moderator effect can be represented as an interaction between a focal independent variable and a factor that specifies the appropriate conditions for its operation." (p. 1178). Furthermore, Baron and Kenny (1986), described a mediator as a variable which "represents the generative mechanism through which the focal independent variable is able to influence the dependent variable of interest" (p. 1173) and further stated that a mediator "accounts for the relation between the predictor and the criterion" (p. 1176).

Adaptive Versus Maladaptive Coping

According to Lazarus (1993b), "There may be no universally good or bad coping processes, though some might more often be better or worse than others" (p. 235). The efficacy of a coping strategy is determined by factors such as the person involved, the threat, the stage of the stressful encounter, and the impact on long-term outcomes such as subjective well-being, social functioning, or somatic health (Lazarus, 2001). Stated more simply, "it is

important not to value a particular form of coping without reference to the context in which it is used" (Folkman, Lazarus, Gruen, & DeLongis, 1986, p. 578). Taken together, these researchers suggested that there is no a priori basis for determining the adaptiveness or maladaptiveness of a coping strategy. Instead, the context in which the coping strategy is used matters as well as its cumulative consequences (Skinner et al., 2003).

Numerous studies (Kane & Shaya, 2008; Osterberg & Blaschke, 2005; Sokol, McGuigan, Verbrugge, & Epstein, 2005) have found that foregoing medical care is associated with poor health outcomes (e.g., worsening of disease, or death), increased use of emergency room and other medical services (e.g., doctor visits, or urgent care), and increased healthcare costs. Based on these cumulative consequences, although foregoing medical care may be effective in the short-term for dealing with financial strain, it is reasonable to classify foregoing medical care as a maladaptive coping strategy for dealing with financial strain. On the other hand, because calculating retirement savings needs has been found to be positively associated with self-reported retirement savings (Bi et al., 2017; Mayer et al., 2011), and retirement confidence (Kim et al., 2005), it is reasonable to classify calculating retirement savings needs as an adaptive coping strategy for dealing with financial strain.

Demographic Variables

The literature review identified several demographic variables that have been found to influence financial worry. These variables are considered control variables in the present study and include age, gender, race, marital status, home ownership, education, employment status, and presence of financially dependent children. Age is positively associated with retirement worry (Hershey et al., 2010; Lusardi & de Bassa Scheresberg, 2017; Rohwedder, 2006); negatively associated with financial worry (Litwin & Meir, 2013); and negatively associated with worry about debt (Lenton & Mosley, 2008). In a study involving truck drivers, Meuris and Leana (2018) did not find a significant association between age and

financial worry. Similarly, in a study of working adults with children, Kiso et al. (2019) found no significant association between age and retirement worry. The findings on gender were mixed. Rohwedder (2006) did not find a significant association between gender and retirement worry. Hershey and Henkens (2010) found that women reporter higher levels of retirement worry. In contrast, Kiso and Kiso et al. (2019) found that women had lower levels of retirement worry. Tay et al. (2016) found a positive association between gender and financial worry. Lenton and Mosley (2008) found that women worry more about debt than men.

In a study involving 6,542 working women, Lusardi and de Bassa Scheresberg (2017) found that, compared to white women, African American women reported lower retirement worry. Litwin and Meir (2013) found that, compared to Jews, Russians had less financial worry. Lenton and Mosley (2008) found that nonwhite individuals worried more about debt. The findings on marital status were not consistent. Rohwedder (2006) found that married people worried less worry about running out of money in retirement. Hershey and Henkens (2010) did not find a significant relationship between marital status and retirement worry. Lusardi and de Bassa Scheresberg (2017) found that single people worried more about running out of money in retirement than married people. Tay et al. (2016) found that married people had less financial worry compared to single people. Lenton and Mosley (2008) found that couples worried less about debt than single people.

Only one study had homeownership as a control variable. Homeowners reported less worry about running out of money in retirement (Lusardi & de Bassa Scheresberg, 2017). The findings on education were mixed. Rohwedder (2006) found no significant association between education and retirement worry. Similarly, Meuris and Leana (2018) did not find a significant association between education and financial worry. Kiso et al. (2019) also did not find a significant relationship between education and retirement worry. More years of

education are negatively associated with retirement worry (Hershey & Henkens, 2010). Similarly, having some college education or at least a bachelor's degree was associated with less worry about running out of money in retirement among working women (Lusardi & de Bassa Scheresberg, 2017). Self-employed and part-time employed women reported lower retirement worry (Lusardi & de Bassa Scheresberg, 2017). Working full-time was associated with less financial worry (Tay et al., 2016). There is no significant association between number of children and retirement worry (Hershey & Henkens, 2010; Rohwedder, 2006). The number of children was positively associated with financial worry (Tay et al., 2016), retirement worry (Lusardi & de Bassa Scheresberg, 2017), and positively associated with worry about debt (Lenton & Mosley, 2008).

Studies in normal worry research have focused on gender and age differences in worry. There is consensus in the literature that women worry more than men (Gould & Edelstein, 2010; Hunt, Wisocki, & Yanko, 2003; Mccann, Stewin, & Short, 1991; Robichaud et al., 2003; Stavosky & Borkovec, 1987) and that young people engage in worry more than older people (Babcock, Laguna, Laguna, & Urusky, 2000; Basevitz, Pushkar, Chaikelson, Conway, & Dalton, 2008; Gould & Edelstein, 2010; Hunt et al., 2003). Although there is paucity of research on the relationship between worry and ethnicity, one study found preliminary evidence of differences in worry across race. A study (n = 502) that used the Worry Domains Questionnaire (Tallis et al., 1992), and based on group analyses of college students, found that African Americans reported less worry than White individuals and Asians across all domains except the financial domain, which was similar across the race groups (Scott, Eng, & Heimberg, 2002).

While research on the relationship between the demographic variables and financial worry has not yielded consistent results, the literature summarized above supports the inclusion of these variables in models predicting financial worry to control for their influence.

I attribute the inconsistent results to different samples used in the studies, differences in the operationalization of the concept of financial worry, and the range of predictors used in the regression models. Also, these inconsistent results seem to suggest that there are differences in the relationships between the demographics and sub-concepts of financial worry such as worry about debt, retirement worry, or worry not affording regular monthly expenses.

Summary and Purpose of Current Study

According to Tallis and Eysenck (1994), worry is initiated when there is dissonance between the severity of a perceived threat (primary appraisal) and the perceived resources (secondary appraisal). Within the retirement worry process conceptualized in the present study, there are several variables: (a) financial strain, (b) financial resources (i.e., household income, health insurance, financial knowledge, short-term savings, IRA/Keogh plans, employer-sponsored retirement plans), (c) personal resources (subjective and objective financial knowledge, financial self-efficacy, and financial mastery, (d) coping strategies (i.e., calculating retirement savings needs and foregoing medical care), and (e) demographic (age, gender, race, marital status, home ownership, education, employment status, and number of financially dependent children).

The purpose of this study was to investigate the predictors of retirement worry with financial strain as the key predictor of interest. A review of the financial worry literature did not reveal any studies that utilized a theoretical framework to guide the research. The purpose of the literature review was to introduce the construct of worry as a foundation for the study of retirement worry. Furthermore, the literature review was intended to show that the conceptualization of the retirement worry based on the Tallis and Eysenck's (1994) model of worry provides rich insights into the predictors of retirement worry and the psychological mechanisms underlying retirement worry. The literature highlighted the lack of an agreed-upon definition of financial worry and the inconsistency in the operationalization of financial

worry. In contrast, there is consistency in how studies have operationalized retirement worry as concern or worry about not having enough money in retirement. The review of literature also discussed the various sources of financial strain and the financial and personal resources individuals draw upon to cope with financial strain. The review of literature concluded with a discussion of the coping strategies (i.e., foregoing medical care, calculating retirement savings needs) individuals use to mitigate the effects of financial strain.

Research Questions

The primary purpose of the present study was to determine the degree to which financial strain predicted retirement worry. The secondary purpose was to determine the degree to which financial resources (i.e., household income, health insurance coverage, IRA/Keogh plans, short-term savings, employer-sponsored retirement plans), personal resources (i.e., objective and subjective financial knowledge, financial self-efficacy, and financial mastery), and coping strategies (i.e., calculating retirement savings needs and foregoing medical care) predicted retirement worry. The present study sought to answer the following research questions. The long list of research questions indicates that retirement worry research is still in its infancy with limited knowledge of the predictors of retirement worry.

1. Is financial strain a significant predictor of retirement worry?
2. Are financial resources significant predictors of retirement worry?
3. Are personal resources significant predictors of retirement worry?
4. Are coping strategies significant predictors of retirement worry?
5. Does calculating retirement savings needs moderate the relationship between financial strain and retirement worry?
6. Does foregoing medical care moderate the relationship between financial strain and retirement worry?

Conceptual Model and Hypotheses

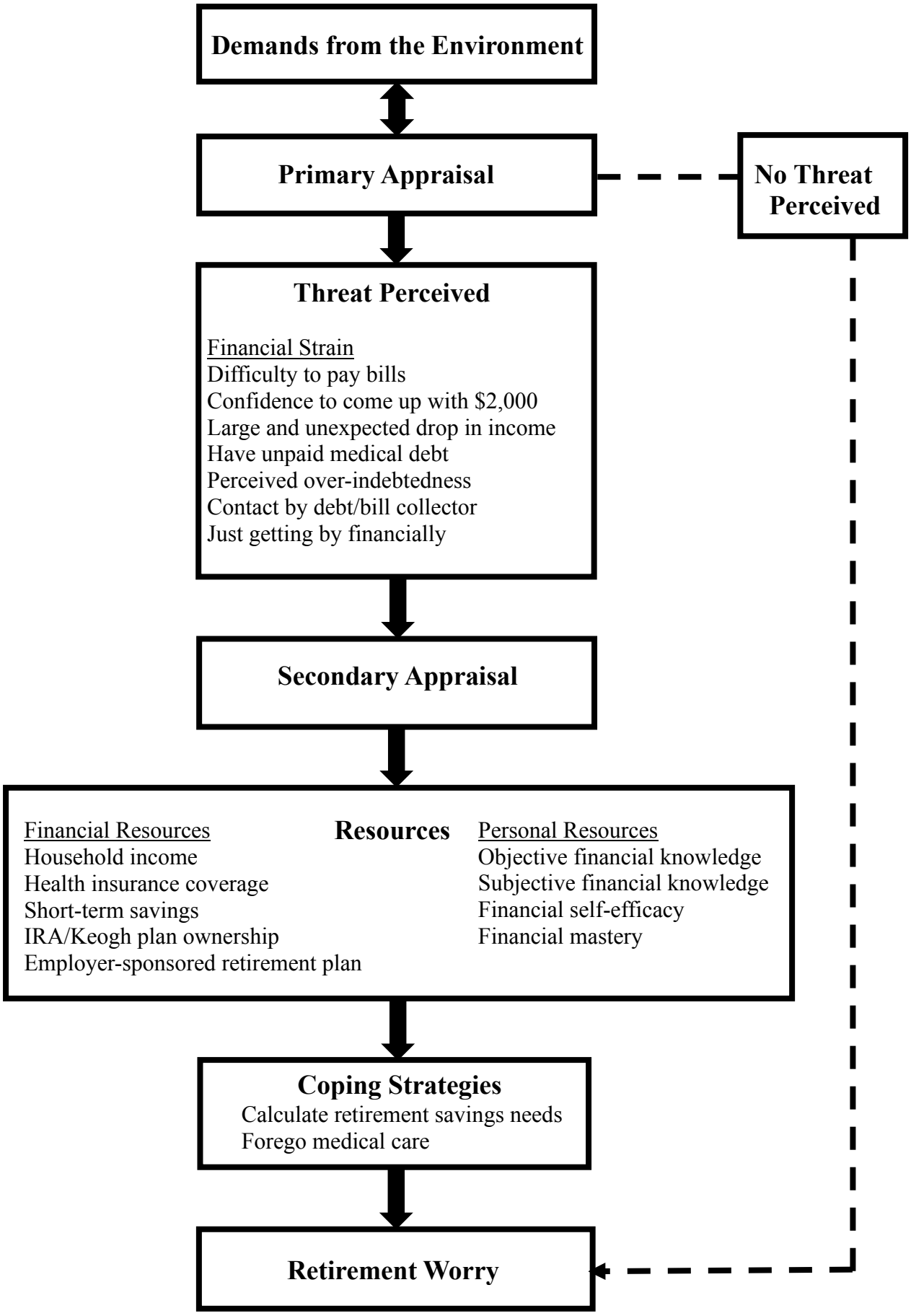
Conceptual Model

In this study, through the Tallis and Eysenck (1994) model, the initiation of worry is connected to cognitive appraisals (primary and secondary) and coping resources, while the maintenance of worry in connected to the selection of coping strategies (problem vs. emotion-focused). The process for the initiation and maintenance of worry is depicted in Figure 2.2. Since Tallis and Eysenck's (1994) model utilizes the appraisal processes from Lazarus and Folkman's (1984) transactional theory of stress and coping, a key tenet of the Tallis and Eysenck (1994) model is that people continuously assess the environment for potential threats to their personal well-being.

As depicted in Figure 2.4, during the primary appraisal, an individual makes assessments of whether a potential threat affects their well-being. When the potential threat is assessed negatively, it becomes a perceived threat. Next, the individual undertakes an assessment of potential resources and behavioral responses to the perceived threat during the secondary appraisal. If these are perceived as inadequate to meet the demands of the perceived threat, worry is initiated.

The last stage in this transactional view of the worry process is the selection of a coping strategy to address the perceived threat, and in turn reduce or eliminate worrying. During this stage, the individual can select coping strategies that directly address the perceived threat (problem-focused coping). For example, to manage the financial strain associated with difficulty to pay monthly bills, an individual might proactively reduce eating out, and do more home cooking. In contrast, the individual can select a coping strategy to change the subjective meaning of the perceived threat (emotion-focused coping). For example, the individual experiencing difficulty to pay monthly bills, my select to discuss their feelings with a friend or a financial professional.

Figure 2.4. Illustration of the Conceptual Model for Retirement Worry.



Hypotheses

The hypotheses tested in the present study investigate the associations financial strain, financial resources, personal resources, and coping strategies have with retirement worry, as was shown in the conceptual model in the previous section. Specifically, to answer the above-mentioned research questions, the present study addressed the following hypotheses based on the theoretical and empirical backgrounds provided in this chapter. Relevant research studies are cited to justify the hypotheses.

Hypothesis Relating to the Primary Appraisal

Research studies in the worry literature found that reported high levels of stress were associated with high levels of worry (Chang, 2000; Iijima & Tanno, 2013; Kelly, 2008; Kelly & Daughghtry, 2011; Russell & Davey, 1993; Zalta & Chambless, 2008). Regarding financial strain, research studies reported a positive relationship between financial strain and financial worry (Lusardi & de Bassa Scheresberg, 2017; Owen & Wu, 2007).

H1: There is a positive relationship between the financial strain and retirement worry.

Hypotheses Relating to the Secondary Appraisal: Financial Resources

The presence of high financial resources to mitigate the effects of the perceived threat (i.e., financial strain) is negatively associated with worry. For instance, income was found to be associated with less worry about running out of money in retirement (Kiso et al., 2019; Lusardi & de Bassa Scheresberg, 2017; Rohwedder, 2006); less financial worry (Tay et al., 2017); and less worry about debt (Lenton & Mosley, 2008). Lusardi and de Bassa Scheresberg (2017) found a positive association between lack of health insurance coverage and retirement worry. Positive

money-management practices (i.e., presence of financial assets and financial accounts ownership) were found to be negatively associated with financial worry (Garðarsdóttir & Dittmar, 2012; Hibbert et al., 2004).

H2: There is a negative relationship between household income and retirement worry.

H3: There is a negative relationship between having health insurance coverage and retirement worry.

H4: There is a negative relationship between short-term savings and retirement worry.

H5: There is a negative relationship between IRA/Keogh plan ownership and retirement worry.

H6: There is a negative relationship between employer-sponsored retirement plan ownership and retirement worry.

Hypotheses Relating to the Secondary Appraisal: Personal Resources

The presence of high personal resources to mitigate the effects of the perceived threat (i.e., financial strain) is negatively associated with worry. Research studies reported that high levels of mastery were found to be associated with lower reported levels of worry (Hobfoll, et al., 2002; Zalta & Chambless, 2008). Regarding self-efficacy, research studies reported that individuals with low perceived self-efficacy had higher levels of worry (Awang-Hashim et al., 2002; Kelly & Daughtry, 2011; Malpass et al., 1996). Regarding financial knowledge, Kiso and Hershey (2016) reported a significant negative association between perceived financial knowledge and financial worry, whereas Kiso et al. (2019) found no significant relationship between perceived financial knowledge and retirement worry. Lusardi and de Bassa Scheresberg

(2017) reported a negative association between objective financial knowledge and retirement worry. A few studies on worry and aging have found a negative association between objective knowledge about aging and a worry among older adults (Neikrug, 1998; Nuevo, Wetherell, Montorio, Ruiz, & Cabrera, 2009).

H7: There is a negative relationship between objective financial knowledge and retirement worry.

H8: There is a negative relationship between subjective financial knowledge and retirement worry.

H9: There is a negative relationship between financial self-efficacy and retirement worry.

H10: There is a negative relationship between financial mastery and retirement worry.

Hypotheses Relating to the Secondary Appraisal: Coping strategies

Kim et al. (2005) found that calculating retirement needs predicted retirement confidence. It is plausible that high retirement confidence is negatively associated with retirement worry. Hershey and colleagues (Hershey et al., 2007; Hershey et al., 2010) found a positive association between a retirement planning activity scale with items such as "The calculations have been made to estimate how much money I (we) will have saved for retirement," and perceived savings adequacy measure. Some studies have reported a positive association between calculating retirement savings needs and reported retirement savings (Mayer et al., 2011; Bi et al., 2017). Based on these studies, it is reasonable to expect that high perceived savings adequacy and high reported retirement savings are negatively associated with retirement worry. Thus, for the present

study, I expected a negative association between calculating retirement savings needs and retirement worry.

H11: There is a negative relationship between calculating retirement savings needs and retirement worry.

Research studies have reported a strong positive association between financial strain and foregoing medical care (Baughman et al., 2015; Bazin et al., 2005; Elofsson et al., 1998; Kalousova & Burgard, 2013). Queen (2009) reported a strong positive association between worry and foregoing medical care. Thus, for the present study, I expected a positive association between foregoing medical care and retirement worry.

H12: There is a positive relationship between foregoing medical care and retirement worry.

Hypotheses Relating to the Secondary Appraisal: Moderated Effects

Some research studies have found that coping strategies can have a buffering effect on the relationship between financial strain and outcomes of interest such as psychological well-being, whereas others have found that coping strategies can have an exacerbating effect. Wadsworth et al. (2005) reported that while problem-focused coping strategies buffered the effect of financial strain on predicting depression in adults, emotion-focused coping strategies exacerbated the effect. Voydanoff and Donnelly (1988) found that emotion-focused coping strategies buffered the effects of economic distress on quality of family life for men. Chou and

Chi (2002) found that coping strategies moderated the effect of financial strain on life satisfaction. Thus, for the present study, I expected coping strategies to moderate the relationship between financial strain and retirement worry.

H13: The relationship between financial strain and retirement worry is moderated by calculating retirement savings needs.

H14: The relationship between financial strain and retirement worry is moderated by foregoing medical care.

Table 2.3 provides a summary of the expected relationships between the independent variables and retirement worry. The next chapter will review the variables used to operationalize the concepts in the Tallis and Eysenck (1994) model of worry and the statistical methods employed to determine the degree to which financial strain, financial resources, personal resources, coping strategies, and "coping strategy × financial strain" interactions predicted retirement worry.

Table 2.3 Expected Relationships Between Independent Variables and Retirement Worry

Hypotheses	Independent Variables	Relationship	Dependent Variable
	Primary Appraisal		
H1	Financial strain (FS)	Positive	
	Secondary Appraisal		
	Financial Resources		
H2	Household income	Negative	
H3	Health insurance coverage	Negative	
H4	Short-term savings	Negative	
H5	IRA/Keogh plans	Negative	
H6	Employer-sponsored retirement plan	Negative	
	Personal Resources		Retirement Worry
H7	Objective financial knowledge	Negative	
H8	Subjective financial knowledge	Negative	
H9	Financial self-efficacy	Negative	
H10	Financial mastery	Negative	
	Coping Strategies		
H11	Retirement savings calculation (RSC)	Negative	
H12	Foregoing medical care (FMC)	Positive	
	Moderated Effects		
H13	RSC × FS	NE	
H14	FMC × FS	NE	

Note: NE = None Expected

Chapter 3 - Methodology

Data and Sample

This chapter presents the dataset, sample, variables, and analytic approach for the study. The primary purpose of the present study was to determine the degree to which financial strain predicted retirement worry, defined as worry about running out of money in retirement. A secondary research goal of this study to determine the degree to which coping resources and coping strategies predicted retirement worry. The guiding theoretical framework for investigating these relationships was Tallis and Eysenck's (1994) model of worry. This study utilized the 2018 National Financial Capability Study (NFCS).

The National Financial Capability Study

The dataset for this study came from the 2018 National Financial Capability Study (NFCS) commissioned by the FINRA Investor Education Foundation. The goal of the NFCS is to monitor and better understand financial capability in the US (Mottola & Kieffer, 2017). The first NFCS was conducted in 2009 to assess and establish baseline indicators of American adults' financial capability. The survey was repeated in 2012, 2015 and 2018. The 2018 NFCS is the most recent dataset. The data was obtained via a self-administered online survey that ran from June 2018 to October 2018. Examples of new data collected in the 2018 survey include: other work for pay in addition to main employment, highest education level of parents or guardians, variation in monthly income, select questions from the CFPB Financial Well-Being Scale (Consumer Financial Protection Bureau, 2015), frequency of buying lottery tickets, having a will, receipt of Medicaid benefits or food stamps/SNAP, hours and quality of financial education.

The respondents to the survey were selected using non-probability quota sampling from established online panels made up of millions of individuals actively recruited to join and offered

incentives in exchange for their participation in online surveys (Mottola & Kieffer, 2017). One disadvantage of the use of online panels is that traditional response rates cannot be constructed, however, participation data can be reported (Schmidt, 1997). According to the FINRA Investor Education Foundation (2018), for the 2018 NFCS, a total of 1,410,923 email invitations with a link to begin the survey were sent to panel members; 100,611 panel members clicked on the link to start taking the survey; 59,207 were terminated due to response quotas being reached or due to not meeting the set criteria such as providing demographic information; and an additional 14,313 panel members dropped out of the survey before completing it, resulting in 27,091 completed surveys.

The 2018 NFCS comprises 27,091 adults aged 18 years or older with approximately 500 respondents from each state plus the District of Columbia; oversampling in Oregon and Washington was introduced with approximately 1,250 respondents (FINRA Investor Education Foundation, 2018). As with the 2009, 2012, and 2015 surveys, the 2018 NFCS did not particularly target heads of households or principal financial decision-makers. Survey responses were weighted to be representative of the national population in terms of age, gender, ethnicity, education and Census Division (FINRA Investor Education Foundation, 2018). My results were weighted using the national survey weight provided with the dataset.

Study Sample

In the present study, the initial sample included 27,091 adults age 18 and over. However, some variables have fewer observations because of the structure of the survey. For example, a respondent cannot answer questions about retirement plans through the employer unless they have a retirement plan through the employer. Furthermore, the survey offers the respondents the choice of “Don’t know” or “Prefer not to say.” Such responses were treated as missing data.

Consequently, to control for the missing data, all "prefer not to say" and "don't know" responses to all variables were excluded from the data, except for the five questions used to measure objective financial knowledge where the "don't know" response reflected an incorrect answer. That is, only complete cases were included in the analytic sample. This approach to controlling for missing data is consistent with other researchers (e.g., Allgood & Walstad, 2016; Kim et al., 2019) who use the NFCS dataset. Table 3.1 provides additional information on how the analytic sample for the present study was derived. The final analytical sample included 13,919 respondents. Because only complete cases were included in the analytic sample (i.e., listwise deletion) and the present study has a large number of independent variables, a large number of cases were dropped in deriving the analytic sample. A further analysis of the treatment of missing data in the present study is provided in the results section. The rationale behind the sample selection was that the experience of retirement may influence retirement worry, hence the focus on nonretired households. Also, individuals working past age 65 are likely to be receiving retirement benefits but still working for pay. This phenomenon is referred to as "bridge employment" (Dingemans et al., 2016) and may influence retirement worry, hence individuals working past age 65 are excluded from the population of interest.

Table 3.1 Deriving the Analytic Sample

Step	Decrement Amount	Respondents in Sample
Initial 2018 NFCS sample		27,091
Limit by nonretired households	6,329	20,762
Limit by age less than or equal to 64	1,033	19,729
Exclude "don't know" or "prefer not to say" from all independent variables	5,810	13,919
Final analytic sample		13,919

Measurement

Dependent Variable

This study defined retirement worry as the worry about running out of money in retirement. Retirement worry was measured with a single question that asked the respondents the following: "How strongly do you agree or disagree with the following statement?" "I worry about running out of money in retirement." Respondents were asked to rate their worry on a 7-point Likert-type scale where: 1 = "Strongly Disagree," 4 = "Neither Agree nor Disagree," and 7 = "Strongly Agree." For the present study, I had decided not to reduce the ordinal levels of the dependent variable by combining some of the levels for two reasons. First, combining categories may result in information loss. Second, combining categories of an ordinal dependent variable may affect the correlation between the variable and independent variables and the overall regression model (Irwin & McClelland, 2003). However, for the model with seven categories of the dependent variable, SAS 9.4 warned that "Negative individual predicted probabilities were identified in the final model fit" and that the "Validity of the model fit is questionable." The SAS support community suggested reducing the number of categories of the dependent variable as a possible solution. I therefore decided to reduce the number of categories from seven to five by combining the first three levels. No such warning was raised when the dependent variable was operationalized in this way. The decision to combine the three lower categories was based on an inspection of the distribution of the responses and a desire to not combine the "Neither Agree nor Disagree" category with any other category because it conveys information that no other category does by indicating that the respondent has equally positive and negative feelings towards running out of money during retirement (Alwin & Krosnick, 1991). In summary the dependent variable for the study, retirement worry has the following five levels. Responses 1, 2,

and 3 were combined to create a low retirement worry level while responses 4, 5, 6, and 7 were maintained and can be thought of as representing moderate, considerable, high, and very high levels of retirement worry.

According to Tallis and Eysenck (1994) worry is initiated when there is dissonance between the severity of a perceived threat (primary appraisal) and the perceived resources (secondary appraisal). Once worry is initiated, coping strategies are a response to mitigate the influence of financial strain on retirement worry. Therefore, the independent variables for present study are organized by the three constructs in the Tallis and Eysenck (1994) model : (a) perceived threat (i.e., financial strain), (b) financial and personal resources, and (c) coping strategies (i.e., retirement savings needs calculation, and foregoing medical care).

Independent Variables

Financial Strain

Based on the literature review (see Table 2.2 in Chapter 2) financial strain was measured with a score that was created based on seven items. For each item, a binary indicator was created to indicate the presence of financial strain (1 = yes, 0 = no). The affirmative responses to the questions were summed to create a financial strain score (range: 0 to 7). For univariate analysis, the financial strain score was then specified into eight categories ranging from zero financial stressors (i.e., no financial strain) to seven financial stressors (i.e., very high financial strain). A factor analysis of the seven questions that was carried out in the results section of the present study showed that all the items captured one underlying factor, and therefore could be summed as a single continuous score. For multivariate analysis, a financial strain index was created (range: 0 to 7). A higher total score indicated a higher level of financial strain. A Cronbach's

alpha was calculated to measure reliability of the index. Respondents were asked the following seven questions.

- "In a typical month, how difficult is it for you to cover your expenses and pay all your bills?" Respondents were asked to rate their difficulty as "Very difficult," "Somewhat difficult," or "Not at all difficult." If the respondents indicated either very difficult or somewhat difficult, the variable was coded with 1, otherwise 0.
- "How confident are you that you could come up with $2,000 if an unexpected need arose within the next month?" Respondents were asked to respond as follows: "I am certain I could come up with the full $2,000," "I could probably come up with $2,000," "I could probably not come up with $2,000," and "I am certain I could not come up with $2,000." If the respondents indicated that they probably or certainly could not come up with $2,000 if the sudden need were to arise within the next month, the variable was coded with 1, otherwise 0.
- "In the past 12 months, have you/your household experienced a large drop in income which you did not expect?" The variable was coded with 1 for yes, otherwise 0.
- "Do you currently have any unpaid bills from a healthcare or medical service provider (e.g., a hospital, a doctor's office, or a testing lab) that are past due?" The variable was coded with 1 for yes, otherwise 0.
- "How strongly do you agree or disagree with the following statement?" "I have too much debt right now." The response format was on a seven-point Likert-type scale where: 1 = "Strongly Disagree," 4 = "Neither Agree nor Disagree," and 7 = "Strongly Agree." Similar to (Hasler et al., 2018) if the response was 5, 6, or 7, the variable was coded with 1, otherwise 0.

- "Have you been contacted by a debt collection agency in the past 12 months?" The variable was coded with 1 for yes, otherwise 0.
- "How well does this statement describe you or your situation? I am just getting by financially." The response format was on a 5-point Likert-type scale where: 1 = "Does not describe me at all," 2 = "Describes me very little," 3 = "Describes me somewhat," 4 = "Describes me very well," and 5 = "Describes me completely." If the response was 3, 4, or 5, the variable was coded with 1, otherwise 0.

Financial Resources

For household income, eight categorical variables were created: less than $15K, $15K to $25K, $25K to $35K, $35K to $50K, $50K to $75K, $75K to $100K, $100K to $150K, and more than $150K. Respondents were asked "Are you covered by health insurance?" The variable was coded with 1 for yes, otherwise 0. Short-term saving was measured with a short-term savings score that was created based on two items. For each item, a binary indicator was created to indicate the presence of short-term savings (1 = yes, 0 = no). The affirmative responses to the questions were summed to create a short-term savings score (range: 0 to 2) with a high score indicating a higher presence of short-term saving. For univariate analysis, the score was then specified into three categories: zero, one, and two. A factor analysis of the two questions that was carried out in the results section of the present study showed that all the items captured one underlying factor, and therefore could be summed as a single continuous score. For multivariate analysis, a short-term savings index was created (range: 0 to 2). A higher total score indicated a higher presence of short-term saving. A Cronbach's alpha was calculated to measure reliability of the index. Respondents were asked the following two questions.

- "Have you set aside emergency or rainy-day funds that would cover your expenses for 3 months, in case of sickness, job loss, economic downturn, or other emergencies?" The variable was coded with 1 for yes, otherwise 0.
- "How often does this statement apply to you? I have money left over at the end of the month." The response format was on a five-point Likert-type scale where: 1 = "Never," 3 = "Sometimes," and 5 = "Always." If the response was 4 or 5, the variable was coded with 1, otherwise 0.

The ownership of retirement savings accounts was measured with two separate items. Regarding ownership of employer-sponsored retirement plans, respondents were asked "Do you or your spouse/partner have any retirement plans through a current or previous employer, like a pension plan or a 401(k)?" The variable was coded with 1 for yes, otherwise 0. Regarding ownership of IRA/Keogh plans, respondents were asked "Do you or your spouse/partner have any other retirement accounts NOT through an employer, like an IRA, Keogh, SEP, or any other type of retirement account that you have set up yourself?" The variable was coded with 1 for yes, otherwise 0.

Personal Resources

Subjective knowledge was measured on a Likert-type scale in response to the question "On a scale from 1 to 7, where 1 means very low and 7 means very high, how would you assess your overall financial knowledge?" Objective financial knowledge was measured with five questions regarding compound interest, inflation, bond prices, mortgages and portfolio diversification (see Table 3.2). Past research has traditionally measured objective financial knowledge through multiple choice or true–false test questions (Allgood & Walstad, 2016).

Table 3.2 Objective Financial Knowledge Questions

Topic	Question
Interest	"Suppose you had $100 in a savings account and the interest rate was 2% per year. After 5 years, how much do you think you would have in the account if you left the money to grow?" (1) More than $102, (2) Exactly $102, (3) Less than $102, (98) Do not know, and (99) Prefer not to say.
Inflation	"Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After 1 year, how much would you be able to buy with the money in this account?" (1) More than today, (2) Exactly the same, (3) Less than today, (98) Do not know, and (99) Prefer not to say.
Bond Price	"If interest rates rise, what will typically happen to bond prices?" (1) They will rise, (2) They will fall, (3) They will stay the same, (4) There is no relationship between bond prices and the interest rates, (98) Do not know, and (99) Prefer not to say.
Mortgage	"Please tell me whether this statement is true or false. A 15-year mortgage typically requires higher monthly payments than a 30-year mortgage, but the total interest paid over the life of the loan will be less." (1) True, (2) False, (98) Do not know, and (99) Prefer not to say.
Portfolio	"Please tell me whether this statement is true or false. Buying a single company's stock usually provides a safer return than a stock mutual fund." (1) True, (2) False, (98) Do not know, and (99) Prefer not to say.

Some or all of the objective financial knowledge questions in the 2018 NFCS have been used as reliable and valid indicators of objective financial knowledge in national surveys such as the Health and Retirement Survey, National Longitudinal Survey of Youth and the American Life Panel survey (Allgood & Walstad, 2016). Correct answers were coded 1. Incorrect answers and "do not know" were coded 0. The correct answers to the questions were summed to create an objective financial knowledge index (range: 0 to 5). A higher total score indicated a higher level of objective financial knowledge. For univariate analysis, the score was then specified into six categories ranging from zero (i.e., all five answers incorrect) to five (i.e., all five answers correct). A factor analysis of the five questions that was carried out in the results section of the present study showed that all the items captured one underlying factor, and therefore could be summed as a single continuous score. A Cronbach's alpha was calculated to measure reliability of the index.

Financial self-efficacy was measured with a single item using a four-point scale (not at all confident to very confident) about one's self-assessed confidence to achieve financial goals. Respondents were asked the following question. "If you were to set a financial goal for yourself today, how confident are you in your ability to achieve it?" The response format was on a 4-point Likert-type scale where: 1 = "Not at all confident," 2 = "Not very confident," 3 = "Somewhat confident," and 4 = "Very confident."

To measure financial self-efficacy, some researchers (e.g., Xiao, Chen, & Chen, 2014) have utilized a single, seven-point response format item (strongly disagree to strongly agree) based on a respondent's self-assessed ability to handle day-to-day financial matters ("I am good at dealing with day-to-day financial matters, such as checking accounts, credit and debit cards, and tracking expenses."). I created a two-item index based on this item and the item on

confidence to achieve financial goals. The Cronbach's alpha for the index was very low at .47 indicating the low correlation ($r = .32$, $p < .001$) between these two items. Because of the low Cronbach's alpha and the fact that the Lown (2011) financial self-efficacy index has a similar item on achieving financial goals ("It is challenging to make progress toward my financial goals."), I decided to use the single item on self-assessed confidence to achieve financial goals as my measure for financial self-efficacy in the present study.

Financial mastery was measured with an index that was created based on two items (range: 2 to 10). A higher total score indicated a higher level of financial mastery. A factor analysis of the two questions that was carried out in the results section of the present study showed that all the items captured one underlying factor, and therefore could be summed as a single continuous score. A Cronbach's alpha was calculated to measure the reliability of the index. Respondents were asked the following questions. Both items were reverse-coded so that higher scores reflected higher financial mastery.

- "How often does this statement apply to you? My finances control my life." The response format was on a 5-point Likert-type scale where: 1 = "Never," 2 = "Rarely," 3 = "Sometimes," 4 = "Often," and 5 = "Always."
- "How well does this statement describe you or your situation? Because of my money situation, I feel like I will never have the things I want in life" The response format was on a 5-point Likert-type scale where: 1 = "Does not describe me at all," 2 = "Describes me very little," 3 = "Describes me somewhat," 4 = "Describes me very well," and 5 = "Describes me completely."

Measuring financial mastery with the two questions discussed in the preceding paragraph was supported by the literature review. The first question is "How often does this statement

apply to you? My finances control my life." This question is similar to a statement from the widely used Pearlin and Schooler's (1978) Mastery Scale ("I have little control over the things that happen to me"). The second question "How well does this statement describe you or your situation? Because of my money situation, I feel like I will never have the things I want in life" is similar to a statement from Pearlin and Schooler's (1978) Mastery Scale ("I often feel helpless in dealing with the problems of life"). The Mastery Scale measures a person's felt sense that they manifest personal mastery over life outcomes (Pearlin & Schooler, 1978) and has been widely used in the stress process research (Scheier, Carver, & Bridges, 1994). Britt and colleagues (Britt et al., 2015; Britt et al., 2016) used the scale in financial stress studies among college students.

Coping Strategies

Calculating retirement savings needs was measured with a single item. Respondents were asked "Have you ever tried to figure out how much you need to save for retirement?" The variable was coded with 1 for yes, otherwise 0. The presence of foregoing medical care was measured with a score that captured reports of foregoing medical care. The score was based on three items. For each item, a binary indicator was created to indicate foregoing medical care (1 = yes, 0 = no). The affirmative responses to the questions were summed to create a foregoing medical care score (range: 0 to 3). A higher total score indicated a higher level of foregoing medical care. A factor analysis of the three questions that was carried out in the results section of the present study showed that all the items captured one underlying factor, and therefore could be summed as a single continuous score. The respondents were asked the following question. "In the last 12 months, was there any time when you…" The responses were: "Did NOT fill a prescription for medicine <u>because of the cost</u>," "SKIPPED a medical test, treatment or follow-up

recommended by a doctor because of the cost," and "Had a medical problem but DID NOT go to a doctor or clinic because of the cost."

Control Variables

The literature review identified several demographic variables that have been found to influence retirement worry. These variables are considered control variables in the present study and are listed in Table 3.3. Statistical control variables are required in regression analyses in order to isolate the influence of variables of interest (Wooldridge, 2005).

Statistical Analysis

The present study primarily investigated the predictors of retirement worry with financial strain as the key predictor of interest. Because the dependent variable in the present study has a natural order from low to high retirement worry, ordered logit regression is the appropriate statistical technique to examine the relationship between retirement worry and the set of independent variables. There are various ordered logit models based on the cumulative approach that can be used to develop a multivariate model of retirement worry. According to Fullerton (2009) the cumulative approach models "compare the probability of being at or below a certain point to the probability of being beyond that point" (p. 308) and the widely used model is the proportional odds. In other words, for retirement worry with five categories, the cumulative approach splits the five categories into four binary logit equations based on comparing very high vs. high, considerable, moderate or low retirement worry, high vs. considerable, moderate or low retirement worry, considerable vs. moderate or low retirement worry, and moderate vs. low worry. Thus, the probability of interest is the probability of retirement worry being less than or equal to the very high, high, considerable, or moderate category. Hence, it is called the cumulative probability.

Table 3.3 Measurement of All Variables

Variable	Measurement
Dependent Variable	
Retirement worry	7-point scale with higher scores representing higher levels of retirement worry classified into 5 categories
Low	1 if respondent reported level of retirement worry is 1,2, or 3; otherwise 0
Moderate	1 if respondent reported level of retirement worry is 4; otherwise 0
Considerable	1 if respondent reported level of retirement worry is 5; otherwise 0
High	1 if respondent reported level of retirement worry is 6; otherwise 0
Very high	1 if respondent reported level of retirement worry is 7; otherwise 0
Independent Variables	
Primary Appraisal	
Financial Strain	Summated score (range: 0 to 7) of financial stressors (1 = yes; 0 = no) with higher scores indicating higher levels of financial strain
Secondary Appraisal	
Financial Resources	
Household income	
Less than $15,000	1 if respondent reported income of less than $15,000; 0 if otherwise
$15,000 to $25,000	1 if respondent reported income of at least $15,000 but less than $25,000; otherwise 0
$25,000 to $35,000	1 if respondent reported income of at least $25,000 but less than $35,000; otherwise 0
$35,000 to $50,000	1 if respondent reported income of at least $35,000 but less than $50,000; otherwise 0
$50,000 to $75,000	1 if respondent reported income of at least $50,000 but less than $75,000; otherwise 0
$75,000 to $100,000	1 if respondent reported income of at least $75,000 but less than $100,000; otherwise 0
$100,000 to $15000	1 if respondent reported income of at least $100,000 but less than $150,000; otherwise 0
More than $150,000	1 if respondent reported income of greater than $150,000; otherwise 0
Health insurance	1 if respondent reported being covered by health insurance; otherwise 0
Short-term savings	Summated index (range: 0 to 2) of short-term saving (1 = yes; 0 = no) with higher scores indicating higher short-term savings
Employer-sponsored retirement plan	1 if respondent reported having an employer-sponsored retirement plan; otherwise 0
IRA/Keogh plans	1 if respondent reported owning IRA/Keogh plans; otherwise 0
Personal Resources	
Objective financial knowledge	Summated scale (range: 0 to 5) with higher scores representing higher levels of objective financial knowledge
Subjective financial knowledge	7-point scale with higher scores representing higher levels of subjective financial knowledge
Financial mastery	Summated scale (range: 2 to 10) with higher scores representing higher levels of financial mastery
Financial self-efficacy	4-point scale with higher scores representing higher levels of financial self-efficacy

(continued)

Variable	Measurement
Coping Strategies	
Retirement savings calculation	1 if respondent reported calculating retirement savings needs; otherwise 0
Foregoing medical care	Summated scale (range: 0 to 3) with higher scores representing higher levels of foregoing medical care
Control variables	
Age	
18 - 24	1 if respondent's reported age is from 18 to 24; otherwise 0
25 - 34	1 if respondent's reported age is from 25 to 34; otherwise 0
35 – 44	1 if respondent's reported age is from 35 to 44; otherwise 0
45 – 54	1 if respondent's reported age is from 45 to 54; otherwise 0
55 – 64	1 if respondent's reported age is from 55 to 64; otherwise 0
Education	
Less than high school	1 if respondent reported highest level of education as less than a high school diploma or GED; otherwise 0
High school	1 if respondent reported highest level of education as either high school diploma or GED; otherwise 0
Some college	1 if respondent reported highest level of education as some college education but no degree; otherwise 0
College degree	1 if respondent reported highest level of education as a college degree; otherwise 0
Postgraduate degree	1 if respondent reported highest level of education as a postgraduate degree; otherwise 0
Race	
White	1 if respondent reported being White; otherwise 0
Black	1 if respondent reported being Black; otherwise 0
Hispanic	1 if respondent reported being Hispanic; otherwise 0
Asian/Other	1 if respondent reported being Asian or a race other than Black, White or Hispanic; otherwise 0
Gender	
Male	1 if the respondent is male; otherwise 0
Employment status	
Works full-time	1 if the respondent reported working full-time for an employer; otherwise 0
Works part-time	1 if the respondent reported working part-time for an employer; otherwise 0
Self-employed	1 if the respondent reported being self-employed; otherwise 0
Unemployed	1 if the respondent reported being unemployed; otherwise 0
Not in labor force	1 if the respondent reported being a homemaker, full-time student, disabled, permanently sick, or unable to work; otherwise 0
Marital status	
Married	1 if respondent reported being married; otherwise 0
Single	1 if respondent reported being single; otherwise 0
Separated or divorced	1 if respondent reported being separated or divorced; otherwise 0
Widowed	1 if respondent reported being widowed; otherwise 0
Homeowner	1 if respondent reported that they were a homeowner; otherwise 0
Financially dependent children	1 if the respondent reported having at least one child who depended on them financially; otherwise 0

According to Fullerton (2009), the equation for the proportional odds model is

$$\log\left(\frac{\Pr\{y \leq m|\mathbf{x}\}}{\Pr\{y > m|\mathbf{x}\}}\right) = \tau_m - \mathbf{x}\boldsymbol{\beta}$$

$$(1 \leq m < M)$$

$$\tau_1 < \tau_2 \ldots \tau_{M-1}$$

where m is a category of the ordered variable y, $\mathbf{x}$ is a vector of independent variables, τ is a cut point, $\boldsymbol{\beta}$ is a vector of constant logit coefficients, and the ratio $\Pr\{y \leq m|\mathbf{x}\}/\Pr\{y > m|\mathbf{x}\}$ is the odds of the cumulative probabilities of the dependent variable for the $M-1$ categories.

The negative sign on $\boldsymbol{\beta}$ in this linear model enables an Ordinary Least Squares regression-type interpretation of the coefficients. That is, a positive coefficient means that a unit increase in x is associated with a higher level of y. However, in SAS, the default is to model the probability of the response level with lower ordered value (Allison, 2012b). In other words, the coefficients are parameterized so that positive coefficients translate into lower levels of y for every unit increase in x. According to Fullerton (2009) the probability for any given outcome category m (e.g., moderate worry) in the proportional odds model is

$$\Pr(y = m|\mathbf{x}) = \begin{cases} F(\tau_1 - \mathbf{x}\boldsymbol{\beta}), & m = 1, \\ F(\tau_m - \mathbf{x}\boldsymbol{\beta}) - F(\tau_{m-1} - \mathbf{x}\boldsymbol{\beta}), & 1 < m \leq M-1, \\ 1 - F(\tau_{M-1} - \mathbf{x}\boldsymbol{\beta}), & m = M, \end{cases}$$

where F is the logistic cumulative density function, m, $\mathbf{x}$, τ are similarly defined as above but in addition, each m has its associated logit equation. For retirement worry, with three

categories, the proportional odds model simultaneously estimates two binary logit models with the following marginal probabilities for each retirement worry category:

$$\mathrm{P}_1 = \Pr(y = 1),$$

$$\mathrm{P}_2 = \Pr(y \leq 2) - \Pr(y = 1),$$

$$\mathrm{P}_3 = 1 - \Pr(y \leq 3)$$

One of the major assumptions in the proportional odds model is the constant $\boldsymbol{\beta}$**s** across logit equations for the different cut points. As the above equations show, the coefficient vector $\boldsymbol{\beta}$ does not depend on the level of retirement worry. In other words, the same coefficient vector $\boldsymbol{\beta}$ is assumed for all M levels of the dependent variable implying that the effect of the independent variables on the log odds is constant across all the levels of the dependent variable (e.g., high vs. moderate or low and moderate vs. low). This assumption is known as the proportional odds assumption. While the proportional odds model has the advantage of parsimony, it has the disadvantage that the assumption of proportional odds often doesn't hold in practice, and the consequence is biased estimates that result from two separate significant effects in opposite directions (Fullerton, 2009). For example, in the proportional odds model, financial mastery may have a significant negative association with the high vs. moderate or low category and a significant positive association with the moderate vs. low category. These offsetting positive and negative effects of financial mastery may result in a single, nonsignificant effect of financial mastery on retirement worry in the proportional odds model.

To determine whether the proportional odds assumption was valid, I performed a Score Test. The test has the null hypothesis that proportional odds may be assumed. The assumption of proportionality was rejected ($p < .001$). This suggested that, for at least one independent variable, separate parameters are needed across the logits. Since the proportional odds assumption of the

ordered logit was violated, I used the *partial* proportional odds model to examine the relationship between retirement worry and the independent variables. The partial proportional odds model relaxes the proportional odds assumption only for those independent variables that violate the assumption and allows them to differ across logit equations. According to Fullerton (2009) the probability for any given outcome category m (e.g., moderate worry) in the partial proportional odds model is

$$\Pr(y = m|\mathbf{x}) = \begin{cases} F(\tau_1 - \mathbf{x_1}\boldsymbol{\beta_{1_1}} - \mathbf{x_2}\boldsymbol{\beta_2}), & m = 1, \\ F(\tau_m - \mathbf{x_1}\boldsymbol{\beta_{1_m}} - \mathbf{x_2}\boldsymbol{\beta_2}) - F(\tau_{m-1} - \mathbf{x_1}\boldsymbol{\beta_{1_{m-1}}} - \mathbf{x_2}\boldsymbol{\beta_2}), & 1 < m \leq M - 1, \\ 1 - F(\tau_{M-1} - \mathbf{x_1}\boldsymbol{\beta_{1_{M-1}}} - \mathbf{x_2}\boldsymbol{\beta_2}), & m = M, \end{cases}$$

where F is the logistic cumulative density function, $\boldsymbol{\beta_1}$ is a vector of logit functions that can be different across logit equations, $\boldsymbol{\beta_2}$ is a vector of logit coefficients that are fixed across logit equations, $\mathbf{x_1}$ and $\mathbf{x_2}$ are vectors of independent variables**,** m is a category of the ordered variable, and τ is a cut point.

Because the logistic regression model is linear in log-odds, the coefficient estimates from logistic regression represent the change in the log-odds of the occurrence of the event. This makes the coefficients not easily interpretable in practical application. In contrast, odds ratios are more interpretable. Hence, logistic regression results are typically interpreted using odds ratios. What then is an odds ratio? The odds ratio is the ratio of the odds for two different values of an independent variable. Consider the present study in which the dependent variable is the probability that an individual reported a certain level of retirement worry, and one of the independent variables of interest is financial strain. From the proportional odds model, we can get the odds of an individual reporting retirement worry at various levels of financial strain (i.e.,

low financial strain vs. high financial strain). Based on the proportional odds model, the odds ratio simplifies to the exponent of the estimated coefficient of financial strain, $\beta_{finstrain}$. That is,

$$OR = odds\ ratio = \frac{odds\ for\ high\ financial\ strain}{odds\ for\ low\ financial\ strain} = e^{\beta_{finstrain}}$$

which is equivalent to:

$$log\ odds = \beta_{finstrain}$$

To perform the regression analyses for the present study, I fitted the *partial* proportional odds model using the PROC LOGISTIC statement in SAS9.4. First, I selected the DESCENDING option that allowed me to model the probability of higher levels of retirement worry. Second, I specified both the UNEQUALSLOPES and EQUALSLOPES in the options for the MODEL statement. This allowed SAS9.4 to produce a model that included parameter estimates that satisfy the proportionality assumption as well as those that fail to satisfy the assumption for each independent variable at each level of retirement worry. Now that the independent variables for which the proportional odds assumption was not satisfied had been identified, in the final step, I fitted the final partial proportional odds model by specifying these independent variables in the UNEQUALSLOPES option for the MODEL statement.

To check for multicollinearity, I first examined the bivariate correlations among the independent variables. Second, the variance inflation factor (VIF) was measured. The concordance index and the pseudo R-squared were used to check for model fit and performance. Finally, the beta coefficients of the independent variables were checked for significance and interpreted using odds ratios. In ordinary least squares (OLS) regression, the R-squared statistic indicates the proportion of variance in the dependent variable that is explained by the regression model. Logistic regression models do not have an R-squared statistic with the same

interpretation. The McFadden's R-squared statistic is often reported with logistic regression results. It is based on the log likelihood for the model with independent variables compared to the log likelihood for the model without independent variables. While the McFadden's R-squared statistic does not have the same interpretation as the OLS R-squared it is useful for comparing models because it adjusts for the number independent variables used in the models. The prediction capacity of a model is typically assessed with the receiver operating characteristic (ROC) curve; a large area under the curve indicates better prediction power (Cook, 2007). The area under the ROC curve is the concordance index that SAS 9.4 reports in logistic regression results as the c statistic. Since the c statistic ranges from .50 to 1 (Cook, 2007), Hosmer and Lemeshow (2000) suggested a threshold of .70 for an acceptable model fit.

To check for missing data, the PROC FREQ statement in SAS9.4 was run on each variable included in the regression models. The frequency statement identified that some variables had missing data. Rubin (1976) and Little and Rubin (2002) identified three mechanisms under which missing data can occur: (1) missing at random (MAR), (2) missing completely at random (MCAR), and (3) missing not at random (MNAR). Missing data are considered missing completely at random (MCAR) if the missing values on a particular variable, X, are not related to the underlying values of X or the values of any other variable tested in the study (Little & Rubin, 2002; Rubin, 1976). Missing data are considered missing at random (MAR) if the missing values on a variable X are not related to the underlying values of X but may be related to other variables tested in the study (Little & Rubin, 2002; Rubin, 1976). According to Little and Rubin (2002) and Rubin (1976), when the missingness on variable X is related to the underlying values of the variable X itself, the data are considered as not missing at random (NMAR).

According to Baraldi and Enders (2010), while it is possible to test whether data are MCAR, it is impossible to test whether data are MAR or NMAR because the information needed for such a test requires the unobserved data. To determine the pattern of the missing data in the present study, I first ran the PROC MI procedure in SAS9.4 to get the "Missing Data Patterns" output. The missing data patterns revealed that the missing data appeared not to be MCAR. Second, I followed the two steps recommended by Schlomer, Bauman, and Card (2010) to determine the pattern of the missing data. First, I created dummy variables (1 = yes, 0 = no) that captured whether the independent variables of interest had missing values. Second, I ran a series of binary logistic regressions with each dummy variable as the dependent variable to test the relationships among the dummy variable, the dependent variable in the present study (i.e., retirement worry) and the set of independent variables of interest. According to Schlomer et al. (2010), if the dummy variables are not related to any other variables, then the data are either MCAR or NMAR. In contrast, if the dummy variables are associated with other variables, then the data are MAR or NMAR (Schlomer et al., 2010). There were some significant associations between the dummy variables and some of the independent variables of interest, indicating that the data were MAR or NMAR. It is worth noting that there was no significant association between any of the dummy variables and retirement worry, the dependent variable for the present study.

In SAS9.4, listwise or case deletion is the default method for missing values. According to various researchers (e.g., Allison, 2001; Bartlett, Harel, & Carpenter, 2015; Little & Rubin, 2002), listwise deletion produces unbiased estimates of regression slopes under all missing data mechanisms, provided that missingness missing depends on predictor variables and not on the dependent variable. The series of binary logistic regressions described in the preceding

paragraph revealed that this condition holds in the present study. Therefore, listwise deletion was determined to be an appropriate approach for handling missing data for the present study.

Subgroup Analyses

In addition to developing a multivariate model of retirement worry for non-retired households, with respondents aged 18 to 64 as discussed in the preceding paragraphs, I also analyzed retirement worry for two age-based subsamples and gender to develop a better understanding of the relationship between retirement worry and the set of independent variables considered in the present study.

The age subgroup analysis was motivated by both theoretical and empirical reasons. The life cycle model assumes that savings will be related to an individual's stage in the lifecycle while according Zick, Mayer, and Kara (2012), a number of studies have found age differences in retirement planning behavior. Specifically, compared to younger people, older people are more likely to attach higher importance to retirement planning, engage in more retirement planning behaviors, and have more retirement savings (Zick et al., 2012). Two subsamples based on the age groups 18 to 44, and 45 to 64 were analyzed in the present study. The choice of the 45 to 64 age group provided an opportunity to study retirement worry during a period when most individuals are focusing on life-course issues such as retirement planning (Mayer et al, 2011).

The gender subgroup analysis was motivated by empirical reasons. Research has found evidence for gender-based differences in worry. There is consensus in the literature that women worry more than men (Gould & Edelstein, 2010; Hunt, Wisocki, & Yanko, 2003; Mccann, Stewin, & Short, 1991; Robichaud et al., 2003; Stavosky & Borkovec, 1987). Furthermore, the gender subgroup analysis was for the purpose of comparing the results of the present study with

those of the Lusardi and de Bassa Scheresberg (2017) study that was based on a sample of working women.

Chapter 4 - Results

This chapter provides descriptive and multivariate results of the present study. The first section provides descriptive results for the analytic sample of this study. The second section provides multivariate results in the context of answering the primary and secondary research questions of the present study. The primary purpose of the present study was to determine the degree to which financial strain predicted retirement worry. The secondary purpose was to determine the degree to which financial resources, personal resources, and coping strategies predicted retirement worry. Partial proportional odds hierarchical cumulative logistic regressions were used to answer the following research questions: (1) Is financial strain a significant predictor of retirement worry? (2) Are coping resources and coping strategies significant predictors of retirement worry? (3) Do coping strategies moderate the relationship between financial strain and retirement worry.

Descriptive Statistics

Missing Data

In the present study, the initial sample included 27,091 adults age 18 and over. From the 2018 National Financial Capability Study dataset, the sample was restricted for nonretired respondents to allow for modeling retirement worry before retirement. This data restriction reduced the sample size to 20,762. This sample was further restricted to respondents aged between 18 and 64 years. This further reduced the sample size to 19,279. To control for missing data from this sample, listwise deletion was used to remove all “prefer not to say” and “don’t know” responses (except for the objective financial knowledge questions) to the questions related to all the independent variables. The missing data analysis is provided in Table 4.1.

Table 4.1 Missing Data Analysis

Variable	Sample before listwise deletion (N = 19,729)		
	N	Missing	% Missing
Dependent Variable			
Retirement worry	19140	589	2.99%
Independent Variables			
Primary Appraisal: Financial Strain			
Contacted by debt collector	18973	756	3.83%
Large unexpected drop in income	19079	650	3.29%
Financially fragile	18844	885	4.49%
Difficulty paying bills	19123	606	3.07%
Past due medical debt	19030	699	3.54%
Perceived over indebtedness	19353	376	1.91%
Just getting by financially	19058	671	3.40%
Secondary Appraisal: Financial Resources			
Short-term savings score			
Has emergency funds	18771	958	4.86%
Has money left at end of month	19290	439	2.23%
Retirement savings			
Has own retirement plan (e.g., IRA/Keogh)	18204	1525	7.73%
Has employer-sponsored retirement plan	18362	1367	6.93%
Household income	19729	0	0.00%
Has health insurance	19208	521	2.64%
Secondary Appraisal: Personal Resources			
Objective financial knowledge			
Compound interest	19729	0	0.00%
Inflation	19458	271	1.37%
Bond	19509	220	1.12%
Mortgage	19559	170	0.86%
Diversification	19529	200	1.01%
Subjective financial knowledge	19156	573	2.90%
Financial self-efficacy			
Confidence to achieve financial goals	18863	866	4.39%
Financial mastery			
Finances control me	19128	601	3.05%
Will never have the things I want in life	19014	715	3.62%
Secondary Appraisal: Coping Strategies			
Retirement savings calculation	18703	1026	5.20%
Forego medical care			
Did not fill prescription due to the cost	19042	687	3.48%
Skipped medical test due to the cost	19021	708	3.59%
Did not go to doctor due to the cost	19005	724	3.67%
Control variables			
Age	19729	0	0.00%
Gender	19729	0	0.00%
Race	19729	0	0.00%
Education	19729	0	0.00%
Employment status	19729	0	0.00%
Marital status	19729	0	0.00%
Financial dependents	19729	0	0.00%
Homeowner	19315	414	2.10%

Table 4.1 shows that the level of missing data ranged from 0% to 7.73%; averaged 2.49% across the variables in the model; and were handled through listwise deletion resulting in the final analytical sample size of 13,919. According to Schlomer et al. (2010), listwise deletion of missing data presents a threat to generalizability of research findings because of the possibility that the resultant sample is no longer representative of the original sample. To check whether the analytic sample of the present study was representative of the sample before listwise deletion of missing data, I followed the guidelines provided by Little, Lindenberger, and Maier (2000).

First, I compared the unweighted samples on all variables in the present study (See Table 4.2). The comparison showed that while the samples were quite similar, the analytical sample had respondents who were slightly older, homeowners, more educated, working full-time, and earning more. Furthermore, the analytical sample had respondents who reported slightly higher levels of retirement accounts ownership, financial literacy, financial mastery, subjective financial knowledge, and retirement planning (i.e., calculating retirement savings needs).

Second, I compared the unweighted correlations among the independent variables of interest. The correlation analysis showed that the correlation coefficients were quite similar in both samples (See Appendix A, Tables A.1 and A.2). The results of these analyses provided evidence that the two samples were similar and therefore, the analytic sample was representative of the sample before listwise deletion of missing data. As further robustness checks, I compared the weighted samples on all variables in the present study (See Table 4.2), as well as the weighted correlations among the independent variables of interest (See Appendix A, Tables A.3 and A.4). The results were very similar to those with unweighted data. Consequently, the analytic sample was weighted to represent the general adult US population using the national

weight that is provided with the dataset. This approach is consistent with other researchers (e.g., Robb et al., 2015; Kim et al., 2019) who use the NFCS dataset.

Table 4.2 Sample Characteristics Before and After Listwise Deletion

Variable	Sample before listwise deletion (N = 19,729)			Sample after listwise deletion (N = 13,919)		
	N	Unweighted %	Weighted %	*N*	Unweighted %	Weighted %
Dependent Variable						
Retirement worry	*19140*			*13919*		
Low	4183	21.85	22.04	3218	23.12	23.25
Moderate	3830	20.01	20.39	2336	16.78	17.07
Considerable	2904	15.17	14.78	2187	15.71	15.28
High	2726	14.24	13.87	2082	14.96	14.55
Very high	5497	28.72	28.91	4096	29.43	29.85
Primary Appraisal	*17114*			*13919*		
Financial Stressors						
Zero	3636	21.25	20.60	3165	22.74	22.14
One	2355	13.76	13.61	1893	13.60	13.44
Two	2228	13.02	13.09	1765	12.68	12.70
Three	2543	14.86	14.86	1986	14.27	14.21
Four	2245	13.12	13.57	1736	12.47	12.84
Five	1829	10.69	10.79	1495	10.74	10.80
Six	1686	9.85	10.14	1387	9.96	10.46
Seven	592	3.46	3.34	492	3.53	3.42
Secondary Appraisal						
Financial Resources						
Short-term savings score	*18566*			*13919*		
Zero	5286	28.47	28.09	3746	26.91	26.59
One	5783	31.15	31.45	4118	29.59	29.51
Two	7497	40.38	40.47	6055	43.50	43.90
IRA/Keogh plans	*18204*			*13919*		
Yes	5675	31.17	29.91	4758	34.18	32.93
No	12529	68.83	70.09	9161	65.82	67.07
Employer retirement plan	*18362*			*13919*		
Yes	11007	59.94	57.62	8929	64.15	62.08
No	7355	40.06	42.38	4990	35.85	37.92
Household income	*19729*			*13919*		
Less than $15K	2558	12.97	14.36	1337	9.61	10.73
$15K to $25K	2042	10.35	10.80	1299	9.33	9.79
$25K to $35K	2050	10.39	10.73	1340	9.63	10.00
$35K to $50K	2751	13.94	13.92	1932	13.88	13.79
$50K to $75K	3687	18.69	18.23	2761	19.84	19.31
$75K to $100K	2786	14.12	13.59	2121	15.24	14.82
$100K to $150K	2508	12.71	12.07	2008	14.43	14.10
Above $150K	1347	6.83	6.32	1121	8.05	7.47

(continued)

Variable	Sample before listwise deletion (N = 19,729)			Sample after listwise deletion (N = 13,919)		
Has health insurance	*19208*			*13919*		
Yes	16767	87.29	85.92	12416	89.20	88.20
No	2441	12.71	14.08	1503	10.80	11.80
Secondary Appraisal						
Personal Resources						
Financial knowledge score	*19310*			*13919*		
Zero	1804	9.34	10.11	765	5.50	5.79
One	2815	14.58	15.92	1617	11.62	12.62
Two	4329	22.42	23.18	3031	21.78	23.00
Three	4272	22.12	21.73	3231	23.21	23.11
Four	3993	20.68	19.04	3417	24.55	22.96
Five	2097	10.86	10.02	1858	13.35	12.52
Subjective financial knowledge	*19156*			*13919*		
Range		1 - 7	1 - 7		1 - 7	1 - 7
Mean (Median)		4.98 (5.00)	4.99 (5.00)		5.11 (5.00)	5.13 (5.00)
Standard deviation		1.41	1.45		1.33	1.35
Financial self-efficacy	*18863*			*13919*		
Range		1 - 4	1 - 4		1 - 4	1 - 4
Mean (Median)		2.98 (3.00)	2.99 (3.00)		3.02 (3.00)	3.03 (3.00)
Standard deviation		0.88	0.89		0.87	0.87
Financial mastery	*18727*			*13919*		
Range		2 - 10	2 - 10		2 - 10	2 - 10
Mean (Median)		5.85 (6.00)	5.83 (6.00)		5.95 (6.00)	5.93 (6.00)
Standard deviation		2.34	2.37		2.37	2.38
Secondary Appraisal						
Coping Strategies						
Retirement savings calculation	*18703*			*13919*		
Yes	8151	43.58	42.49	6737	48.40	47.44
No	10552	56.42	57.51	7182	51.60	52.56
Forego medical care	*18590*			*13919*		
Zero	11982	64.45	64.95	9002	64.67	64.83
One	2387	12.84	12.67	1744	12.53	12.39
Two	1935	10.41	10.18	1471	10.57	10.31
Three	2286	12.30	12.20	1702	12.23	12.48
Control variables						
Age	*19729*			*13919*		
18 - 24	2786	14.12	15.62	1569	11.27	12.34
25 – 34	4671	23.68	24.73	3137	22.54	23.48
35 – 44	4470	22.66	21.83	3246	23.32	22.78
45 – 54	4406	22.33	21.24	3315	23.82	22.86
55 – 64	3396	17.21	16.58	2652	19.05	18.54
Gender	*19729*			*13919*		
Male	8602	43.60	49.76	6278	45.10	51.14
Female	11127	56.40	50.24	7641	54.90	48.86
Race	*19729*			*13919*		
White	13711	69.50	57.71	10022	72.00	60.65
Black	2180	11.05	13.56	1426	10.24	12.72
Hispanic	2088	10.58	19.22	1362	9.79	18.01
Asian/Other	1750	8.87	9.51	1109	7.97	8.63

(continued)

Variable	Sample before listwise deletion (N = 19,729)			Sample after listwise deletion (N = 13,919)		
Education	*19729*			*13919*		
Below high school	590	2.99	3.27	277	1.99	2.21
High school	4876	24.71	27.38	3083	22.15	24.35
Some college	5408	27.41	28.97	3801	27.31	29.25
College degree	6520	33.05	29.96	4868	34.97	32.00
Postgraduate degree	2335	11.84	10.43	1890	13.58	12.20
Employment status	*19729*			*13919*		
Works full-time	10477	53.10	52.28	8143	58.50	57.85
Works part-time	2062	10.45	10.75	1308	9.40	9.62
Self-employed	1758	8.91	8.82	1251	8.99	8.90
Unemployed	1173	5.95	6.62	654	4.70	5.28
Not in labor force	4259	21.59	21.53	2653	18.41	18.35
Homeowner	19315			*13919*		
Yes	10585	54.80	52.51	8203	58.93	56.96
No	8730	45.20	47.49	5716	41.07	43.04
Marital status	*19729*			*13919*		
Married	9818	49.76	47.00	7301	52.45	50.15
Single	7393	37.47	40.84	4762	34.21	37.18
Divorced or separated	2173	11.01	10.48	1611	11.57	10.95
Widowed	345	1.75	1.68	245	1.76	1.72
Financially dependent children	*19729*			*13919*		
At least one	12369	62.69	61.04	9013	64.75	63.39
None	7360	37.31	38.96	4906	35.25	36.61

Sample Characteristics

As shown in Table 4.2, the analytic sample consisted of 13,919 nonretired adults, aged 18 to 64. The majority of the full sample was White (61%), male (51%), married (50%), homeowners (57%), and had at least one financially dependent child (63%). In addition, nearly two-thirds (64%) of the sample was in the age range of 35 to 64 years while nearly three-quarters (73%) possessed at least some college education or higher, and nearly six-tenths (58%) were working full-time for an employer.

Retirement Worry

Retirement worry, defined as the worry about running out of money during retirement was the dependent variable of the present study. As shown in Table 4.2, for the analytical sample, the majority (60%) of the respondents reported considerable, high or very high

retirement worry, while a sixth (17%) reported moderate retirement worry and nearly quarter (23%) reported low retirement worry. In other words, about six-tenths of the sample was considerably, highly or very highly worried about running out of money during retirement.

Financial Strain

In the present study, primary appraisal was operationalized as financial strain. Financial strain was measured by the number of reported financial stressors (range: 0 to 7) with a higher score indicating higher levels of financial strain. Table 4.2 shows that for the analytical sample, nearly a quarter (22%) of the respondents reported no financial strain (i.e., zero stressors), while just over a quarter (26%) reported low financial strain (i.e., one to two stressors), and about four-tenths (38%) reported moderate financial strain (i.e., three to five stressors). About one-seventh (14%) reported high financial strain (i.e., six to seven stressors).

Financial Resources

The presence of short-term savings was measured by a short-term savings score (range: 0 to 2) with a higher score indicating higher presence of short-term savings. Table 4.2 shows that for the analytical sample, almost three-tenths (27%) of the respondents had a score of zero, indicating no presence of short-term savings while nearly three-tenths had a score of one, and 44% had the highest score of two. Retirement savings were measured by ownership of employer-sponsored retirement plans and personal retirement accounts such as individual retirement accounts (IRAs) and Keogh plans. Table 4.2 shows that for the analytical sample, a third of the respondents owned IRA/Keogh accounts while just over six-tenths (62%) owned employer-sponsored retirement plans. As reported in Table 4.2, for the analytical sample, about a ninth (11%) of the respondents earned less than $15K while the majority (53%) earned between $15K and $75K and about four-tenths (36%) earned more than $75K.

Personal Resources

As reported in Table 4.2, for the analytic sample, the mean for subjective financial knowledge was 5.13 (*SD* = 1.35) on a one to seven scale, while the mean for financial self-efficacy was 3.03 (*SD* = 0.87) on a one to four scale, and the mean for financial mastery was 5.93 (*SD* = 2.38) on a two to ten scale. Thus, respondents reported relatively high levels of subjective financial knowledge, financial self-efficacy, and financial mastery. Only six percent of respondents answered all financial objective knowledge questions incorrectly, while thirteen percent answered one question correctly, and nearly a quarter (23%) answered two questions correctly. Nearly six-tenths (59%) of the respondents answered at least three of the five questions correctly, indicating a relatively high level of financial literacy among the respondents.

Coping Strategies

The two coping strategies that were the focus of the present study are foregoing medical care and calculating retirement savings needs. As shown in Table 4.2, for the analytical sample, nearly half (47%) of the respondents reported that they calculated retirement savings needs. The three types of foregoing needed medical care because of the cost were: (1) not filling a prescription, (2) skipping a medical test or treatment, and (3) not going to a doctor or clinic. Nearly two-thirds (65%) of the respondents did not forego any medical care because of the cost, while just over a tenth (12%) reported foregoing one type of medical care, and a tenth reported forgoing two types of medical care. Twelve percent of the respondents reported foregoing all three types of medical care because of the cost.

Sample Characteristics Results by Age Groups

Table 4.3 provides descriptive results separately for the full sample (described in the preceding section), for respondents aged 18 to 44, and for respondents aged 45 to 64.

Table 4.3 Sample Characteristics of Categorical Variables

Variable	Analytical sample (*N* = 13,919)		Age 18 to 44 (*N* = 7,952)		Age 45 to 64 (*N* = 5,967)		ChiSq Test
	N	%	*N*	%	*N*	%	
Dependent Variable							
Retirement worry							
Low	3218	23.25	1727	21.70	1491	25.45	***
Moderate	2336	17.07	1454	18.61	882	14.90	***
Considerable	2187	15.28	1249	15.47	938	15.02	ns
High	2082	14.55	1138	14.06	944	15.23	ns
Very high	4096	29.85	2384	30.87	1712	29.40	ns
Primary Appraisal							
Financial Stressors							
Zero	3165	22.14	1333	16.83	1832	29.66	***
One	1893	13.44	1020	12.87	873	14.25	*
Two	1765	12.70	1043	13.30	722	11.85	*
Three	1986	14.21	1185	14.37	801	13.97	ns
Four	1736	12.84	1087	13.96	649	11.25	***
Five	1495	10.80	959	11.89	536	9.25	***
Six	1387	10.46	997	12.95	390	6.94	***
Seven	492	3.42	328	3.83	164	2.84	**
Secondary Appraisal							
Financial Resources							
Short-term savings score							
Zero	3746	26.59	2207	26.58	1539	26.60	ns
One	4118	29.51	2515	31.30	1603	26.99	***
Two	6055	43.90	3230	42.12	2825	46.41	***
IRA/Keogh plans							
Yes	4758	32.93	2268	28.46	2490	39.26	***
No	9161	67.07	5684	71.54	3477	60.74	
Employer retirement plan							
Yes	8929	62.08	4825	58.35	4104	67.36	***
No	4990	37.92	3127	41.65	1863	32.64	
Household income							
Less than $15K	1337	10.73	887	12.58	450	8.11	***
$15K to $25K	1299	9.79	801	10.56	498	8.70	**
$25K to $35K	1340	10.00	853	11.00	487	8.58	***
$35K to $50K	1932	13.79	1190	14.67	742	12.53	**
$50K to $75K	2761	19.31	1598	19.17	1163	19.51	ns
$75K to $100K	2121	14.82	1230	15.04	891	14.51	ns
$100K to $150K	2008	14.10	943	11.54	1065	17.72	***
Above $150K	1121	7.47	450	5.44	671	10.34	***
Has health insurance							
Yes	12416	88.20	6931	85.87	5485	91.80	***
No	1503	11.80	1021	14.13	482	8.50	
Secondary Appraisal							
Personal Resources							
Financial knowledge score							
Zero	765	5.79	523	6.89	242	4.23	***
One	1617	12.62	1162	15.41	455	8.68	***
Two	3031	23.00	2151	28.09	880	15.80	***
Three	3231	23.11	1795	22.22	1436	24.36	**

(continued)

Variable	Analytical sample (*N* = 13,919)		Age 18 to 44 (*N* = 7,952)		Age 45 to 64 (*N* = 5,967)		ChiSq Test
	N	%	*N*	%	*N*	%	
Four	3417	22.96	1629	19.05	1788	28.49	***
Five	1858	12.52	692	8.33	1166	18.45	***
Coping Strategies							
Retirement savings calculation							
Yes	6737	47.44	3500	43.68	3237	52.77	***
No	7182	52.56	4452	56.32	2730	47.23	
Forego medical care							
Zero	9002	64.83	4707	59.74	4295	72.02	***
One	1744	12.39	1081	13.18	663	11.27	**
Two	1471	10.31	991	12.06	480	7.82	***
Three	1702	12.48	1173	15.02	529	8.88	***
Control variables							
Age							
18 – 24	1569	12.34	1569	21.05	—	—	—
25 – 34	3137	23.48	3137	40.07	—	—	—
35 – 44	3246	22.78	3246	38.88	—	—	—
45 – 54	3315	22.86	—	—	3315	55.22	—
55 – 64	2652	18.54	—	—	2652	44.78	—
Gender							
Male	6278	51.14	3448	51.45	2830	50.72	ns
Female	7641	48.86	4504	48.55	3137	49.28	
Race							
White	10022	60.65	5259	53.94	4763	70.14	***
Black	1426	12.72	980	14.91	446	9.61	***
Hispanic	1362	18.01	964	21.44	398	13.15	***
Asian/Other	1109	8.63	749	9.71	360	7.10	***
Education							
Below high school	277	2.21	188	2.46	89	1.86	*
High school	3083	24.35	1661	23.01	1422	26.24	***
Some college	3801	29.25	2268	30.61	1533	27.32	***
College degree	4868	32.00	2808	35.25	2060	31.64	ns
Postgraduate degree	1890	12.20	1027	11.67	863	12.95	*
Employment status							
Works full-time	8143	57.85	4638	57.64	3505	58.13	ns
Works part-time	1308	9.62	766	10.30	542	8.67	**
Self-employed	1251	8.90	641	7.97	610	10.22	***
Unemployed	654	5.28	376	5.54	278	4.92	ns
Not in labor force	2653	18.35	1531	18.55	1032	18.07	ns
Homeowner							
Yes	8203	56.96	3988	48.92	4215	68.35	***
No	5716	43.04	3964	51.08	1752	31.65	
Marital status							
Married	7301	50.15	3777	44.67	3524	57.91	***
Single	4762	37.18	3640	49.07	1122	20.34	***
Divorced or separated	1611	10.95	497	5.81	1114	18.22	***
Widowed	245	1.72	38	0.44	207	3.53	***
Financial dependent children							
At least one	9013	63.39	4613	56.23	4400	73.52	***
None	4906	36.61	3339	43.77	1567	26.48	

Notes: Differences are by age group. ns = not significant. *p<0.05, **p<0.01, ***p<0.001. Weighted results.

Table 4.3 shows that in both age groups the typical respondent was White, male, with at least some college education, had financially dependent children, and worked full-time for an employer. However, there were some prominent differences between the two groups. First, more older respondents were White (54% vs. 70%). Also, fewer Blacks (15% vs. 10%) and fewer Hispanics (21% vs. 13%) were in the older age group. Second, more younger respondents were single (49% vs. 20%) while more older respondents were separated or divorced (6% vs. 18%). Third, more younger respondents reported having no financially dependent children (44% vs. 26%). Finally, more older respondents were homeowners (68% vs. 50%).

Retirement Worry

Retirement worry, defined as the worry about running out of money during retirement was the dependent variable of the present study. As shown in Table 4.3, younger respondents reported lower levels of low retirement worry than older respondents (22% vs. 25%). In contrast, for the moderate level of retirement worry, younger respondents reported higher levels than older respondents (19% vs. 15%). The reported levels of high and very retirement worry were about the same for both age groups. Chi-square tests for differences in levels of retirement worry by age were statistically significant for the low and moderate levels of retirement worry. These results provided preliminary evidence that age may be associated with retirement worry.

Financial Strain

In the present study, primary appraisal was operationalized as financial strain. Financial strain was measured by the number of reported financial stressors (range: 0 to 7) with a higher score indicating higher levels of financial strain. As shown in Table 4.3, fewer younger respondents reported zero financial stressors (i.e., no financial strain) compared to older respondents (19% vs. 30%). In contrast, more younger respondents reported at least four

financial stressors compared to older respondents (43% % vs. 30%). Chi-square tests for differences in levels of financial strain by age were statistically significant across all levels of financials strain with the exception of the three financial stressors level.

Financial Resources

The presence of short-term savings was measured by a short-term savings score (range: 0 to 2) with a higher score indicating higher presence of short-term savings. As shown in Table 4.3, more younger respondents reported a short-term savings score of one compared to older respondents (31% vs. 27%). In contrast, fewer younger respondents reported the maximum short-term savings score of two compared to older respondents (42% % vs. 46%). Chi-square tests for differences in short-term savings scores by age were statistically significant across all levels of short-term savings scores with the exception of the score of zero level.

The presence of retirement savings accounts was measured by ownership of personal retirement accounts such as IRAs and Keogh plans, and employer-sponsored retirement plans. As shown in Table 4.3, fewer younger respondents owned IRA/Keogh accounts compared to older respondents (28% vs. 39%). Similarly, fewer younger respondents owned employer-sponsored retirement plans compared to older respondents (58% vs. 67%). Chi-square tests for differences in ownership of retirement savings accounts and employer-sponsored retirement plans by age were statistically significant.

As shown in Table 4.3, there were striking differences between the two group across almost all income levels. More younger respondents earned less than $15K than older respondents (13% vs. 8%). Similarly, more younger respondents earned between $15K and $50K than older respondents (36% vs. 30%). In contrast, fewer younger respondents earned $100K or more compared to older respondents (17% vs. 28%). Taken together, these results indicated that

younger respondents earned less than older respondents. Chi-square tests for differences in income by age were statistically significant across almost all income levels. Finally, compared to older respondents, fewer younger respondents reported having health insurance coverage (86% vs. 92%). Chi-square tests for differences in health insurance coverage by age were statistically significant.

Coping Strategies

The two coping strategies that were the focus of the present study are foregoing medical care and calculating retirement savings needs. As shown in Table 4.3, compared to older respondents, fewer younger respondents reported that they calculated retirement savings needs (44% vs. 53%). Also, more younger respondents reported foregoing medical care than older respondents (40% vs. 28%). Chi-square tests for differences in foregoing medical care and calculating retirements saving needs by age were statistically significant.

Table 4.4 Sample Characteristics of Continuous Variables

			Full Sample (N = 13,919)		Respondents age 18 to 44 (N = 7,952)		Respondents age 45 to 64 (N = 5,967)		T-test
Variable	Min	Max	Mean	SD	Mean	SD	Mean	SD	
Primary Appraisal									
Financial strain	0	7	2.73	2.14	3.02	2.15	2.33	2.07	***
Secondary Appraisal									
Financial Resources									
Short-term savings	0	2	1.17	0.82	1.16	0.82	1.20	0.81	**
Personal Resources									
Subjective financial knowledge	1	7	5.13	1.35	5.07	1.42	5.21	1.25	***
Objective financial knowledge	0	5	2.82	1.39	2.56	1.37	3.20	1.34	***
Financial self-efficacy	1	4	3.03	0.87	3.09	0.85	2.94	0.89	***
Financial mastery	2	10	5.93	2.38	5.67	2.35	6.30	2.37	***
Secondary Appraisal									
Coping Resources									
Foregoing medical care	0	3	0.70	1.07	0.82	1.14	0.54	0.95	***

Notes: Weighted results. Differences are by age group. *p<0.05, **p<0.01, ***p<0.001

Personal Resources

Table 4.4 reports the means and standard deviations for each continuous variable utilized in the present study. I will focus on the descriptive results for the full sample first. The mean for subjective financial knowledge was 5.13 (*SD* = 1.35) indicating that the respondents rated their subjective financial knowledge fairly high. The mean for objective financial knowledge was 2.82 (*SD* = 1.39) showing that on average, respondents answered three out of the five questions correctly. Since the standard deviation is a measure of the dispersion around the mean, a standard deviation of 1.39 means on average, a respondent answered between two and four questions correctly. The mean for financial self-efficacy was 3.03 (*SD* = 0.87) while the mean for financial mastery was 5.93 (*SD* = 2.38). I will now move to the descriptive statistics for the two age groups. Table 4.4 shows that younger respondents scored lower on all the measures of personal resources with the exception of financial self-efficacy. Average subjective financial knowledge was .14 higher; average objective financial knowledge was .64 higher; average financial self-efficacy was .15 lower; and average self-mastery was .63 higher if the respondent was older. T-tests for these differences were all statistically significant.

Although the descriptive and bivariate analyses for the full sample and subsamples discussed in the preceding sections provided useful insights, they do not provide information on the relationships between independent variables of interest and retirement worry. In the next section, I will provide the results of the multivariate analyses that provided robust tests of the relationship between retirement worry and the independent variables of interest. Similar to the descriptive results presented in the preceding sections, the results are organized according the key concepts of the Tallis and Eysenck (1994) model of worry that was the theoretical framework for the present study.

Multivariate Results

Using the Tallis and Eysenck (1994) model of worry as the guiding framework, the predictors of worry are perceived threat, resources and coping strategies. The model hypothesizes a sequential worry process in which worry results from the lack of adequate resources to meet the demands of a perceived threat. This process can be divided into two stages: (1) threat appraisal and worry activation, and (2) coping. According to Tallis and Eysenck (1994), the primary method by which worry is reduced or terminated is the adoption of effective coping strategies that moderate the relationship between the perceived threat and worry. Based on the theoretical framework for the present study, I sought to sequentially examine the influence of three blocks of variables on retirement worry: (1) threat appraisal and worry activation, (2) coping strategies, and (3) "coping strategy × financial strain" interactions. According to researchers (e.g., Petrocelli, 2003; Wampold & Freund, 1987), hierarchical regression is ideal for such specific and theory-based investigations. Thus, I utilized a three-block hierarchical partial proportional odds cumulative logistic regression model to examine how demographics, financial strain, and resources (block one), coping strategies (block two), and the interactions between financial strain and coping strategies (block three) are related to retirement worry.

Because the present study utilized partial proportional odds cumulative logistic regression, the models generated by sequentially adding financial strain, coping resources, coping strategies, and the interaction terms to the initial regression model are not necessarily nested. A model is nested when it is a subset of another model. This reason for this is the fact that for each partial proportional odds logit model, the variables for which the proportional odds assumption holds may not be the same. As a result, ordinary statistical tests (e.g., Likelihood ratio test) cannot be used to test whether a block of variables significantly added explanatory

power to the model. Consequently, to compare non-nested models, the present study utilized the Akaike information criterion (AIC), one of the most frequently used method for comparing such models (Burnham & Anderson, 2004). However, according to Burnham and Anderson (2004), no statistical test of significance for the AIC exists. Furthermore, according to the AIC, a model with a smaller AIC is preferable since it balances the trade-off between the information gained and complexity from adding more parameters to a model (Burnham & Anderson, 2004).

The moderation hypotheses in the present study were tested by adding interaction terms that were created as products of independent variables to the regression model. The present study assessed moderation effects utilizing the framework suggested by Frazier, Tix, and Barron (2004). However, since multicollinearity was not an issue in the regression model as discussed in the next session, I did not center the continuous variables as suggested by Frazier et al. (2004). Guided by the Tallis and Eysenck (1994) model of worry, I sequentially entered variables into the hierarchical cumulative logistic regression in steps as follows: (1) demographic variables, financial strain (i.e., perceived threat), and resources, (2) coping strategies, and (3) interaction terms. The two interactions terms were simultaneously added to the regression model as recommended by Frazier et al. (2004). The resulting three regression models can be summarized as follows:

$$Model\ 1 = f(demographic, financial\ strain, and\ resources\ variables)$$

$$Model\ 2 = Model\ 1 + f(coping\ strategies\ variables)$$

$$Model\ 3 = Model\ 2 + f(interaction\ terms)$$

Multicollinearity

High multicollinearity results in regression coefficient estimates with large variances and weakens each independent variable's unique contribution to the explained variance in the

dependent variable (Wooldridge, 2005). The presence of multicollinearity was checked in two ways. First, I examined the correlation matrix of all the independent variables. According to Wooldridge (2005), there is no absolute correlation cutoff that indicates the presence of multicollinearity. However, the literature review revealed that a rule of thumb is that correlations above .80 indicate the presence of high multicollinearity. The examination of the correlation matrix showed that there were no correlations above .80. Second, I measured the variance inflation factors (VIF) for the individual coefficients. The variance inflation factor measures how much the variance of a coefficient is higher because the independent variable associated with the coefficient is not uncorrelated with the other independent variables (Wooldridge, 2005). There is inconsistency in the literature on the cutoff value for VIF above which multicollinearity is an issue (O'Brien, 2007; Wooldridge, 2005). However, Allison (2012a) has recommended a cutoff VIF value of 2.50. Table 4.5 provides variables with VIFs greater than 2.50. Allison (2012a) provided criteria for when high VIFs are not an indicator of high multicollinearity and can be ignored: (1) when control variables have high VIFs but independent variables of interest have low VIFs, (2) when variables with high VIFs are dummy variables representing categorical variables with at least three categories, and (3) when the high VIFs are due to the inclusion of powers or interaction terms. As shown in Table 4.5, the VIF for the financial strain index is marginally above the 2.50 cutoff before the introduction of the interaction terms. Also, the VIFs for dummy variables representing the categorical control variables age and education are greater than 2.50. Household income is the only independent variable of interest with high VIFs. However, household income is coded as dummy variables representing categorical variables with three or more categories. Finally, the VIFs for calculating retirement savings needs and foregoing medical care only exceeded 2.50 after the introduction of the interaction terms.

Therefore, based on Allison's (2012a) criteria, multicollinearity was not an issue in the regression analyses results that will be presented in the next section.

Table 4.5 Variables with Variance Inflation Factors > 2.50

	Without interaction terms	With interaction terms
Variable	VIF	VIF
Household income		
$35K to $50K	2.57	2.57
$50K to $75K	3.45	3.45
$75K to $100K	3.39	3.39
$100K to $150K	3.56	3.57
More than $150K	2.75	2.76
Age		
25 - 34	2.62	2.62
35 – 44	2.85	2.85
45 – 54	3.06	3.07
55 – 64	2.91	2.92
Education		
High school	9.72	9.72
Some college	11.20	11.21
College degree	13.07	13.08
Postgraduate degree	7.53	7.53
Financial strain index	2.81	4.68
Calculated retirement savings needs	1.39*	3.09
Forego medical care	1.42*	5.99
Retirement Savings Calculation × Financial Strain	–	3.39
Forego Medical Care×Financial Strain	–	7.65

Note: *Included to allow for comparison with VIFs after introduction of interaction terms.

Factor Analysis

In the section on measurement of variables in Chapter 3, I described the construction of the financial strain, short-term savings, and foregoing medical care indexes. These indexes were created based on several items for each variable. For each item, a binary variable was created to indicate the presence of financial strain, short-term savings, and foregoing medical care. To assess the latent dimensionality of the items used for each variable, I performed factor analysis on the binary variables using the principal component factor method. For all the items, for each variable, only one eigenvalue was greater than one, showing that the items captured a single

underlying factor that could be summed up as a single score. Similarly, for the indexes constructed to measure objective financial knowledge and financial mastery, factor analyses were performed. Furthermore, Cronbach's alpha for each index were measured. The Cronbach's alpha is a measure of reliability and the generally accepted cutoff value is .70 (Cortina, 1993). The Cronbach's alpha for the indexes constructed for the present study were measured and are reported in Table 4.6. The present study measured objective financial knowledge using an index constructed from the "Big 5" financial literacy questions. Past studies (e.g., Kim, et al., 2019) have reported low Cronbach's alpha for objective financial knowledge indexes based on the "Big 5". The short-term savings index had a Cronbach's alpha of .62, relatively lower than the acceptable range of .70 or higher, indicating a relatively low level of internal consistency in the index. Table 4.6 provides a summary of the results of the factor analyses.

Table 4.6 Factor Analysis Results

Variables and Items	Factor Loadings	% of Variance	Eigenvalues >1	Cronbach's Alpha
Financial strain index		43.68%	3.09	0.78
Difficulty to pay bills	0.76			
Contacted by debt collector	0.69			
Past due medical debt	0.68			
Just getting by financially	0.67			
Perceived over-indebtedness	0.66			
Confidence to come up with $2K	0.58			
Unexpected large drop in income	0.56			
Short-term saving index		72.70%	1.45	0.62
Has money left at the end of the month	0.85			
Has emergency funds	0.85			
Objective financial knowledge index		37.95%	1.90	0.58
Inflation	0.72			
Diversification	0.69			
Compound interest	0.60			
Mortgage	0.59			
Bond price	0.44			

(continued)

Variables and Items	Factor Loadings	% of Variance	Eigenvalues >1	Cronbach's Alpha
Financial mastery index		81.61%	1.63	0.77
Finances control me	0.90			
Financial helplessness	0.90			
Foregoing medical care index		72.20%	2.17	0.81
Did not fill a prescription	0.80			
Skipped a medical test or treatment	0.88			
Did not go to a doctor or clinic	0.87			

Primary Analysis

Since the proportional odds assumption was rejected, I used the partial proportional odds logistic model to examine the degree to which financial strain, financial and personal resources, and coping strategies predicted retirement worry. Table 4.7 summarizes the results from the three hierarchical regression models. Overall, Model three that combined demographic, financial strain, financial, and personal resources (block one), coping strategies (block two), and interactions terms (block three) provided strong evidence linking financial strain (i.e., perceived threat), personal resources (i.e. self-efficacy and self-mastery), financial resources (i.e., presence of short-term savings) and coping strategies (i.e., calculating retirement savings needs and foregoing medical care) to retirement worry, as operationalized through the Tallis and Eysenck (1994) model of worry. The significant chi-square statistic ($p < .001$) indicated that the full model was an improvement on the model with no predictors (i.e., the "null" model). The McFadden's R-squared of .1552 meant that there was information gained by including predictors in the model and thus, the full model was a 15.52% improvement on the null model. The regression model's concordance of .760 indicated that the model predicted its own data well and therefore was a good fit.

For each model, the coefficient estimates for the variables that violated the proportional odds assumption are presented in Table 4.7 for each level of retirement worry: 2 = moderate, 3 = considerable, 4 = high, and 5 = very high. The reference category is 1 = low. In Table 4.7, if a variable has a single coefficient estimate, this means for that variable, the proportional odds assumption holds.

Because there is no single odds ratio estimate for an interaction term variable, in SAS9.4, PROC LOGISTIC only computes odds ratio estimates for variables not involved in interactions. Therefore, in Table 4.7, odds ratio estimates for variables involved in interactions are not reported. However, for variables involved in interactions, the ODDSRATIO statement in PROC LOGISTIC was used to get the odds ratio estimates and they are presented in separate tables.

Since there is no single odds ratio estimate for an interaction term variable, odds ratio estimates can be calculated for one of the variables in the interaction term at several values of the other variable in the interaction term. For example, for the interaction variable "forego medical care × financial strain", odds ratio estimates can be calculated for the variable "forego medical care" at various levels of the variable "financial strain".

The regression results are organized, first, according to the order in which blocks of variables were entered into the hierarchical regression model, and second, according to the key concepts of the Tallis and Eysenck (1994) model of worry that was the theoretical framework for the present study.

Table 4.7 Cumulative Logistic Regression for Higher Retirement Worry (N = 13,919)

		Model 1			Model 2			Model 3		
Variable		*B*	*SE B*	*OR*	*B*	*SE B*	*OR*	*B*	*SE B*	*OR*
Intercept	5	0.81***	0.20	-----	0.67**	0.20	-----	0.99***	0.20	-----
Intercept	4	1.37***	0.20	-----	1.31***	0.20	-----	1.51***	0.20	-----
Intercept	3	1.84***	0.20	-----	1.71***	0.20	-----	1.91***	0.20	-----
Intercept	2	3.82***	0.21	-----	3.77***	0.21	-----	3.90***	0.21	-----
Control Variables										
Age (Age18to24)										
Age25to34		0.38***	0.06	1.47	0.41***	0.06	1.50	0.41***	0.06	1.50
Age35to44		0.61***	0.06	1.84						
	5	-----	-----	-----	0.70***	0.08	2.00	0.69***	0.07	2.00
	4	-----	-----	-----	0.68***	0.07	1.99	0.69***	0.07	1.99
	3	-----	-----	-----	0.63***	0.08	1.87	0.63***	0.07	1.88
	2	-----	-----	-----	0.63***	0.08	1.87	0.64***	0.08	1.90
Age45to54										
	5	0.73***	0.08	2.08	0.80***	0.08	2.23	0.81***	0.08	2.25
	4	0.83***	0.07	2.30	0.89***	0.07	2.43	0.91***	0.08	2.48
	3	0.73***	0.07	2.08	0.78***	0.07	2.19	0.80***	0.07	2.23
	2	0.72***	0.08	2.06	0.76***	0.08	2.14	0.77***	0.08	2.17
Age55to 64										
	5	0.69***	0.08	2.00	0.78***	0.08	2.18	0.79***	0.08	2.20
	4	0.81***	0.08	2.24	0.87***	0.08	2.40	0.91***	0.08	2.47
	3	0.70***	0.08	2.01	0.76***	0.08	2.14	0.80***	0.08	2.21
	2	0.59***	0.08	1.81	0.63***	0.08	1.89	0.67***	0.08	1.95
Education (< HS)										
High school (HS)		0.34**	0.12	1.40	0.37***	0.12	1.44	0.32**	0.12	1.38
								0.29*	0.12	1.34
	5	0.34**	0.13	1.41	0.29*	0.13	1.34	-----	-----	-----
	4	0.28*	0.13	1.33	0.31*	0.13	1.36	-----	-----	-----
	3	0.28*	0.13	1.33	0.39**	0.13	1.47	-----	-----	-----
	2	0.32*	0.13	1.38	0.39**	0.13	1.47	-----	-----	-----
College degree		0.19	0.12	1.21						
	5	-----	-----	-----	0.09	0.13	1.09	0.07	0.13	1.07
	4	-----	-----	-----	0.21	0.13	1.24	0.19	0.13	1.21
	3	-----	-----	-----	0.36**	0.13	1.43	0.29*	0.13	1.34
	2	-----	-----	-----	0.28*	0.13	1.33	0.20	0.13	1.22
Postgraduate degree										
	5	0.09	0.14	1.09	0.03	0.14	1.03	0.02	0.14	1.02
	4	0.19	0.14	1.21	0.22	0.14	1.25	0.21	0.14	1.23
	3	0.23	0.14	1.27	0.36**	0.14	1.43	0.30*	0.14	1.34
	2	0.18	0.14	1.20	0.24	0.14	1.28	0.16	0.14	1.18
Race (white)										
Black										
	5	0.25**	0.07	1.26	0.26**	0.07	1.30	0.24**	0.07	1.28
	4	0.04	0.07	0.99	0.06	0.07	1.07	0.04	0.07	1.04
	3	-0.11	0.07	0.88	-0.13	0.07	0.88	-0.14*	0.07	0.87
	2	-0.37***	0.07	0.70	-0.38***	0.07	0.69	-0.39***	0.07	0.68
Hispanic		0.12*	0.06	1.15	0.13*	0.06	1.14	0.12*	0.06	1.13

(continued)

		Model 1			Model 2			Model 3		
Variable		*B*	*SE B*	*OR*	*B*	*SE B*	*OR*	*B*	*SE B*	*OR*
Asian/Other										
	5	0.09	0.08	1.09	0.14	0.08	1.15	0.11	0.08	1.12
	4	0.02	0.07	1.00	0.03	0.07	1.03	0.02	0.07	1.02
	3	-0.14*	0.07	0.83	-0.14*	0.07	0.87	-0.16*	0.07	0.85
	2	-0.18*	0.08	0.81	-0.19*	0.08	0.83	-0.19*	0.08	0.83
Gender (female)		-0.32***	0.03	0.71	-0.31***	0.03	0.73	-0.31***	0.03	0.73
Employment (full-time)										
Works part-time		-0.12*	0.06	0.89	-0.11	0.06	0.89	-0.11	0.06	0.90
Self-employed		0.07	0.06	1.07	0.05	0.06	1.05	0.04	0.06	1.04
Unemployed		-0.06	0.09	0.94	-0.04	0.09	0.96	-0.02	0.09	0.98
Not in labor force		-0.20***	0.05	0.82	-0.21***	0.05	0.81	-0.20***	0.05	0.82
Marital status (married)										
Single					0.02	0.05	1.02	0.01	0.05	1.01
	5	0.03	0.06	1.04	-----	-----	-----	-----	-----	-----
	4	0.06	0.05	1.07	-----	-----	-----	-----	-----	-----
	3	-0.04	0.05	0.96	-----	-----	-----	-----	-----	-----
	2	-0.00	0.06	0.99	-----	-----	-----	-----	-----	-----
Separated or divorced										
	5	0.20**	0.07	1.23	0.20**	0.07	1.22	0.19**	0.07	1.21
	4	0.13	0.07	1.14	0.10	0.07	1.11	0.10	0.07	1.11
	3	0.03	0.07	1.03	0.05	0.07	1.05	0.05	0.07	1.05
	2	-0.07	0.08	0.93	-0.06	0.06	0.94	-0.06	0.08	0.94
Widowed		-0.05	0.13	0.95	-0.05	0.13	0.95	-0.06	0.13	0.95
Homeowner		0.06	0.04	1.06	0.06	0.04	1.06	0.04	0.04	1.04
At least one child		-0.06	0.04	0.94	-0.07	0.04	0.93	-0.07	0.04	0.93
Primary Appraisal										
Financial strain		0.19***	0.01	1.21	0.15***	0.01	1.16	0.09***	0.02	OR[1]
Secondary Appraisal										
Financial Resources										
Short-term savings										
	5	0.08*	0.03	1.08	0.06	0.03	1.06	0.05	0.03	1.05
	4	0.17***	0.03	1.19	0.15***	0.03	1.16	0.15***	0.03	1.16
	3	0.34***	0.03	1.40	0.30***	0.03	1.36	0.31***	0.03	1.36
	2	0.32***	0.04	1.38	0.29***	0.04	1.34	0.29***	0.04	1.34
IRA/Keogh plans								0.02	0.04	1.02
	5	0.10	0.05	1.10	0.04	0.06	1.04	-----	-----	-----
	4	0.10*	0.05	1.11	0.06	0.05	1.06	-----	-----	-----
	3	0.10*	0.05	1.10	0.04	0.05	1.04	-----	-----	-----
	2	-0.09	0.05	0.92	-0.09	0.05	0.91	-----	-----	-----
Work retirement plan		-0.01	0.04	0.99	-0.03	0.04	0.97	-0.03	0.04	0.97
Income (< $15K)										
$15K to $25K		0.08	0.08	1.09	0.08	0.08	1.09	0.08	0.08	1.08
$25K to $35K		0.18*	0.08	1.20	0.17*	0.08	1.19	0.17*	0.08	1.18

(continued)

[1] See Table 4.9

		Model 1			Model 2			Model 3		
Variable		*B*	*SE B*	*OR*	*B*	*SE B*	*OR*	*B*	*SE B*	*OR*
$35K to $50K		0.25**	0.08	1.29	0.23***	0.08	1.26	0.22**	0.08	1.24
$50K to $75K										
	5	0.17*	0.09	1.19	0.16	0.09	1.18	0.15	0.09	1.16
	4	0.37***	0.08	1.45	0.35***	0.08	1.42	0.33***	0.08	1.39
	3	0.35***	0.08	1.43	0.33***	0.08	1.40	0.32**	0.08	1.38
	2	0.28**	0.09	1.33	0.27**	0.09	1.31	0.26**	0.09	1.30
$75K to $100K										
	5	0.43***	0.10	1.53	0.40***	0.10	1.50	0.38***	0.09	1.47
	4	0.54***	0.09	1.71	0.49***	0.09	1.63	0.48***	0.09	1.61
	3	0.56***	0.09	1.75	0.52***	0.09	1.68	0.52***	0.09	1.68
	2	0.36**	0.10	1.43	0.34**	0.10	1.41	0.33***	0.10	1.40
$100K to $150K										
	5	0.10	0.10	1.10	0.11	0.11	1.11	0.11	0.10	1.12
	4	0.42***	0.10	1.52	0.39***	0.10	1.48	0.41***	0.10	1.51
	3	0.48***	0.10	1.62	0.46***	0.10	1.58	0.49***	0.10	1.63
	2	0.38**	0.10	1.46	0.38**	0.10	1.46	0.41***	0.10	1.50
More than $150K										
	5	-0.01	0.14	0.99	-0.00	0.14	0.99	0.03	0.14	1.03
	4	0.27*	0.11	1.31	0.23*	0.11	1.26	0.29*	0.11	1.33
	3	0.23*	0.11	1.26	0.21*	0.11	1.24	0.27*	0.11	1.31
	2	-0.04	0.11	0.96	-0.04	0.11	0.97	0.00	0.11	1.00
Health insurance		-0.06	0.06	0.95	0.02	0.06	1.02	0.02	0.06	1.02
Secondary Appraisal										
Personal Resources										
Financial knowledge										
	5	-0.04*	0.02	0.96	-0.04*	0.02	0.96	-0.04*	0.02	0.96
	4	-0.02	0.02	0.98	-0.02	0.02	0.98	-0.02	0.02	0.98
	3	0.06**	0.02	1.06	0.04**	0.02	1.04	0.05**	0.02	1.05
	2	-0.00	0.02	1.00	-0.00	0.02	1.00	0.00	0.02	1.00
Subjective financial knowledge										
	5	0.01	0.02	1.01	0.00	0.02	1.00	0.00	0.02	1.00
	4	0.01	0.02	1.01	0.00	0.02	1.00	-0.00	0.02	1.00
	3	-0.02	0.02	0.98	-0.03	0.02	0.97	-0.03	0.02	0.97
	2	-0.09***	0.02	0.91	-0.09***	0.02	0.92	-0.09***	0.02	0.92
Financial self-efficacy		-0.25***	0.03	0.78	-0.25***	0.03	0.78	-0.25***	0.03	0.78
Financial mastery										
	5	-0.45***	0.01	0.64	-0.44***	0.01	0.65	-0.44***	0.01	0.65
	4	-0.44***	0.01	0.65	-0.43***	0.01	0.65	-0.42***	0.01	0.65
	3	-0.40***	0.01	0.67	-0.39***	0.01	0.68	-0.39***	0.01	0.68
	2	-0.42***	0.02	0.66	-0.42***	0.02	0.66	-0.41***	0.01	0.66

(continued)

		Model 1			Model 2			Model 3		
Variable		*B*	*SE B*	*OR*	*B*	*SE B*	*OR*	*B*	*SE B*	*OR*
Secondary Appraisal										
Coping Strategies										
Retirement savings calculation (RSC)										
	5	-----	-----	-----	0.07	0.05	1.07	-0.40***	0.07	
	4	-----	-----	-----	0.06	0.04	1.06	-0.33***	0.06	OR[2]
	3	-----	-----	-----	0.10*	0.05	1.11	-0.24***	0.06	
	2	-----	-----	-----	-0.11*	0.05	0.90	-0.43***	0.06	
Forego medical care (FMC)								0.25***	0.04	OR[3]
	5	-----	-----	-----	0.24***	0.02	1.26	-----	-----	-----
	4	-----	-----	-----	0.18***	0.02	1.20	-----	-----	-----
	3	-----	-----	-----	0.17***	0.02	1.18	-----	-----	-----
	2	-----	-----	-----	0.10**	0.03	1.11	-----	-----	-----
Moderated Effects										
RSC×Financial Strain		-----	-----	-----	-----	-----	-----	0.15***	0.02	OR[4]
FMC×Financial Strain		-----	-----	-----	-----	-----	-----	-0.02*	0.01	OR[5]
McFadden's R^2		0.1500			0.1540			0.1552		
ΔMcFadden's R^2		–			0.0040			0.0012		
Concordance		0.7560			0.7590			0.7600		
Likelihood Ratio Test chi-square (df)		–			177*** (11)			NA		
Δc statistic		–			0.0030			0.0010		
AIC		37407.09			37251.79			37187.67		
ΔAIC		–			-155.30			-64.11		

Notes: *p<0.05, **p<0.01, ***p<0.001; AIC=Akaike Information Criterion. NA=not applicable, models not nested.

Model One (Threat Appraisal and Worry Activation)

In Model one, I entered the demographic, financial strain, financial, and personal resources variables (block one) into the regression model for retirement worry. I wanted to establish the relationship between these variables and retirement worry. Overall, Model one exhibited a McFadden's R-squared of .15, a c statistic of .756, and an AIC score of 37,407.

[2] See Table 4.10
[3] See Table 4.11
[4] See Table 4.9
[5] See Table 4.9

Financial Strain

Model one provided support for Hypothesis 1. Financial strain was associated with increased odds of reporting higher retirement worry. Specifically, for every one-unit increase in financial strain, the odds of reporting higher levels of retirement worry increased by 21%, holding all else constant.

Financial Resources

Model one failed to provide support for Hypothesis 2. The results surprisingly revealed that for all levels of retirement worry, individuals with higher incomes were more likely to report higher levels of retirement worry. For example, holding all else constant, compared to individuals earning less than $15K, individuals earning at least $25K but less than $35K and $35K but less than $50K had 20% and 29% greater odds of reporting higher levels of retirement worry, respectively. Even more surprising, holding all else constant, earning at least $100K but less than $150K (as compared to earning less than $15K) was associated with a 62% increase in the odds of reporting high (as compared to considerable, moderate, or low) retirement worry. Similarly, earning greater than $150K (as compared to earning less than $15K) was associated with a 31% increase in the odds of reporting high (as compared to considerable, moderate, or low) retirement worry.

There was a negative but nonsignificant relationship between health insurance coverage and retirement worry. Therefore, Hypothesis 3 was only partially supported. Surprising, for all levels of retirement worry, the presence of short-term savings was associated with greater odds of reporting higher levels of retirement worry. Specifically, holding all else equal, a one-unit increase in the short-term savings index was associated with an 8% increase in the odds of reporting very high (as compared to low, moderate, considerable or high) retirement worry; a

19% increase in the odds of reporting high (as compared to low, moderate, or considerable) retirement worry; a 40% increase in the odds of reporting considerable (as compared to low or moderate) retirement worry; and a 38% increase in the odds of reporting moderate (as compared to low) retirement worry. Thus, Model one failed to provide support for Hypothesis 4.

Surprisingly, IRA/Keogh plan ownership was associated with increased odds of reporting higher levels of retirement worry. Specifically, holding all else equal, ownership of IRA/Keogh plans was associated with a 11% increase in the odds of reporting high (as compared to low, moderate, or considerable) retirement worry and 10% increase in the odds of reporting considerable (as compared to low or moderate) retirement worry. Thus, Model one failed to provide support for Hypothesis 5. There was a negative but nonsignificant relationship between ownership of employer-sponsored retirement plans and retirement worry. Therefore, Hypothesis 6 was only partially supported.

Personal Resources

Objective financial knowledge had a positive association with the very high level of retirement worry and a negative association with the considerable level of retirement worry. Specifically, a one-unit increase in the objective financial knowledge index was associated with a 4% decrease in the odds of reporting very high (as compared to low, moderate, considerable, or high) retirement worry, holding all else constant. Thus, Model one provided evidence in support of Hypothesis 7. In contrast, and unexpectedly, a one-unit increase in the objective financial knowledge index was associated with a 4% increase in the odds of reporting considerable (as compared to low or moderate) retirement worry, holding all else constant. It is noteworthy that in Model one, both the positive and negative effects of objective financial knowledge on retirement worry were relatively small. Holding all else constant, a one-unit increase in an individual's

subjective financial knowledge was associated with a 9% decrease in the odds of reporting moderate (as compared to low) retirement worry. Thus, Model one provided evidence in support of Hypothesis 8.

In line with expectations, financial self-efficacy and financial mastery had strong negative associations with retirement worry. Specifically, a one-unit increase in financial self-efficacy, was associated with a reduction of 22% in the odds of reporting higher levels of retirement worry, holding all else constant. Thus, Hypothesis 9 was supported. Holding all else equal, a one-unit increase in the financial mastery index was associated with an 36% decrease in the odds of reporting very high (as compared to low, moderate, considerable or high) retirement worry; a 35% decrease in the odds of reporting high (as compared to low, moderate, or considerable) retirement worry; a 33% decrease in the odds of reporting considerable (as compared to low or moderate) retirement worry; and a 34% decrease in the odds of reporting moderate (as compared to low) retirement worry. Thus, Hypothesis 10 was supported.

Demographic Variables

The results revealed that older individuals were more likely to report higher levels of retirement worry. Specifically, holding all else constant, compared to those aged 18 to 24, individuals aged 25 to 34, and 35 to 44 had 47% and 84% greater odds of reporting higher retirement worry, respectively. The effects of age on retirement worry varied considerably at each level of retirement worry. For example, holding all else constant, compared to those aged 18 to 24, individuals aged 45 to 54, and 55 to 64 had 106% and 81% greater odds of reporting moderate (as compared to low) retirement worry, respectively.

The results revealed that individuals with more education were more likely to report higher levels of retirement worry. Specifically, holding all else constant, the odds of reporting

higher retirement worry were 40% greater for individuals with high school education than those with less than high school education. The odds of reporting considerable (as compared to low or moderate) retirement worry were 33% greater for individuals with some college education compared to those with less than high school education, holding all else constant.

The effects of race on retirement worry varied considerably at each level of retirement worry. For example, the odds of reporting moderate (as compared to low) retirement worry were 30% lower for Black individuals compared to White individuals, holding all else constant. In contrast, the odds of reporting very high (as compared to low, moderate, considerable, or high) retirement worry were 26% greater for Black individuals compared to White individuals, holding all else constant. Holding all else constant, the odds of reporting higher retirement worry were 15% greater for Hispanic individuals compared to White individuals while for Asian and other individuals (i.e., not Black or Hispanic), the odds of reporting moderate (as compared to low) retirement worry were 19% lower than White individuals.

The odds of reporting higher levels of retirement worry were 29% lower for males than for females, holding all else constant. Surprisingly, compared to individuals working full-time, individuals working part-time and individuals not in the labor force, had 11% and 18% reduced odds of reporting higher retirement worry, respectively, holding all else constant. The odds of reporting very high (as compared to low, moderate, considerable, or high) retirement worry were 23% greater for separated or divorced individuals than for married individuals, holding all else constant.

Model Two (Coping)

In Model two, I combined the two coping strategies (block two) with the demographic, financial strain, and coping resources variables (block one) to establish the relationship between

the two coping strategies and retirement worry as well determine if the coping strategies added more explanatory power to the model estimating retirement worry over and above the block one variables. Overall, Model two exhibited a McFadden's R-squared of .1540, a c statistic of .759, and an AIC score of 37,251, reflecting an increase of .0040, .0030, and a decrease of 155 respectively, from Model one. Since, all else being equal, a higher c statistic and smaller AIC values suggest a better fitting model, Model two was an improvement on Model one, indicating that coping strategies improved the fit of the model examining retirement worry. Furthermore, since Model one was nested in model two, a Likelihood Ratio test was performed. The test revealed a significant chi-square statistic ($p < .001$) indicating that the addition of the coping strategies significantly improved the fit of the model investigating retirement worry.

The two coping strategies that were included in Model two had significant associations with retirement worry. Specifically, calculating retirement savings needs had a positive association with the considerable level of retirement worry ($B = .10$, $p < .05$, $OR = 1.11$) and a negative association with the moderate level of retirement worry ($B = -.11$, $p < .05$, $OR = .90$). Thus, Hypothesis 11 was supported. Foregoing medical care was significant for all levels of retirement worry: very high ($B = .24$, $p < .001$, $OR = 1.26$), high ($B = .18$, $p < .001$, $OR = 1.20$), considerable ($B = .17$, $p < .001$, $OR = 1.18$), and moderate ($B = .10$, $p < .01$, $OR = 1.11$). Thus, Hypothesis 12 was supported.

The inclusion of coping strategies in Model two resulted in education (i.e., college degree) becoming significant at the considerable level of retirement worry ($B = .36$, $p < .01$, $OR = 1.43$) and at the moderate level of retirement worry ($B = .28$, $p < .05$, $OR = 1.33$) while education (i.e., postgraduate degree) became significant at the considerable level of retirement worry ($B = .36$, $p < .01$, $OR = 1.43$). Furthermore, employment status (i.e., working part-time)

and ownership of IRA/Keogh plans became nonsignificant in the regression model on the inclusion of coping strategies in Model two. All other variables retained statistical significance.

The effect of the entry of coping strategies in Model two on the size of the coefficient for financial strain is worth noting. In Model one, the size of the coefficient for financial strain was .19. In Model two, the coefficient for financial strain was .15, a reduction of 21%. In other words, while it remained statistically significant at the $p < .001$. level, the effect of financial strain on the log odds of being at or above a given retirement worry level decreased on the introduction of coping strategies in Model two.

Model Three (Interaction Terms)

In Model three, I combined the interaction terms (block 3) with the two coping strategies (block two) and the demographic, financial strain, and coping resources variables (block one) to establish the relationship between the two interaction terms and retirement worry as well determine if the interaction terms added more explanatory power to the model estimating retirement worry over and above the block one and block two variables. The interaction terms were created as products of variables (i.e., *Retirement Savings Calculation* × *Financial Strain,* and *Foregoing Medical Care* × *Financial Strain*). Overall, Model three exhibited a McFadden's R-squared of .1552, a c statistic of .760, and an AIC score of 37,188 reflecting an increase of .0012, .0010, and a decrease of 64 respectively, from Model two. Based on the degrees of freedom (99 vs. 92), Model two is not nested in model Three. Therefore, I used the AIC score to compare the two models. For comparing models using the AIC score, Burnham and Anderson (2004) recommended rescaling the AIC score to:

$$\Delta_i = AIC_i - AIC_{min}$$

where AIC_{min} is the minimum AIC score for all the models under consideration. According to Burnham and Anderson (2004), this transformation is required so that AIC scores can be compared as a way of assessing the merits of the models. The Δ_i serves this purpose and means that the best model will have $\Delta = 0$, while the remaining models have positive values. Furthermore, Burnham and Anderson (2004) provided the following guidelines for assessing the models under consideration. Table 4.8 provides a summary of the AIC results for the three models for estimating retirement worry.

- Model has substantial support if $\Delta_i \leq 2$
- Model have considerably less substantial support if $4 \leq \Delta_i \leq 7$
- Model has no support if $\Delta_i > 10$

Table 4.8 Summary of AIC Scores for the Models Estimating Retirement Worry

Model	df	AIC	ΔAIC
Model 1	88	37407.09	219.42
Model 2	99	37251.79	64.12
Model 3	92	37187.67	0

Table 4.8 shows that Model three had the lowest AIC score (*AIC* = 37,187) indicating that for the given data, this model is the most parsimonious (Burnham & Anderson, 2004). Based on Burnham and Anderson's (2004) guidelines, there is substantial support in favor of Model three. Furthermore, the other two models have $\Delta_i > 10$ indicating that there is no support for them. Therefore, Model three is an improvement on Model two, indicating that the interaction terms improved the fit of the model examining retirement worry. Since Model two is not nested in Model three, there is no statistical test to determine whether interaction terms significantly improved the model fit. However, the use of the change in AIC scores in conjunction with

Burnham and Anderson's (2004) guidelines provided a robust mechanism for determining that Model three is the most parsimonious model.

The interaction *Retirement Savings Calculation* × *Financial Strain* was significant in the regression model ($B = .15$, $p < .001$), indicating that the relationship between financial strain and retirement worry differed depending on whether an individual had calculated retirement savings needs or not. Thus, Hypothesis 13 was supported. The interaction *Foregoing Medical Care* × *Financial Strain* was significant in the regression model ($B = -.02$, $p < .05$), indicating that the relationship between financial strain and retirement worry differed between individuals with high or low foregoing medical care index scores. Thus Hypothesis 14 was supported.

Frazier et al. (2004) recommend further probing of significant interactions to better interpret them through graphically depicting the moderated association between the independent variable of interest and the dependent variable at different levels of the moderator variable. Such graphs are referred to as effect plots in SAS9.4. I was unable to produce such effect plots for the interactions in Model three because in SAS9.4, the partial proportional odds logistic model utilizes the UNEQUALSLOPES option. Once specified in PROC LOGISTIC, the UNEQUALSLOPES option in SAS9.4 does not allow the specification of statements such as EFFECTPLOT, SLICE, STORE, and PPROB that can be used to produce effect plots in SAS9.4.

All variables retained statistical significance in Model three. However, the effect of the entry of the interaction terms in Model three on the size of the coefficient for financial strain is worth noting. In Model two, the size of the coefficient for financial strain was .15. In Model three, the coefficient for financial strain was .09, a reduction of 40%. In other words, while it remained statistically significant at the $p < .001$. level, the effect of financial strain on the log

odds of being at or above a given retirement worry level decreased on the introduction of interaction terms in Model three.

The PROC LOGISTIC procedure in SAS9.4 only computes odds ratio estimates for variables not involved in interactions. Therefore, the odds ratio estimates for variables involved in interactions were not reported in Table 4.7. To get odds ratios for variables involved in interactions, I used the ODDSRATIO statement in PROC LOGISTIC. It should be noted that there is no single odds ratio estimate for the interaction terms. Instead, odds ratio estimates can be calculated for one of the variables in the interaction term at several values of the other variable in the interacting term. Because the variable financial strain was in the two interactions: *Retirement Savings Calculation* × *Financial Strain* and *Foregoing Medical Care* × *Financial Strain*, the effect of financial strain on retirement worry is conditional on the variables: calculating retirement savings needs and foregoing medical care.

Table 4.9 provides the odds ratio estimates together with their confidence limits intervals for financial strain at different scores of the foregoing medical care index and values of the dummy variable for calculating retirement savings. The first row of Table 4.9 shows that, holding all else constant, a one-unit increase in the financial strain index was associated with a 9% increase in the odds of reporting higher levels of retirement worry for individuals who neither forewent medical care nor calculated retirement savings needs. Similarly, the last row of Table 4.9 shows that, holding all else constant, a one-unit increase in the financial strain index was associated with a 21% increase in the odds of reporting higher levels of retirement worry for individuals who forewent three types of medical care and calculated retirement savings needs. Table 4.9 shows that effect of financial strain on retirement worry was highest ($OR = 1.28$) for individuals who did not forgo medical care and calculated retirement savings needs (i.e., FMC =

0 and RSC = 1) and lowest (*OR* = 1.06) for individuals who forwent two types of medical care and did not calculate retirement savings needs (i.e., FMC = 2 and RSC = 0). Overall, Table 4.9 shows that higher foregoing medical care and calculating retirement savings needs exacerbates the effect of financial strain on retirement worry. Furthermore, higher foregoing medical care and *not* calculating retirement savings needs also exacerbates the effect of financial strain on retirement worry but to a lesser extent.

Table 4.9 Odds Ratios for Financial Strain

Foregoing Medical Care (FMC) Index Level	Retirement Savings Calculation (RSC) (1 = yes, 0 = no)	Odds Ratios for Financial Strain	95% Confidence Limits	
0	0	1.093	1.059	1.129
0	1	1.275	1.234	1.319
1	0	1.075	1.044	1.107
1	1	1.254	1.215	1.293
2	0	1.056	1.020	1.095
2	1	1.232	1.187	1.280
3	0	1.039*	0.991	1.089
3	1	1.212	1.153	1.273

Note: *Not significant since the OR confidence limits intervals include the null value of 1.

The inclusion of the interaction term in Model three had a big effect on the size and sign of the coefficient for calculating retirement savings needs. In Model two, calculating retirement savings needs was significant at two levels of retirement worry: considerable ($B = .10$, $p <. 05$, $OR = 1.11$) and moderate ($B = -.11$, $p < .05$, $OR = .90$). In contrast, in Model three, calculating retirement savings was significant for all levels of retirement worry: very high ($B = -.40$, $p < .001$), high ($B = -.33$, $p < .001$), considerable ($B = -.24$, $p < .001$), and moderate ($B = -.43$, $p < .001$). Thus, providing strong evidence in support of Hypothesis 11. Because the interaction term *Retirement Savings Calculation* × *Financial Strain* was significant ($B = .15$, $p < .001$), the size

and sign change of the coefficient for calculating retirement savings needs indicated that it was important to have the interaction term in the regression model for retirement worry.

Because the interaction term *Retirement Savings Calculation* × *Financial Strain* was significant, the effect of calculating retirement savings needs on retirement worry was conditional on financial strain index scores. Table 4.10 provides the odds ratios together with their confidence limits intervals for calculating retirement savings needs at different levels of the financial strain index.

For the very high level of retirement worry, the first row of Table 4.10 shows that holding all else constant, individuals who reported calculating retirement savings needs had 31% lower odds of reporting very high (as compared to low, considerable, moderate, or high) level of retirement worry if they reported no financial strain. Similarly, the second row, shows that holding all else constant, individuals who reported calculating retirement savings needs had 19% lower odds of reporting very high (as compared to low, considerable, moderate, or high) level of retirement worry if they reported a financial strain index level of one. In contrast, the last two rows show that holding all else constant, individuals who reported calculating retirement savings needs had 40% and 103% higher odds of reporting very high (as compared to low, considerable, moderate, or high) level of retirement worry if they reported financial strain index levels of six and seven, respectively. A similar pattern of results is evident for high, considerable, and moderate levels of retirement worry. In other words, at low financial strain levels, calculating retirement savings needs mitigated the effect of financial strain on retirement worry while at higher financial strain levels, calculating retirement savings needs exacerbated the effect of financial strain on retirement worry.

Table 4.10 Odds Ratios for Retirement Savings Calculation (RSC)

Retirement Worry Level	Financial Strain Level	Odds Ratios for RSC	95% Confidence Limits	
Very high	0	0.691	0.601	0.794
	1	0.806	0.717	0.906
	2	0.940*	0.850	1.041
	3	1.097*	0.996	1.208
	4	1.280	1.155	1.417
	5	1.493	1.326	1.680
	6	1.401	1.210	1.622
	7	2.032	1.719	2.401
High	0	0.722	0.638	0.817
	1	0.842	0.760	0.933
	2	0.982*	0.898	1.075
	3	1.146	1.048	1.252
	4	1.337	1.209	1.477
	5	1.559	1.383	1.758
	6	1.819	1.573	2.104
	7	2.122	1.784	2.524
Considerable	0	0.787	0.699	0.885
	1	0.918*	0.831	1.014
	2	1.071*	0.979	1.171
	3	1.249	1.139	1.370
	4	1.457	1.310	1.622
	5	1.700	1.495	1.933
	6	1.984	1.699	2.315
	7	2.314	1.926	2.780
Moderate	0	0.648	0.573	0.733
	1	0.756	0.678	0.843
	2	0.882	0.795	0.979
	3	1.029*	0.922	1.149
	4	1.201	1.060	1.360
	5	1.401	1.210	1.622
	6	1.634	1.376	1.941
	7	1.906	1.561	2.328

Note: *Not significant since the OR confidence limits intervals include the null value of 1.

Because the interaction term *Foregoing Medical Care* × *Financial Strain* was significant, the effect of foregoing medical care on retirement worry was conditional on financial strain index scores. Table 4.11 provides the odds ratios together with their confidence limits intervals for foregoing medical care at different levels of the financial strain index.

Table 4.11 Odds Ratios for Foregoing Medical Care (FMC)

Financial Strain	Odds Ratios for FMC	95% Confidence Limits	
0	1.284	1.194	1.380
1	1.262	1.190	1.338
2	1.240	1.184	1.299
3	1.219	1.174	1.267
4	1.199	1.156	1.243
5	1.178	1.130	1.229
6	1.158	1.099	1.221
7	1.139	1.066	1.216

The first row of Table 4.11 shows that, for individuals who reported no financial strain, a one-unit increase in the foregoing medical care index was associated with a 28% increase in the odds of reporting higher levels of retirement worry, holding all else constant. Similarly, the last row shows that, for individuals who reported a financial strain index score of seven, a one-unit increase in the foregoing medical care index was associated with a 14% increase in the odds of reporting higher levels of retirement worry, holding all else constant.

Secondary Analysis

Age

In addition to developing a multivariate model of retirement worry for nonretired households, with respondents aged 18 to 64 as discussed in the preceding paragraphs, I also analyzed retirement worry for two age-based subsamples to develop a better understanding of the relationship between retirement worry and the set independent variables considered in the

present study. This decision was based on both theoretical and empirical reasons. The life cycle model assumes that savings will be related to an individual's stage in the lifecycle while a number of studies have found age differences in retirement planning behavior.

I split the full sample used in the present study (n = 13,919) into two subsamples: age 18 to 44 (n = 7,952) and age 45 to 64 (n = 5,967). The partial proportional odds logit model from the primary analysis was applied to each subsample. The results of these two partial proportional odds logits are summarized in Table 4.12. In terms of model fit, McFadden's R-squared was .1371, and .1811 while the c statistic was .743, and .786 for age 18 to 44 and age 45 to 64 models, respectively.

Contrary to the primary model, education, all levels of income except two categories (i.e., $75K to $100K and $100K to $150K), employment status (i.e., not in the labor force), marital status (i.e., separated or divorced), and the interaction *Foregoing Medical Care* × *Financial Strain* were nonsignificant in the age 18 to 44 model. All other effects were consistent between the primary model and the age 18 to 44 model.

Contrary to the primary model, education, race (except Black), all levels of education except one category (i.e., some college), and marital status (i.e., separated or divorced) were nonsignificant in the age 45 to 64 model while employment status (i.e., works part-time) (B = -.23, p = .05, OR = .80) and ownership of employer-sponsored retirement plan were significant. Specifically, ownership of employer-sponsored retirement plans was significant in opposite directions for two levels of retirement worry: very high (B = -.38, p < .001, OR = .69) and considerable (B = .34, p < .01, OR = 1.40). All other effects were consistent between the primary model and the age 45 to 64 model.

Table 4.12 Cumulative Logistic Regression for Higher Retirement Worry (by age)

		Respondents age 18 to 44 (N = 7,952)			Respondents age 45 to 64 (N = 5,967)		
Variable		*B*	*SE B*	*OR*	*B*	*SE B*	*OR*
Intercept	5	0.39	0.24	-----	2.66***	0.33	-----
Intercept	4	0.93**	0.24	-----	3.28***	0.33	-----
Intercept	3	1.53***	0.24	-----	3.64***	0.33	-----
Intercept	2	3.55***	0.26	-----	5.10***	0.34	-----
Control Variables							
Age (age18to24: younger sample)							
Age (age45to54: older sample)							
Age25to34		0.42***	0.06	1.53	-----	-----	-----
Age35to44		0.69***	0.07	2.00	-----	-----	-----
Age55to 64		-----	-----	-----	-0.02	0.05	0.98
Education (less than high school)							
High school					0.51	0.22	1.66
	5	0.19	0.16	1.21	-----	-----	-----
	4	0.23	0.15	1.25	-----	-----	-----
	3	0.19	0.15	1.21	-----	-----	-----
	2	0.21	0.16	1.24	-----	-----	-----
Some college		0.21	0.15	1.24	0.45*	0.22	1.56
College degree					0.35	0.23	1.42
	5	-0.05	0.16	0.95	-----	-----	-----
	4	0.12	0.15	1.13	-----	-----	-----
	3	0.23	0.15	1.25	-----	-----	-----
	2	0.16	0.16	1.17	-----	-----	-----
Postgraduate degree					0.35	0.23	1.41
	5	-0.10	0.18	0.91	-----	-----	-----
	4	0.16	0.17	1.17	-----	-----	-----
	3	0.26	0.17	1.30	-----	-----	-----
	2	0.06	0.17	1.06	-----	-----	-----
Race (white)							
Black					-0.38**	0.10	0.68
	5	0.37***	0.09	1.45	-----	-----	-----
	4	0.16	0.08	1.18	-----	-----	-----
	3	0.03	0.08	1.03	-----	-----	-----
	2	-0.37***	0.09	0.69	-----	-----	-----
Hispanic					0.05	0.10	1.05
	5	0.23**	0.09	1.25	-----	-----	-----
	4	0.08	0.08	1.09	-----	-----	-----
	3	0.17*	0.08	1.19	-----	-----	-----
	2	0.10	0.10	1.11	-----	-----	-----
Asian/Other					-0.16	0.11	0.85
	5	0.22*	0.10	1.24	-----	-----	-----
	4	0.11	0.09	1.12	-----	-----	-----
	3	-0.12	0.09	0.89	-----	-----	-----
	2	-0.20*	0.10	0.82	-----	-----	-----
Gender (female)		-0.26***	0.05	0.77	-0.44***	0.05	0.65

(continued)

		Respondents age 18 to 44 (N = 7,952)			Respondents age 45 to 64 (N = 5,967)		
Variable		*B*	*SE B*	*OR*	*B*	*SE B*	*OR*
Employment (full-time)							
Works part-time		-0.04	0.08	0.96	-0.23*	0.09	0.80
Self-employed		0.08	0.08	1.09	-0.02	0.09	0.98
Unemployed		-0.12	0.11	0.89	0.13	0.14	1.14
Not in labor force		-0.11	0.06	0.90	-0.39***	0.08	0.68
Marital status (married)							
Single		0.01	0.06	1.00	0.00	0.08	1.00
Separated or divorced					0.12	0.07	1.12
	5	0.19	0.11	1.21	-----	-----	-----
	4	-0.02	0.11	0.99	-----	-----	-----
	3	-0.10	0.11	0.91	-----	-----	-----
	2	-0.20	0.14	0.82	-----	-----	-----
Widowed		-0.17	0.30	0.85	-0.09	0.15	0.92
Homeowner		0.06	0.05	1.06	-0.04	0.07	0.96
At least one child		-0.06	0.05	0.94	-0.11	0.07	0.90
Primary Appraisal							
Financial strain		0.10***	0.02	1.21	0.08**	0.03	-----
Secondary Appraisal							
Financial Resources							
Short-term savings					0.13**	0.05	1.14
	5	0.03	0.04	1.03	-----	-----	-----
	4	0.16***	0.04	1.18	-----	-----	-----
	3	0.37***	0.04	1.45	-----	-----	-----
	2	0.28***	0.05	1.33	-----	-----	-----
IRA/Keogh plans		-0.04	0.06	0.97	0.07	0.06	1.07
Work retirement plan		-0.04	0.06	0.96			
	5	-----	-----	-----	-0.38***	0.09	0.69
	4	-----	-----	-----	-0.04	0.08	0.97
	3	-----	-----	-----	0.34**	0.09	1.40
	2	-----	-----	-----	0.10	0.10	1.11
Income (< $15K)							
$15K to $25K		0.02	0.09	1.02	0.26	0.13	1.30
$25K to $35K		0.07	0.10	1.07	0.43**	0.14	1.54
$35K to $50K		0.07	0.09	1.08	0.54***	0.14	1.72
$50K to $75K					0.56***	0.14	1.76
	5	0.01	0.10	1.02	-----	-----	-----
	4	0.14	0.10	1.15	-----	-----	-----
	3	0.18	0.10	1.20	-----	-----	-----
	2	0.17	0.11	1.18	-----	-----	-----
$75K to $100K		0.35**	0.10	1.42	0.64***	0.15	1.90
$100K to $150K					0.66***	0.15	1.94
	5	0.02	0.13	1.02	-----	-----	-----
	4	0.32**	0.12	1.38	-----	-----	-----
	3	0.39**	0.12	1.47	-----	-----	-----
	2	0.23	0.13	1.26	-----	-----	-----
More than $150K		-0.13	0.13	0.88	0.51**	0.16	1.67

(continued)

		Respondents age 18 to 44 (N = 7,952)			Respondents age 45 to 64 (N = 5,967)		
Variable		*B*	*SE B*	*OR*	*B*	*SE B*	*OR*
Health insurance		-0.02	0.07	0.98	0.07	0.10	1.08
Secondary Appraisal							
Personal Resources							
Objective financial knowledge							
	5	-0.03	0.02	0.97	-0.06	0.03	0.95
	4	-0.02	0.02	0.98	0.02	0.03	1.02
	3	0.05*	0.02	1.05	0.11***	0.03	1.12
	2	-0.03	0.02	0.97	0.01	0.03	1.01
Subjective financial knowledge					-0.07**	0.02	0.93
	5	0.03	0.02	1.03	-----	-----	-----
	4	0.04	0.02	1.04	-----	-----	-----
	3	-0.01	0.02	0.99	-----	-----	-----
	2	-0.09**	0.03	0.91	-----	-----	-----
Financial self-efficacy		-0.17***	0.03	0.85	-0.38***	0.04	0.69
Financial mastery		-0.37***	0.01	0.69	-0.48***	0.02	0.62
Secondary Appraisal							
Coping Strategies							
Retire savings calculation (RSC)		-0.26**	0.08	-----	-0.35***	0.08	-----
Forego medical care (FMC)		0.18**	0.04	-----	0.33***	0.06	-----
Moderated Effects							
RSC×Financial Strain		0.13***	0.02	-----	0.14***	0.03	-----
FMC×Financial Strain		0.00	0.01	-----	-0.05**	0.01	-----
McFadden's R^2		0.1371			0.1811		
Concordance (c statistic)		0.7430			0.7860		

Notes: *p<0.05, **p<0.01, ***p<0.001; AIC = Akaike Information Criterion.

Younger Adults Versus Older Adults

Some notable differences were evident between the two age groups. It is noteworthy that most of these differences were among the control variables. Specifically, whereas education (i.e., some college), employment status (i.e., part-time work and not in the labor force), household income (i.e., $25K to $35K, $35K to $50K, $50K to $75K, and >$150K) were nonsignificant in the age 18 to 44 subsample model, they were significant in the age 45 to 64 subsample model. In contrast, whereas race (i.e., Hispanic and Asian/Other) was not significant in the age 18 to 44 subsample model, it was significant in the age 45 to 64 subsample model.

Whereas in the age 18 to 44 subsample model, the association between employer-sponsored retirement plan and retirement worry was negative but nonsignificant, in the age 45 to 64 subsample model, it was negative and significant (B = -.38, p < .001, OR = .69) for the very high level of retirement worry and positive and significant for the considerable level of retirement worry (B = .34, p < .01, OR = 1.40). Finally, while the interaction *Foregoing Medical Care* × *Financial Strain* was nonsignificant (B = .04, p = .78) in the age 18 to 44 subsample model, it was significant in the age 45 to 64 subsample model (B = -.05, p < .01). All other effects were consistent between the age 18 to 44 and age 45 to 64 subsample models.

Gender

Because previous studies have found gender differences in worry, to better understand the influence of this variable on retirement worry, I split the full sample used in the present study (n = 13,919) into two subsamples: males (n = 6,278) and females (n = 7,641). The partial proportional odds logit model from the primary analysis was applied to each subset. The results of these two partial proportional odds logits are summarized in Table B1 in Appendix B. In terms of model fit, McFadden's R-squared was .1740, and .1403 while the c statistic was 0.776, and 0.745 for male- and female-only models, respectively. Other than some notable differences mostly among the control variables, all other effects were consistent between the male-and female-only subsample models.

Summary of Results

Primary Research Question

In the primary research question, I determined the degree to which financial strain predicted retirement worry. Under Hypothesis 1, I expected a positive association between financial strain and retirement worry, defined as running out of money in retirement. Analyses

with the primary model, age 18 to 44, and age 45 to 64 subsample models provided consistent evidence for this hypothesis.

Secondary Research Question 1

In Secondary Research Question 1, I determined the degree to which coping resources and coping strategies predicted retirement worry. Under Hypothesis 2, I expected a negative association between household income and retirement worry. Analyses with the primary model, age 18 to 44, and age 45 to 64 subsample models provided insufficient evidence to support this hypothesis. In all the models, household income had a significant positive association with retirement worry. Under Hypothesis 3, I expected a negative association between health insurance coverage and retirement worry. Analyses with the primary model, age 18 to 44, and age 45 to 64 subsample models provided insufficient evidence to support this hypothesis. Contrary to expectations, in the primary model and the age 45 to 64 subsample model, the association between health insurance coverage and retirement worry was positive but nonsignificant while in the age 18 to 44 subsample model, the association was negative but nonsignificant.

Under Hypothesis 4, I expected a negative association between the short-term savings index and retirement worry. Analyses with the primary model, age 18 to 44, and age 45 to 64 subsample models provided insufficient evidence to support this hypothesis. Contrary to expectations, the association between the short-term saving index and retirement worry was significantly positive in all the models.

Under Hypothesis 5, I expected a negative association between personal savings accounts ownership (i.e., IRAs and Keogh plans) and retirement worry. Analyses with the primary model, age 18 to 44, and age 45 to 64 subsample models provided insufficient evidence to support this

hypothesis. Contrary to expectations, in the primary model and the age 45 to 64 subsample model, the association between health insurance coverage and retirement worry was positive but nonsignificant while in the age 18 to 44 subsample model, the association was negative but nonsignificant.

Under Hypothesis 6, I expected a negative association between employer-sponsored retirement plan ownership and retirement worry. Analyses with the primary model, and the age 18 to 44 subsample model only provided partial support for this hypothesis because the association was negative but nonsignificant. Analysis with the age 45 to 64 subsample model provided inconsistent evidence for this hypothesis. Specifically, while the association was significantly negative for the very high level of retirement worry, it was significantly positive for the considerable level of retirement worry.

Under Hypothesis 7, I expected a negative association between objective financial knowledge and retirement worry. Analyses with the primary model, age 18 to 44, and age 45 to 64 subsample models provided inconsistent evidence for this hypothesis. In the primary model, whereas, the association between objective financial knowledge and retirement worry was negative and significant for the very high level of retirement worry, it was positive and significant for the considerable level of retirement worry. In both the age 18 to 44, and age 45 to 64 subsample models, in contrast to expectations, the association between objective financial knowledge and retirement worry was positive and significant for the considerable level of retirement worry.

Under Hypothesis 8, I expected a negative association between subjective financial knowledge and retirement worry. Analyses with the primary model, age 18 to 44, and age 45 to 64 subsample models provided sufficient evidence in support of this hypothesis. Whereas, the

association between subjective financial knowledge and retirement worry was negative and significant for only the moderate level of retirement worry in the primary model and in the age 18 to 44 subsample model, it was negative and significant for all levels of retirement worry in the age 45 to 64 subsample model.

Under Hypothesis 9, I expected a negative association between financial self-efficacy and retirement worry. Analyses with the primary model, age 18 to 44, and age 45 to 64 subsample models provided sufficient evidence in support of this hypothesis. Under Hypothesis 10, I expected a negative association between financial mastery and retirement worry. Analyses with the primary model, age 18 to 44, and age 45 to 64 subsample models provided sufficient evidence in support of this hypothesis.

Under Hypothesis 11, I expected a negative association between calculating retirement savings needs and retirement worry. Analyses with the primary model, age 18 to 44, and age 45 to 64 subsample models provided sufficient evidence in support of this hypothesis. Under Hypothesis 12, I expected a positive association between foregoing medical care and retirement worry. Analyses with the primary model, age 18 to 44, and age 45 to 64 subsample models provided sufficient evidence in support of this hypothesis.

Secondary Research Question 2

In Secondary Research Question 2, I investigated the moderating role of coping strategies on the relationship between financial strain and retirement worry. Under Hypothesis 13, I expected the interaction term *Calculating Retirement Savings Needs* × *Financial Strain* to be significant. Analyses with the primary model, age 18 to 44, and age 45 to 64 subsample models provided sufficient evidence in support of this hypothesis. Under Hypothesis 14, I expected the interaction term *Foregoing Medical Care* × *Financial Strain* to be significant. Analyses with the

primary model and the age 45 to 64 subsample models provided sufficient evidence in support of this hypothesis while in the age 18 to 44 subsample model, the interaction term was not significant.

Chapter 5 - Discussion and Implications

According to Borkovec, et al. (1983) worry can be described as the persistent awareness of possible negative future outcomes (e.g., running out of money during retirement). In the present study, retirement worry was defined as worry about running out of money during retirement. Nearly two-thirds (63%) of American adults fear running out of money in retirement (Allianz Life Insurance Company, 2017). Based on existing literature, worry leads to bias in information processing resulting in selective attention to perceived threats (Mathews, 1990; Matthews & Wells, 2000; Metzger et al., 1990), and maintenance of distress (Segerstrom et al., 2000). Although previous studies have investigated retirement worry (e.g., Hershey et al., 2010; Kiso & Hershey, 2016; Lusardi & de Bassa Scheresberg, 2017; Owen & Wu, 2007; Rohwedder, 2006), the literature still lacks studies that examined the psychological mechanisms underlying retirement worry (de Bruijn & Antonides, 2019).

Given the background in the preceding paragraph, I sought to investigate the predictors of retirement worry, with financial strain as the key predictor of interest. The Tallis and Eysenck (1994) worry model was the theoretical framework for the present study and informed the hypotheses and overall direction of the research. For more detail on the Tallis and Eysenck (1994) model of worry, please refer to Chapter 2 – Theoretical Framework and Literature Review. The conceptual model for the present study can also be found in Chapter 2. I employed a series of partial proportional odds logit models to examine the degree to which financial strain, coping resources, and coping strategies predicted retirement worry. Specifically, I explored the following research questions using a sample of 13,991 respondents aged 18 to 64 from nonretired households. This sample created for the present study was comparable to the overall 2018 National Financial Capability Study sample, thus maintaining the generalizability of the

results. The primary research question for this study was: Does financial strain significantly predict retirement worry? The secondary research questions were: (1) Do coping resources and coping strategies significantly predict retirement worry? (2) Do coping strategies (i.e., calculating retirement savings needs and foregoing medical care) moderate the relationship between financial strain and retirement worry?

This chapter presents a discussion that relates the results of the present study to the literature and the theoretical framework discussed in Chapter 2. First, the results are analyzed against the theoretical framework and the extant literature. Next, the present study's implications and contributions to literature are discussed. Finally, the limitations related to the present study are noted and suggestions for future research are presented.

Discussion of Results

My main objective in conducting the present study was to determine the predictors of retirement worry, using the Tallis and Eysenck (1994) model of worry as my theoretical grounding. The Tallis and Eysenck (1994) model conceptualizes worry as a dynamic three-step process of individuals: (1) striving to make sense of perceived threats (e.g., financial strain), (2) assessing potential coping resources, and (3) adopting coping strategies to solve problems associated with the perceived threats.

Before discussing the overall results of the present study, I will discuss the effect on retirement worry of coping strategies (block two) and interaction terms (block three) that were entered into the three-step hierarchical regression model for retirement worry. Table 5.1 shows that the entry of coping strategies variables (block two) into the regression model for retirement worry resulted in an increase of .0040 in the McFadden's R^2 and a 177 decrease in the AIC score, indicating that Model 2 was an improvement on Model 1. The increase in the McFadden's

R^2 was significant change ($p < .001$). The entry of interaction terms (block three) into the regression model resulted in a .0012 increase in the McFadden's R^2. Since Model 2 was not nested in Model 3, there is no standard test to determine whether the change in McFadden's R^2 was significant. However, the decrease of 50 in the AIC score indicated that Model 3 was an improvement on Model 2.

Table 5.1 Hierarchical Regression Analysis in the Prediction of Retirement Worry

Variable	McFadden's R^2	Δ McFadden's R^2	AIC	ΔAIC
Model 1				
Demographic, financial strain, financial, and personal resources variables (block one)	0.1500	–	37223.09	–
Model 2				
Block one variables plus coping strategies (block two)	0.1540	0.0040	37045.79	-177.30
Model 3				
Block two variables plus interaction terms (block three)	0.1552	0.0012	36995.67	-50.12

Note: AIC=Akaike Information Criteria

The results of the current study are presented as per the key constructs of the Tallis and Eysenck (1994) model. The association between the primary appraisal (i.e., financial strain) and retirement worry was aligned with expectations of the theoretical framework and previous literature. The results of the secondary appraisal consisted of relationships among coping resources, coping strategies and retirement worry. The results for financial resources (i.e., household income, health insurance coverage, short term savings, employer-sponsored retirement plan, and IRA/Keogh plan ownership) were mostly inconsistent with expectations of the theoretical framework but consistent with some prior studies. Specifically, household income and the short-term savings index had significant positive relationships with retirement worry while health insurance coverage and IRA/Keogh plan ownership had positive but nonsignificant

relationships with retirement worry. Although the relationship was not significant, the result for employer-sponsored retirement plan ownership was directionally consistent with expectations.

The results for personal resources (i.e., subjective financial knowledge, financial self-efficacy, and financial mastery) were mostly consistent with expectations of the theoretical framework and prior studies. Specifically, subjective financial knowledge, financial self-efficacy, and financial self-mastery had significant negative relationships with retirement worry. Contrary to expectations, objective financial knowledge had a significant positive relationship with the considerable level of retirement worry and a negative significant relationship with the very high level of retirement worry.

The results for both coping strategies (i.e., calculating retirement savings needs and foregoing medical care) were consistent with expectations of the theoretical framework. I applied the same series of logit models to the primary sample for the present study as well as to two age-based subsamples. The results between the primary and subsample models were mostly consistent. Table 5.2 provides a summary of the expected versus actual effects of the independent variables on retirement worry, the dependent variable of the present study. This will be followed by a discussion of the results for each hypothesized relationship in the present study.

Table 5.2 Summary of Expected Versus Actual Effects

	Primary Model Expected	Primary Model Actual	Age 18 to 44 Model Actual	Age 45 to 64 Model Actual
Primary Appraisal				
Financial strain index (H1)	(+)	(+)	(+)	(+)
Secondary Appraisal				
Financial Resources				
Household income (H2)	(-)	(+)	(+)	(+)
Health insurance coverage (H3)	(-)	NS	NS	NS
Short-term saving index (H4)	(-)	(+)	(+)	(+)
IRA/Keogh plans ownership (H5)	(-)	NS	NS	NS
Employer-sponsored retirement plan (H6)	(-)	NS	NS	(+/-)
Secondary Appraisal				
Personal Resources				
Objective Financial Knowledge (H7)	(-)	(+/-)	(+)	(+)
Subjective Financial Knowledge (H8)	(-)	(-)	(-)	(-)
Financial Self-Efficacy (H9)	(-)	(-)	(-)	(-)
Financial self-Mastery (H10)	(-)	(-)	(-)	(-)
Coping Strategies				
Retirement Savings Calculation (H11)	(-)	(-)	(-)	(-)
Forego Medical Care (H12)	(+)	(+)	(+)	(+)
Moderated Effects				
Retirement Savings Calculation×Financial Strain (H13)	NE	(+)	(+)	(+)
Forego Medical Care × Financial Strain (H14)	NE	(-)	NS	(-)
Demographic Characteristics				
Age (age 18 to 24)	NE	(+)	–	–
Education (less than high school)	NE	(+)	NS	(+)
Race (White)	NE	(+/-)	(+/-)	(-)
Gender (female)	NE	(-)	(-)	(-)
Employment Status (full-time)	NE	(-)	NS	(-)
Marital Status (married)	NE	(+)	NS	NS
Homeownership	NE	NS	NS	NS
At least one financially dependent child	NE	NS	NS	NS

Notes: NE = None Expected, NS = not statistically significant, (-) is negative effect, (+) is positive effect, (+/-) is positive on one level of retirement worry and negative on another.

Retirement Worry

In the present study, retirement worry was defined as worry about running out of money in retirement. The literature review from Chapter 2 identified a gap in the literature as only a few studies had examined the relationship between financial strain and retirement worry, and none of these studies utilized a theoretical framework. Furthermore, the literature review established a positive relationship between financial strain and retirement worry. However, similar to the present study, some of the studies were cross-sectional, and thus do not confirm the direction of causality. It is plausible that the effect of financial strain on retirement worry is due to reverse causation. That is, individuals prone to worrying about running out of money in retirement may also be more likely to experience financial strain. A longitudinal perspective is required to establish causality. In other words, studies in which financial strain at Time 1 predicts retirement worry at Time 2 controlling for the effect of retirement worry (and other predictors) at Time 1. In an innovative longitudinal study based on the Health and Retirement Study, Owen and Wu (2007) provided evidence for causality by demonstrating that a negative financial shock (i.e., financial strain) experienced between Time 1 and Time 2 predicted retirement worry at Time 2, after controlling for the effect of retirement worry at Time 1. In another longitudinal study, Iijima and Tanno (2013) found that stressful events experienced between Time 1 and Time 2, predicted the Time 2 worry scores after controlling for Time 1 worry scores. Worry was measured by the Tallis and colleagues' (1992) Worry Domain Questionnaire (WDQ). Although the cross-sectional nature of the data employed in the present study leads to questions on the temporal ordering of financial strain and retirement worry, findings from these two studies provide some evidence that the causal flow goes from financial strain to retirement worry.

Primary Appraisal: Perceived Threat

Lazarus and Folkman (1984) identified threat, harm/loss, and challenge as the three types of primary appraisals. Of the three, threat is the primary appraisal type most directly related to worry (Tallis & Eysenck, 1994). Thus, for this study primary appraisal was operationalized as financial strain, a threat to an individual's current and future financial situation (Aldana & Liljenquist, 1998; Northern et al., 2010). At the outset of the present study, I expected a positive association between financial strain and retirement worry. This expectation was supported in both the primary and secondary analyses. Specifically, the coefficient for the financial strain index in the primary model was significant ($B = .09$, $p < .001$) in accord with existing literature (e.g., Lusardi & de Bassa Scheresberg, 2017; Owen & Wu, 2007). This result was consistent in the secondary analyses, in which age was explored.

There are several explanations for the present study's finding of a positive association between current financial strain and future retirement income adequacy (i.e., retirement worry). First, because threats are anticipated future events associated with negative outcomes that have the potential to violate personal goals (Tallis & Eysenck, 1994) and the idea of a long and stable career rewarded by retirement at the end has become a normative life event in American society (Hayward, Friedman, & Chen, 1998; Schulz, 2002), individuals experiencing financial strain may perceive the strain as a threat to their personal goal of having enough money during retirement. Chronic financial strain may result in individuals perceiving long-term financial issues (e.g. saving for retirement) as less important (Loewenstein, 1996) and this loss of salience may lead to concerns about future financial situation (e.g., retirement income adequacy). Second, perceptions of their current financial situations (e.g., chronic financial strain) as "bounded" (Gilovich & Medvec, 1995) may result in individuals being pessimistic about future financial

situations being different from the current financial situation. Given that: (1) only a few studies (e.g., Lusardi & de Bassa Scheresberg, 2017; Owen & Wu, 2007) have examined the influence of financial strain on retirement worry, (2) prior studies utilized single-item measures to operationalize financial strain, and (3) prior studies did utilize a theoretical framework, the present study contributes robust theory-based evidence on the influence of financial strain on retirement worry to the worry and financial wellbeing literature.

Secondary Appraisal: Financial Resources

Secondary appraisal is concerned with an individual's perceived resources and options to cope with the perceived threat. The perceived threat that is the focus of the present study is financial strain. During the secondary appraisal, the individual evaluates their competence and other personal resources in order to cope with the demands at hand (Jerusalem & Schwarzer, 1992). Resources are the economic, social, psychological, or physical assets available to deal with perceived threats (Boss, 2002). The literature review identified the following financial resources: (a) household income, (b) health insurance coverage, (c) short-term savings, (d) IRA/Keogh plans, and (e) employer-sponsored retirement plan.

Household Income

At the outset of the present study, I expected a negative association between household income and retirement worry. Surprisingly, this expectation was not supported in the present study. Contrary to expectations, household income was positively associated with retirement worry in the primary analysis. as well as in the secondary analyses in which age, was examined. The positive relationship between household income and retirement worry is somewhat puzzling and at odds with the prior studies. One possible explanation for this result is that because many individuals do not know the amount of retirement savings they need to live comfortably during

retirement (Skinner, 2007), they use their current household income as a heuristic (Benartzi & Thaler, 2007) for the required retirement income. However, since the source of the current household income (i.e., employment) ceases at retirement, the individual who does not know whether their retirement savings at retirement can provide enough income to replace their current income worries about running out of money during retirement, the higher their household income. Although the present study's results of a positive relationship between household income and retirement worry are inconsistent with other studies that have found a negative relationship (Kiso et al., 2019; Lusardi & de Bassa Scheresberg, 2017; Rohwedder, 2006), there are noteworthy differences between the present study and these prior studies. First, whereas the Rohwedder (2006) study was limited to respondents age 63 and above, thus transitioning into retirement, the present study sample was limited to nonretired respondents aged between 18 and 64. Second, the Kiso et al. (2019) study had a different set of predictor variables because its focus was the influence of child and family factors on retirement worry. Finally, the Lusardi and de Bassa Scheresberg (2017) study was on a sample of working women age 23 to 65 and the predictors were mostly demographic variables whereas the present study had a broader set of predictors.

Health Insurance Coverage

At the outset of the present study, I expected a negative association between health insurance coverage and retirement worry. This expectation was not supported in the present study. In the age 18 to 44 subsample model, the association was negative but statistically nonsignificant. Overall, the results for the association between health insurance coverage and retirement worry were inconsistent with the results of one prior study that has examined this relationship and found evidence of a positive association between lack of health insurance

coverage and retirement worry among a sample of working women (Lusardi & de Bassa Scheresberg, 2017).

Short-Term Savings

At the outset of the present study, I expected a negative association between short-term savings and retirement worry. This expectation was not supported in the present study. In all the models, there was a strong positive association between the short-terms savings index and retirement worry. Although these results are inconsistent with prior related studies that found that liquid assets such as short-term savings had a negative association with financial worry (de Bruijn & Antonides, 2019; Garðarsdóttir & Dittmar, 2012; Hibbert et al., 2004), it is important to note that the dependent variable for the present study is retirement worry, not financial worry in general.

Research studies have shown that liquid financial assets such as emergency funds and other forms of short-term savings act as buffers against financial strain (Despard et al., 2018; Gjertson, 2016; Lusardi et al., 2011; Mistry et al., 2008; Rothwell & Han, 2010). Therefore, there might be an interaction effect of short-term savings and financial strain on retirement worry. Specifically, the relationship between the short-term savings and retirement worry might be conditional on levels of the financial strain index. Although, the inclusion of a *Short-Term Savings* × *Financial Strain* interaction term in the regression model for retirement worry might provide a better understanding of the association between short-term savings and retirement worry, the present study did not include this interaction term because in the Tallis and Eysenck (1994) model of worry that was the guiding theoretical lens, only coping strategies moderate the association between perceived threat (i.e., financial strain) and retirement worry.

IRA/Keogh Plans

At the outset of the present study, I expected a negative association between IRA/Keogh plan ownership and retirement worry. This expectation was not supported in the present study. In the age 18 to 44 subsample model, the association was negative but statistically nonsignificant. A possible reason for the lack of significance could be related to measuring financial resources by IRA/Keogh plan ownership instead of by IRA/Keogh plan balances. Plan balances were not available in the dataset. This speculation is based on studies that found a significant positive association between retirement savings amount and retirement confidence (Joo, So-Hyun & Pauwels, 2002; Kim et al., 2005). Retirement confidence was measured by a six-item index. Examples of some of the items are: (1) confidence about having enough money to support themselves throughout their life, no matter how long they live, and (2) confidence about not outliving retirement savings.

Employer-Sponsored Retirement Plan

At the outset of the present study, I expected a negative association between employer-sponsored retirement plan ownership and retirement worry. However, employer-sponsored retirement plan ownership had a significant but mixed relationship with retirement worry. Specifically, for individuals aged 45 to 64, holding all else constant, employer-sponsored retirement plan ownership was associated with a 31% decrease in the odds of reporting very high (as compared to low, moderate, considerable, or high) retirement worry. A puzzling result was that for individuals aged 45 to 64, holding all else constant, employer-sponsored retirement plan ownership was associated with a 40% increase in the odds of reporting considerable (as compared to low or moderate) retirement worry. In the primary model and the age 18 to 44 subsample model, the relationship was negative but nonsignificant.

Although the literature review revealed no prior research on the association between employer-sponsored retirement plan ownership and retirement worry, the results from the secondary analysis are consistent with results from prior studies that investigated related concepts. For example, Garðarsdóttir and Dittmar (2012) found a negative association between an index of money management practices (e.g., retirement account ownership) and financial worry and Zick et al. (2012) showed an association between retirement account ownership (i.e., employer-sponsored retirement plans) and retirement confidence (i.e., confident of having enough money to live comfortably in retirement).

Secondary Appraisal: Personal Resources

Objective Financial Knowledge

At the outset of the present study, I expected a negative association between objective financial knowledge and retirement worry. However, objective financial knowledge had a significant but mixed relationship with retirement worry. Specifically, holding all else constant, a one-unit increase in objective financial knowledge was associated with a 4% decrease in the odds of reporting very high (as compared to low, moderate, considerable, or high) retirement worry. A puzzling result was that holding all else constant, a one-unit increase in objective financial knowledge was associated with a 5% increase in the odds of reporting considerable (as compared to low or moderate) retirement worry. In the subsample models, the association between objective financial knowledge and retirement worry was also positive. Specifically, holding all else constant, a one-unit increase in objective financial knowledge was associated with a 5% and 12% increase in the odds of reporting considerable (as compared to low or moderate) retirement worry in the age 18 to 44 and age 45 to 64, respectively. These findings are inconsistent with one prior study that found a negative association between objective financial knowledge and

retirement worry in a sample of working women (Lusardi & de Bassa Scheresberg, 2017). Overall, the effects of objective financial knowledge on retirement worry were relatively small.

Because objective financial knowledge is positively associated with retirement planning behaviors (Allgood & Walstad, 2016; Fernandes et al., 2014), one would expect individuals with high levels of objective financial knowledge to engage more in retirement planning and as a consequence worry less about running out of money in retirement. Why the association between objective financial knowledge and retirement worry was also positive is unclear. A possible explanation for this result is that individuals with higher levels of objective financial knowledge may be more aware of the complex retirement planning activities required to have enough money during retirement, and thus report higher levels of retirement worry.

Subjective Financial Knowledge

At the outset of the present study, I expected a negative association between subjective financial knowledge and retirement worry. This expectation was supported in both the primary and secondary analyses. Specifically, holding all else constant, a one-unit increase in subjective financial knowledge was associated with an 8% and 9% decrease in the odds of reporting moderate (as compared to low) retirement worry in the primary model and age 18 to 44 subsample model, respectively. In the age 45 to 64 subsample model, a one-unit increase in subjective financial knowledge was associated with a 7% decrease in the odds of reporting higher levels of retirement worry. Overall, the effects of subjective financial knowledge on retirement worry were relatively small.

Only a few studies have examined the relationship between subjective financial knowledge and retirement worry. The finding that the association between subjective financial knowledge and retirement worry was negative and significant is consistent with the Kiso and

Hershey (2016) study that found a significant negative association between perceived financial knowledge and financial worry. In contrast, Kiso et al. (2019) found no significant relationship between subjective financial knowledge and retirement worry. A possible explanation for the negative association between subjective financial knowledge and retirement worry is that since subjective financial knowledge is related to financial confidence (Allgood & Walstad, 2016; Hadar, Sood, & Fox 2013), individuals with high levels of subjective financial knowledge may have high financial confidence to achieve their goals such as having enough money during retirement, and as a consequence report lower levels of retirement worry.

Financial Self-Efficacy

At the outset of the present study, I expected a negative association between financial self-efficacy and retirement worry. This expectation was supported in both the primary and secondary analyses. Thus, I found robust evidence that individuals with high levels of financial self-efficacy had lower levels of retirement worry. These results are consistent with the Tallis and Eysenck (1994) worry model that posits that self-efficacy is a resource available to individuals during a threatening encounter. Furthermore, the results are consistent with the limited prior studies that found that individuals with high self-efficacy had lower levels of worry (Awang-Hashim et al., 2002; Kelly & Daughtry, 2011; Malpass et al., 1996).

Financial Mastery

At the outset of the present study, I expected a negative association between financial mastery and retirement worry. This expectation was supported in both the primary and secondary analyses. Thus, I found robust evidence that individuals with high levels of financial self-mastery had lower levels of retirement worry. These results are consistent with stress theory that posits that domain-specific mastery is a resource available to individuals during a stressful encounter

(Lazarus & Folkman, 1984). Furthermore, the results are consistent with the limited prior studies that found that individuals with high mastery had lower levels of worry (Buhr, Kristin & Dugas, 2006; Hobfoll et al., 2002; Zalta & Chambless, 2008).

Secondary Appraisal: Coping Strategies

According to Folkman et al. (1986), coping is a dynamic process of cognitive and behavioral efforts that serves two functions: managing emotional distress (emotion-focused coping) and altering the situation that is causing distress (problem-focused coping). According to Tallis and Eysenck (1994) poor problem-solving through the adoption of ineffective coping strategies accounts for the preservation of threat perceptions and maintenance of worry. The present study focused on two problem-focused coping strategies: calculating retirement savings needs and foregoing medical care. The effect of these two coping strategies as moderators of the relationship between financial strain and retirement worry had not been investigated in the extant financial worry literature. To my knowledge, this is the first study to investigate the moderating role of these problem-focused coping strategies.

At the outset of the present study, I expected a negative association between calculating retirement savings needs and retirement worry and a positive association between foregoing medical care and retirement worry. These expectations were supported in both the primary and secondary analyses. Because of the inclusion of interaction terms between the coping strategies and financial strain in the regression model, the interpretation of the effect of the coping strategies on retirement worry depends on whether the interactions terms were significant or not.

At the outset of the present study, I expected that the *Retirement Savings Calculation* × *Financial Strain* interaction term would be a significant predictor of retirement worry. This expectation was supported in both the primary and secondary analyses. Because the interaction

term was significant, this indicated that calculating retirement savings needs moderated the effect of financial strain on retirement worry. In other words, the strength of the negative relationship between calculating retirement savings needs and retirement worry was conditional on the level of financial strain. Although no prior study was found that linked *Retirement Savings Calculation* × *Financial Strain* to retirement worry, the finding of a significant interaction is consistent with the theoretical prediction of the Tallis and Eysenck (1994) model of worry.

As presented in the results section in Chapter 4, one of the most striking and puzzling result was the influence of the interaction *Retirement Savings Calculation* × *Financial Strain* on retirement worry. Specifically, the results indicated that calculating retirement savings needs exacerbated the effects of financial strain on retirement worry at higher levels of financial strain and mitigated the effect of financial strain on retirement worry at lower levels of financial strain. Although, the reasons for these results are not clear, a possible explanation is provided by the concept of catastrophizing, defined as the progressive generation of exaggerated negative future outcomes that is triggered by perceived threats (Matthews & Funke, 2006; Tallis & Eysenck, 1994). At higher levels of financial strain, an individual who calculates retirement savings needs and realizes that they have inadequate savings may as a consequence generate exaggerated negative future retirement outcomes that contribute to retirement worry.

At the outset of the present study, I expected that the *Forego Medical Care* × *Financial Strain* interaction term would be a significant predictor of retirement worry. This expectation was supported in the primary model and in the age 45 to 60 subsample model indicating that the strength of the relationship between financial strain and retirement worry depended the levels of the foregoing medical care index. Specifically, the results indicated that foregoing medical care exacerbated the effects of financial strain on retirement worry at all levels of financial strain. A

possible explanation for these results is provided by the maladaptive nature of foregoing medical care as a coping strategy for financial strain.

Although, foregoing medical care may provide immediate relief from financial strain, it does so without necessarily addressing the source of the financial strain. Foregoing medical care is related to the concept of medical adherence defined by Osterberg and Blaschke (2005) as "the extent to which patients take medications as prescribed by their health care providers" (p. 487). Poor medical adherence (e.g., foregoing medical care) is associated with poor health outcomes (e.g., worsening of disease, or death), increased use of emergency room and other medical services (e.g., doctor visits, or urgent care), and increased healthcare costs (Kane & Shaya, 2008; Osterberg & Blaschke, 2005; Sokol et al., 2005). Thus, a possible explanation is that individuals who forego medical care as a coping strategy may be aware of the long-term negative impact of this choice on their health and financial situation but nevertheless choose this coping strategy as a last resort. Hence, at lower levels of financial strain, there were higher odds of reporting higher levels of retirement worry (e.g., *OR* = 1.28 when financial strain index = 0) because foregoing medical care is less justifiable given its consequences but at higher levels of financial strain it is more justifiable, hence the lower odds of reporting higher levels of retirement worry (e.g., *OR* = 1.14 when financial strain index = 7).

Demographic Variables

According to the Tallis and Eysenck's (1994) model of worry, perceived threats (primary appraisal) are evaluated against coping resources (secondary appraisal), and if the coping resources are deemed inadequate, worry is initiated, and persists until the threat is addressed through selection and implementation of coping strategies. Specifically, based on the Tallis and Eysenck's (1994) model, the experience of financial strain is evaluated against financial

resources (i.e., income, health insurance coverage, short-term savings, IRA/Keogh plans, and employer-sponsored retirement plans), and personal resources (i.e., objective, and subjective financial knowledge, financial self-efficacy, and financial mastery) and if these coping resources are deemed inadequate, retirement worry is initiated, and persists until it is reduced or terminated by coping strategies (i.e., calculating retirement savings needs and foregoing medical care). The literature review identified demographic variables that can influence the effects of financial strain, coping resources and coping strategies on retirement worry. Thus, in the present study, the influence of various demographic variables on reported levels of retirement worry was also investigated. Specifically, the relationships between age, education, race, gender, employment status, marital status, homeownership and presence of financial dependent children were examined. I will now discuss these results for the primary model.

Age was found to be positively associated with retirement worry in accord with existing literature (Hershey et al., 2010; Lusardi & de Bassa Scheresberg, 2017; Rohwedder, 2006). Education was found to be positively associated with retirement worry. These results were not in accord with existing literature that found a negative association between education and retirement worry (Hershey & Henkens, 2010; Lusardi & de Bassa Scheresberg, 2017). The results revealed significant associations between race and retirement worry in accord with existing literature (Lusardi & de Bassa Scheresberg, 2017), and worry (Scott et al., 2002). The results revealed that women reported higher levels of retirement worry in accord with existing retirement worry literature (Hershey & Henkens, 2010) and broader worry literature (Gould & Edelstein, 2010; Hunt et al., 2003; Mccann et al., 1991; Robichaud et al., 2003; Stavosky & Borkovec, 1987).

A striking and puzzling result was the influence of employment status (i.e., not in the labor force) and retirement worry. Specifically, not being in the labor force (as compared to full-time employment) was associated with an 18% reduction in the odds of reporting higher levels of retirement worry. Because in the present study, not being in the labor force comprised three subcategories: homemaker, full-time student, and permanently sick, disabled, or unable to work, I cannot provide substantial reasons for why being not in the labor force (as compared to full-time employment) was associated with reduced odds of reporting high levels of retirement worry. However, this finding indicated that lack of labor force participation did not stop individuals from worrying about running out of money during retirement. Therefore, it is important for retirement planning studies to include individuals not in the labor force.

The results revealed a significant association between marital status (i.e., separated or divorced) and retirement worry. Specifically, holding all else constant, separated or divorced individuals had 21% increased odds of reporting very high (as compared to low, moderate, considerable, or high) retirement worry compared to married individuals. There is no consensus in the literature on the relationship between marital status and retirement worry. Some studies have reported that compared to married people, single people reported higher levels of retirement worry (Rohwedder, 2006; Lusardi & de Bassa Scheresberg, 2017) but in contrast, others (e.g., Hershey & Henkens, 2010) reported no significant relationship between marital status and retirement worry. In contrast to the Lusardi and de Bassa Scheresberg (2017) study that found that homeowners reported less worry retirement worry, in the present study, the relationship was nonsignificant. In contrast to prior studies that found a significant positive association between number of financially dependent children and retirement worry (Kiso et al., 2019; Lusardi & de Bassa Scheresberg, 2017), in the present study, the relationship was nonsignificant.

Contributions to the Literature

The present study contributes to two strands of literature. First, it contributes to the broad literature on worry by applying the model of worry developed by Tallis and Eysenck (1994) to retirement worry. Second, the present study contributes to the literature on financial well-being. The results of the present study provided robust evidence that the model developed by Tallis and Eysenck (1994) can be effectively applied to retirement worry. To my knowledge, no other study has empirically tested the Tallis and Eysenck (1994) model of worry. Furthermore, unlike most of the prior studies on worry that are typically based on student samples, the present study had the advantage of a large, nationally representative sample (n = 13,919).

The results of the present study contribute to the literature on financial well-being in several ways. First, prior studies on financial worry lack a theoretical framework within which hypotheses were developed and tested. In contrast, the present study was guided by the Tallis and Eysenck (1994) model of worry and as a consequence was able to examine the psychological mechanisms underlying retirement worry by statistically modelling the effects of financial strain, coping resources, and coping strategies on retirement worry. Therefore, the present study contributed to the literature gap identified by de Bruijn and Antonides (2019) who stated that the extant financial worry literature lacks studies on the psychological mechanisms underlying financial worry.

Second, guided by the Tallis and Eysenck (1994) model of worry, the present study considered a wider range of independent variables associated with retirement worry, including some variables that had not been considered before in the literature. Such variables include race, short-terms savings, IRA/Keogh plan ownership, employer-sponsored retirement plan ownership, financial self-efficacy, financial mastery, foregoing medical care, and calculating

retirement savings needs. This is important because omitting important variables in a regression model can lead to biased and inconsistent parameter estimates (Wooldridge, 2005). Specifically, the results of the present study provided robust evidence for the relationship between race and retirement worry, and in so doing contributed to the gap in literature identified by Scott et al. (2002) who suggested that the role of ethnicity in the experience of worry was understudied.

Third, unlike the present study, prior financial worry (and broader worry) research, has not investigated the relationship between coping strategies and worry. Therefore, the present study contributed to the literature gap identified by Keogh et al. (1998) who suggested that the role of coping strategies in the worry process was understudied. Fourth, the results of the present study are consistent with prior research (Netemeyer et al., 2017; Owen & Wu, 2007) and provided robust evidence that *current* financial strain influences perceptions of *future* retirement income adequacy (i.e., retirement worry). Therefore, the present study has advanced on the work of Owen and Wu (2007) by considering a wider range of independent variables and the work of Netemeyer et al. (2017) by using a larger sample.

Finally, the present study is one of the few to examine the association between not being in the labor force and retirement worry. The present study contributed to the literature by providing robust evidence that paradoxically, compared to individuals in full-time employment, individuals not in the labor force reported lower levels of retirement worry. This result shows the importance of including individuals not in the labor force in future research because despite their lack of employment for whatever reason, they worry about running out of money in retirement.

Implications of Findings

The results from the present study provide several implications relevant for policymakers, employers, financial professionals, and mental health professionals. First, the finding of a strong

positive association between financial strain and retirement worry suggests that employers can focus on helping employees reduce financial strain. According to the International Foundation of Employee Benefit Plans (IFEBP) *Financial Education for Today's Workforce* report (IEFPB, 2018), employees reported high levels of financial strain related to credit card and other debts (70%), trouble saving for retirement (61%), saving/paying for children's education expenses (55%), covering basic living expenses (48%), paying medical expenses (39%), and supporting elderly parents (39%). To address employee financial strain, employers can offer their employees struggling with college debt, student loan debt payment counseling or student loan debt assistance. Furthermore, employers can help employees who need money for emergencies by offering payroll and short-term loans that are repayable through payroll deduction. This may limit the growing consumer use of high-cost alternative financial services such as payday loans, pawn shops, and tax refund anticipation loans that is a concern to policymakers and financial professionals (Robb, Babiarz, Woodyard, & Seay, 2015).

Second, the literature review for the present study identified contact by debt or bill collector as a source of financial stress and as a consequence included this item in the financial strain index used in the present study. According to the *Consumer Financial Protection Bureau (CFPB) Annual Report* (CFPB, 2017), the majority (41%) of the approximately 88,000 debt collection complaints received during 2016 were about continued attempts by debt collectors to collect debt that, according to the consumer was no longer owed while 15% were about the communication tactics used by debt collectors. From a policy perspective, vigorous enforcement of the Fair Debt Collection Practices Act by the CPFB can reduce consumer the financial stress associated with contact by debt collectors, and in this in turn could reduce retirement worry.

Third, from a practitioner perspective, financial and mental health professionals can use valid, and reliable financial strain indexes (e.g., Aldana & Liljenquist, 1998; Netemeyer et al., 2017; Northern et al., 2010) to measure their clients' financial stress followed by discussions on coping strategies. For example, the finding that coping with financial strain by foregoing medical care exacerbates retirement worry allows financial and mental health professionals to discuss with their clients' the consequences of such a coping strategy. Furthermore, financial and mental health professionals could consider setting reducing client financial stress as a measure of counseling success as part of holistic practice to help their clients achieve financial well-being, an important component of life satisfaction. Finally, because high financial strain and excessive retirement worry maybe markers for poor financial mental health, the findings of the present study can help financial and mental health professionals in their therapeutic approaches to their clients.

Fourth, my conceptual model for retirement worry identified the predictors of retirement worry and the related psychological mechanisms. From a practitioner perspective, financial and mental health professionals can use valid, and reliable financial worry measures such as the financial issues subscale of the Worry Domains Questionnaire (WDQ; Tallis et al., 1992) to measure their clients financial worry. Since no standard scale for retirement worry exists, financial and mental health professionals can for example, use the single -item retirement worry measure used in the present study or Kiso and colleagues' (2019) single-item indicator for retirement worry ("How worried are you about adequately financing your retirement?") that used a response rating of 1 (not at all worried) to 5 (extremely worried) to assess their clients' retirement worry, and then discuss coping resources, and coping strategies as well their consequences with those who are worried.

Fifth, the findings from the present study have important implications for financial education. According to the International Foundation of Employee Benefit Plans (IFEBP) *Financial Education for Today's Workforce* report (IEFPB, 2018), the most common topics addressed in financial education are retirement plan benefits (68%), preretirement financial planning (54%), budgeting (46%), investment management and asset allocation (42%), and retiree healthcare (37%). This list of the common financial education topics confirms the assertion by Fernandes et al. (2014) that financial education programs almost exclusively focus on enhancing objective financial knowledge. The present study found inconsistent evidence for the effect of objective financial knowledge on retirement worry. In contrast, subjective financial knowledge had a negative association with retirement worry. These results suggest that financial education programs should focus on enhancing both objective and subjective financial knowledge. Furthermore, the present study found strong evidence that higher levels of financial self-efficacy were associated with lower levels of reported retirement worry, and so was higher levels of financial mastery. This suggests that financial education programs should also focus on enhancing levels of financial self-efficacy and financial mastery.

Sixth, from a practice perspective, the finding that high levels of financial self-efficacy are associated with low levels of retirement worry suggests that financial and mental health professionals should assess their client's current financial self-efficacy levels. The financial self-efficacy scale (Lown, 2011) can be utilized for this purpose. After assessing clients' levels of financial self-efficacy, financial and mental health professionals can identify strategies to enhance their clients' financial self-efficacy. According to Bandura (1997) perceptions of efficacy are influenced by emotional states (i.e., frequency of positive and negative feelings), verbal persuasion that one can achieve or master tasks, and mastery experiences.

Similarly, the finding that high levels of financial mastery are associated with low levels of retirement worry suggests that financial and mental health professionals should assess their client's current financial mastery levels. While global mastery is often measured by the Pearlin Mastery Scale (Pearlin & Schooler, 1978), there is there is no widely accepted measure of financial mastery. However, financial and mental health professionals can measure financial mastery with items used in the present study that are similar to some of the items in the Pearlin Mastery Scale (Pearlin & Schooler, 1978) or single-items that have been used in the literature ("How would you rate the amount of control you have over your financial situation these days?"). Since financial mastery measures the sense of control individuals feel over their finances, after measuring their clients' levels of financial mastery, financial and mental health professionals can identify strategies to enhance their clients' sense of control over their finances.

Finally, the finding that calculating retirement savings needs is associated with lower levels of retirement worry suggests that the content of financial education programs should include calculating retirement savings needs and that tools for such calculations should be made easily accessible. Also, from a practice perspective, financial professionals can encourage their clients to calculate their retirement savings needs. Furthermore, the finding that calculating retirement savings needs mitigates the effects of financial strain on retirement worry at lower levels of financial strain while exacerbating the effect of financial strain on retirement worry at higher levels of financial strain suggest that financial professionals while encouraging their clients to calculate their retirement savings needs should also help their clients with strategies to reduce financial stress.

Limitations of the Study

In the present study, I used nationally representative data, and a strong theoretical framework to provide evidence for financial strain, coping resources, and coping strategies as predictors of retirement worry, measured as worry about running out of money in retirement. While the present study presented novel findings, it has several limitations that warrant discussion. First, retirement worry was measured with a single question that asked the respondents the following: "How strongly do you agree or disagree with the following statement?" "I worry about running out of money in retirement." The respondents rated their worry on a 7-point Likert-type scale where: 1 = "Strongly Disagree," 4 = "Neither Agree nor Disagree," and 7 = "Strongly Agree." Because worry is most validly assessed on a continuum from low to high (Olatunji et al., 2010; Ruscio et al., 2001), the "Neither Agree nor Disagree" option in the item used to asses retirement worry in the present study is not ideal in an item measuring worry. Furthermore, the use of a single-item to measure retirement worry may be regarded as a limitation since the use of a single-items to measure psychological constructs (e.g., worry) is typically discouraged because they are assumed to have low reliability (Wanous, Reichers, & Hudy, 1997). However, if the concept being measured is sufficiently not ambiguous to the respondent (Wanous et al., 1997) and is global (i.e., not domain specific) (Robins, Hendin, & Trzesniewski, 2001), a single-item measure is sufficient. The concept of retirement worry that was the focus of the present study meets these criteria.

Second, since the present study utilized cross-sectional data, the findings cannot confirm causality. Although the causal direction from financial strain to retirement worry is uncertain in the present study, longitudinal studies have found that financial strain leads to retirement worry (Owen & Wu, 2007) and that stress leads to worry (Iijima & Tanno, 2013). However, more

studies are needed to support these findings. Furthermore, there may be bidirectional relationships between financial self-efficacy, financial mastery, calculating retirement savings needs and retirement worry. Specifically, high financial self-efficacy may reduce retirement worry and high retirement worry may erode financial self-efficacy; high financial mastery may reduce retirement worry and high retirement worry may erode financial mastery; and calculating retirement savings needs may reduce retirement worry and high retirement worry may lead to the calculation of retirement savings needs. The present study addressed this limitation through a theory-based research design, empirical findings, and reliance on theoretical constructs to determine directional expectations between the predictors and the outcome variable. Despite, this, bidirectional relationships remained a limitation. Future longitudinal studies or studies utilizing instrumental variable methods are needed to identify the direction of these relationships.

Third, in the NFCS, respondents were not asked about strategies they utilized to cope with financial strain. Therefore, my approach was to identify strategies individuals use to cope with financial strain based on findings from empirical studies identified in the literature review. It is plausible that some respondents reported calculated retirement savings needs or foregoing medical care without necessarily considering them as strategies to cope with financial strain. Availability of respondent selected coping strategies in the dataset, would have strengthened the results of the presents study.

Fourth, the respondents were not asked about the dollar amounts of savings in employer-sponsored retirement plans or personal retirement accounts such as IRA/Keogh plans. This limited the present study to only measuring ownership of these accounts. However, there is evidence that retirement saving amounts influence retirement confidence (Joo et al., 2002; Kim et al., 2005), a concept related to retirement worry. Therefore, instead of account ownership,

better measures in future research could be variables that measure retirement account balances. Inclusion of such variables in the regression models for predicting retirement worry would strengthen future research findings.

Fifth, a few variables that have been identified as important predictors of worry were not available in the dataset. According to Buhr, Kristin and Dugas (2006), beyond other predictors, intolerance of uncertainty has "emerged as the most salient predictor of worry" (p. 223). Buhr et al. (2006) defined intolerance of uncertainty as "the tendency to react negatively on an emotional, cognitive, and behavioral level to uncertain situations and events" (p .223). This suggests that an individual who is intolerant of uncertainty will find many aspects of managing their finances intolerable given that personal financial management, particularly retirement planning, is filled with uncertainty. In worry research, intolerance of uncertainty is typically measured by the 27-item intolerance of uncertainty scale (Buhr, Kristine & Dugas, 2002) that has items relating to specific beliefs about uncertainty such as uncertainty is unacceptable, frustrating, unpleasant, and stressful. In addition, self-reported health has been identified as an important predictor of retirement worry (Hershey et al., 2010; Rohwedder, 2006) but there was no variable measuring self-reported health in the dataset. Finally, while personality traits (e.g., neuroticism, introversion - extraversion, thinking - feeling) have been found to predict worry (Keogh et al., 1998; Ragozzino & Kelly, 2011), the dataset did not have variables for personality traits. Future retirement worry research should include these variables to strengthen research findings.

Sixth, the measurement of financial self-efficacy in the present study is another limitation. Consistent with previous research that have utilized the NFCS, financial self-efficacy was measured with a single-item due to the unavailability of a standard scale such as the Lown

(2011) financial self-efficacy scale in the dataset. Because financial self-efficacy is a multi-faceted concept (Lown, 2011), future studies could utilize multi-item measures of financial self-efficacy to improve upon the present study.

Finally, the present study identified a limitation of prior financial worry research as the lack of a theoretical framework. Although the present study selected the Tallis and Eysenck (1994) model of worry as the appropriate theoretical framework to overcome this limitation, to my knowledge, this model has not been utilized before in past worry studies. This is somewhat a limitation of the present study. Nevertheless, based on the results from the present study that were mostly consistent with previous research, the Tallis and Eysenck (1994) model of worry appears to be a useful framework to inform future financial worry studies.

Recommendations for Future Research

Based on the results of the present study and gaps in the extant literature, I identified several areas for future research. First, future research would benefit from the use of a longitudinal dataset to confirm the direction of the relationship between financial strain, predictor variables, and retirement worry. Specifically, future research could build upon the present study using the Health and Retirement Study (HRS), a nationally representative panel study of Americans aged 50 years and older. The HRS offers several advantages since it includes detailed economic information, attitudinal variables, and information for both spouses in married households which allows for separate singles, married men, and married women analyses. Future research that conducts a study similar to the present one would enhance the empirical findings of the present study.

Second, the present study's novel findings of a positive association between financial strain and retirement worry, calls for research into how individuals experience financial strain

and worry about money in relation to retirement. Such research would provide subjective accounts from individuals experiencing financial strain and retirement worry. These subjective accounts could, for example, provide insights into perceived causes, controllability, coping strategies, and perceived consequences of retirement worry as well as shed light on how individuals respond to financial strain. This suggests complementing the present study with qualitative research that according to Trochim, Donnelly, and Arora (2015), "concerns itself with analyzing how people interpret their experience and the world in which they live" (p. 57). Focus groups or in-depth interviews with participants selected according to their reported levels of financial strain and retirement worry would provide "detailed stories" (Trochim et al., 2015) about the experience of financial strain and retirement worry and could help researchers develop a deeper understanding of the phenomenon of retirement worry and financial strain.

Third, because the dataset used in the present study did not ask respondents about the strategies they utilized to cope with financial strain, my approach was to identify strategies individuals use to cope with financial strain based on findings from empirical studies identified in the literature review. Future retirement worry studies could ask respondents to select the strategies they used to cope with financial strain from a list. For example, Lusardi et al. (2011), presented respondents with a list of 14 coping strategies (plus "other" and "don't know" options). Alternatively, future research could utilize standard coping scales such as the COPE (Carver et al., 1989) or the Ways of Coping Checklist (Folkman & Lazarus, 1980).

Finally, the present study provided answers to the following questions: (1) What is the degree to which financial strain predicted retirement worry? (2) What is the degree to which resources and coping strategies predicted retirement worry? (3) Do coping strategies (i.e., calculating retirement savings needs and foregoing medical care) moderate the relationship

between financial strain and retirement worry? However, the answers provided in the present study lead to another question that future research should answer: how does retirement worry influence retirement planning activities such as contributing to retirement savings accounts or consulting a financial professional?

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Appendix A - Missing Data Analysis (Correlation)

Table A.1 Unweighted Correlations for Key Variables (Before Listwise Deletion)

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13
1. RetWorry[1]	—												
2. Financial strain	.44***	—											
3. STS[2]	−.26***	−.60***	—										
4. IRA/Keogh[3]	−.09***	−.27***	.40***	—									
5. EmpRetPlan[4]	−.07***	−.26***	.34***	.37***	—								
6. Income	−.11***	−.39***	.41***	.38***	.54***	—							
7. HealthInsurance	−.05***	−.16***	.15***	.13***	.28***	.21***	—						
8. ObjFinKnow[5]	−.09***	−.30***	.21***	.26***	.27***	.35***	.14***	—					
9. SubFinKnow[6]	−.11***	−.24***	.35***	.28***	.24***	.29***	.12***	.23***	—				
10. FinSelfEff[7]	−.31***	−.45***	.54***	.28***	.27***	.32***	.10***	.14***	.40***	—			
11. FinMastery[8]	−.52***	−.65***	.48***	.22***	.23***	.31***	.12***	.23***	.22***	.49***	—		
12. RSC[9]	−.06***	−.21***	.33***	.39***	.37***	.37***	.13***	.28***	.30***	.29***	.19***	—	
13. FMC[10]	.29***	.49***	−.22***	−.05***	−.09***	−.15***	−.18***	−.12***	−.09***	−.20***	−.37***	−.03**	—

[1] Retirement worry
[2] Short term savings
[3] IRA/Keogh plan
[4] Employer-sponsored retirement plan
[5] Objective financial knowledge
[6] Subjective financial knowledge
[7] Financial self-efficacy
[8] Financial mastery
[9] Retirement savings calculation
[10] Foregone medical care

Table A.2 Unweighted Correlations for Key Variables (After Listwise Deletion)

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13
1. RetWorry[1]	—												
2. Financial strain	.45***	—											
3. STS[2]	−.28***	−.61***	—										
4. IRA/Keogh[3]	−.11***	−.29***	.39***	—									
5. EmpRetPlan[4]	−.10***	−.27***	.33***	.36***	—								
6. Income	−.16***	−.40***	.41***	.39***	.54***	—							
7. HealthInsurance	−.08***	−.16***	.15***	.14***	.28***	.22***	—						
8. ObjFinKnow[5]	−.14***	−.31***	.20***	.26***	.25***	.34***	.13***	—					
9. SubFinKnow[6]	−.14***	−.25***	.36***	.29***	.24***	.30***	.11***	.22***	—				
10. FinSelfEff[7]	−.34***	−.47***	.55***	.30***	.28***	.34***	.11***	.15***	.42***	—			
11. FinMastery[8]	−.54***	−.66***	.50***	.23***	.23***	.34***	.14***	.25***	.24***	.50***	—		
12. RSC[9]	−.09***	−.22***	.32***	.38***	.36***	.37***	.13***	.28***	.31***	.30***	.20***	—	
13. FMC[10]	.31***	.49***	−.23***	−.05***	−.10***	−.16***	−.19***	−.15***	−.08***	−.20***	−.38***	−.04**	—

[1] Retirement worry
[2] Short term savings
[3] IRA/Keogh plan
[4] Employer-sponsored retirement plan
[5] Objective financial knowledge
[6] Subjective financial knowledge
[7] Financial self-efficacy
[8] Financial mastery
[9] Retirement savings calculation
[10] Foregone medical care

Table A.3 Weighted Correlations for Key Variables (Before Listwise Deletion)

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13
1. RetWorry[1]	—												
2. Financial strain	.44***	—											
3. STS[2]	−.24***	−.58***	—										
4. IRA/Keogh[3]	−.07***	−.23***	.39***	—									
5. EmpRetPlan[4]	−.06***	−.24***	.34***	.37***	—								
6. Income	−.09***	−.36***	.39***	.37***	.54***	—							
7. HealthInsurance	−.04***	−.14***	.14***	.13***	.27***	.22***	—						
8. ObjFinKnow[5]	−.07***	−.28***	.19***	.24***	.26***	.34***	.14***	—					
9. SubFinKnow[6]	−.09***	−.21***	.35***	.27***	.24***	.28***	.12***	.21***	—				
10. FinSelfEff[7]	−.29***	−.43***	.54***	.28***	.26***	.30***	.09***	.11***	.40***	—			
11. FinMastery[8]	−.51***	−.64***	.45***	.19***	.21***	.28***	.12***	.21***	.20***	.47***	—		
12. RSC[9]	−.04***	−.18***	.33***	.39***	.37***	.35***	.13***	.27***	.29***	.28***	.17***	—	
13. FMC[10]	.29***	.49***	−.19***	−.01	−.07***	−.12***	−.16***	−.10***	−.08***	−.18***	−.36***	−.00	—

[1] Retirement worry
[2] Short term savings
[3] IRA/Keogh plan
[4] Employer-sponsored retirement plan
[5] Objective financial knowledge
[6] Subjective financial knowledge
[7] Financial self-efficacy
[8] Financial mastery
[9] Retirement savings calculation
[10] Foregone medical care

Table A.4 Weighted Correlations for Key Variables (After Listwise Deletion)

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13
1. RetWorry[1]	—												
2. Financial strain	.46***	—											
3. STS[2]	−.27***	−.58***	—										
4. IRA/Keogh[3]	−.09***	−.25***	.39***	—									
5. EmpRetPlan[4]	−.09***	−.25***	.33***	.37***	—								
6. Income	−.14***	−.38***	.39***	.38***	.54***	—							
7. HealthInsurance	−.08***	−.15***	.15***	.14***	.28***	.22***	—						
8. ObjFinKnow[5]	−.14***	−.30***	.18***	.24***	.25***	.33***	.13***	—					
9. SubFinKnow[6]	−.12***	−.23***	.36***	.29***	.24***	.28***	.12***	.20***	—				
10. FinSelfEff[7]	−.32***	−.44***	.56***	.30***	.28***	.32***	.11***	.12***	.43***	—			
11. FinMastery[8]	−.54***	−.65***	.47***	.20***	.22***	.31***	.13***	.23***	.22***	.48***	—		
12. RSC[9]	−.07***	−.19***	.32***	.39***	.36***	.35***	.14***	.26***	.30***	.30***	.17***	—	
13. FMC[10]	.31***	.50***	−.20***	−.02*	−.08***	−.14***	−.17***	−.14***	−.06***	−.18***	−.38***	−.01	—

[1] Retirement worry
[2] Short term savings
[3] IRA/Keogh plan
[4] Employer-sponsored retirement plan
[5] Objective financial knowledge
[6] Subjective financial knowledge
[7] Financial self-efficacy
[8] Financial mastery
[9] Retirement savings calculation
[10] Foregone medical care

Appendix B - Subgroup (Gender) Analysis Regression Results

Table B.1 Cumulative Logistic Regression for Higher Retirement Worry (by gender)

		Males (N = 6,278)			Females (N = 7,641)		
Variable		*B*	*SE B*	*OR*	*B*	*SE B*	*OR*
Intercept	5	-0.28	0.32	-----	1.60***	0.26	-----
Intercept	4	0.49	0.314	-----	1.94***	0.26	-----
Intercept	3	1.40***	0.31	-----	2.15***	0.26	-----
Intercept	2	3.37***	0.33	-----	4.10***	0.27	-----
Control Variables							
Age (age18to24)							
Age25to34					0.45***	0.08	1.57
	5	0.55***	0.12	1.74			
	4	0.35**	0.11	1.41			
	3	0.22*	0.11	1.25			
	2	0.28*	0.12	1.32			
Age35to44					0.77***	0.08	2.16
	5	0.82***	0.12	2.11			
	4	0.52***	0.11	1.69			
	3	0.44***	0.11	1.54			
	2	0.59***	0.12	1.81			
Age45to54							
	5	0.86***	0.13	2.37	0.88***	0.09	2.42
	4	0.82***	0.12	2.27			
	3	0.75***	0.11	2.11			
	2	0.77***	0.12	2.15			
Age55to 64		0.65*	0.11	1.91			
	5	-----	-----	-----	1.02***	0.11	2.76
	4	-----	-----	-----	1.03***	0.10	2.81
	3	-----	-----	-----	0.93***	0.10	2.53
	2	-----	-----	-----	0.77***	0.11	2.16
Education (less than high school)							
High school		0.72**	0.19	2.05	0.07	0.16	1.07
Some college		0.62**	0.19	1.86	0.10	0.16	1.11
College degree		0.51**	0.19	1.67			
	5	-----	-----	-----	-0.08	0.17	0.92
	4	-----	-----	-----	0.00	0.17	1.00
	3	-----	-----	-----	0.15	0.17	1.16
	2	-----	-----	-----	0.07	0.17	1.07
Postgraduate degree		0.51*	0.20	1.66			
	5	-----	-----	-----	-0.20	0.19	0.82
	4	-----	-----	-----	-0.00	0.18	1.00
	3	-----	-----	-----	0.13	0.18	1.14
	2	-----	-----	-----	0.06	0.19	1.06
Race (white)							
Black							
	5	0.73***	0.11	2.07	-0.20*	0.10	0.82
	4	0.38**	0.10	1.43	-0.32**	0.09	0.73
	3	0.16	0.10	1.17	-0.49***	0.09	0.62
	2	-0.05	0.11	0.95	-0.70***	0.10	0.50

(continued)

		Males (N = 6,278)			Females (N = 7,641)		
Variable		*B*	*SE B*	*OR*	*B*	*SE B*	*OR*
Race (white)							
Hispanic		0.14	0.09	1.15	0.05	0.10	1.10
Asian/Other		0.11	0.09	1.12	0.09	0.07	0.85
	5	-----	-----	-----	0.10	0.10	1.11
	4	-----	-----	-----	-0.08	0.09	0.92
	3	-----	-----	-----	-0.32**	0.09	0.73
	2	-----	-----	-----	-0.45***	0.11	0.64
Gender (female)		-0.26***	0.05	0.77	-0.44***	0.05	0.65
Employment (full-time)							
Works part-time					-0.12	0.07	0.89
	5	0.13	0.14	1.14	-----	-----	-----
	4	-0.03	0.13	0.97	-----	-----	-----
	3	-0.15	0.13	0.86	-----	-----	-----
	2	-0.38**	0.14	0.68	-----	-----	-----
Self-employed		0.09	0.08	1.10	-0.04	0.12	0.96
Unemployed		-0.10	0.10	0.91	0.13	0.14	1.04
Not in labor force		-0.10	0.06	0.90	-0.24***	0.06	0.78
Marital status (married)							
Single		-0.02	0.07	0.98	0.03	0.06	1.03
Separated or divorced					0.10	0.07	1.11
	5	0.23	0.12	1.25	-----	-----	-----
	4	0.03	0.11	1.03	-----	-----	-----
	3	-0.01	0.11	0.99	-----	-----	-----
	2	-0.13	0.12	0.88	-----	-----	-----
Widowed		-0.34	0.26	0.71	-0.06	0.15	0.94
Homeowner		0.04	0.06	1.04	0.00	0.05	1.00
At least one child		-0.06	0.06	0.94	-0.08	0.05	0.93
Primary Appraisal							
Financial strain		0.12***	0.03	1.21	0.07**	0.02	-----
Secondary Appraisal							
Financial Resources							
Short-term savings							
	5	0.02	0.06	1.02	0.03	0.04	1.03
	4	0.10	0.05	1.10	0.13**	0.04	1.14
	3	0.35***	0.05	1.43	0.28***	0.04	1.32
	2	0.34***	0.06	1.41	0.26***	0.05	1.29
IRA/Keogh plans		0.00	0.06	1.00	-0.02	0.06	0.98
Work retirement plan		-0.04	0.07	0.96	-0.05	0.06	0.95
Income (< $15K)							
$15K to $25K		0.11	0.13	1.12	0.07	0.10	1.07
$25K to $35K		0.19	0.13	1.21	0.16	0.10	1.17
$35K to $50K		0.29*	0.13	1.34	0.19	0.10	1.20

(continued)

		Males (N = 6,278)			Females (N = 7,641)		
Variable		*B*	*SE B*	*OR*	*B*	*SE B*	*OR*
Income (< $15K)							
$50K to $75K					0.25**	0.10	1.29
	5	0.07	0.14	1.08	-----	-----	-----
	4	0.40**	0.14	1.49	-----	-----	-----
	3	0.36**	0.14	1.43	-----	-----	-----
	2	0.26	0.14	1.30	-----	-----	-----
$75K to $100K					0.41**	0.11	1.50
	5	0.36*	0.15	1.44	-----	-----	-----
	4	0.56**	0.14	1.75	-----	-----	-----
	3	0.54**	0.14	1.72	-----	-----	-----
	2	0.28	0.15	1.32	-----	-----	-----
$100K to $150K							
	5	0.10	0.16	1.10	0.10	0.14	1.11
	4	0.58**	0.15	1.78	0.29*	0.13	1.33
	3	0.62***	0.15	1.86	0.39**	0.13	1.48
	2	0.47**	0.15	1.60	0.28*	0.13	1.32
More than $150K							
	5	0.01	0.20	1.01	0.01	0.19	1.01
	4	0.40*	0.17	1.50	0.23	0.16	1.26
	3	0.45**	0.16	1.57	0.14	0.15	1.15
	2	0.09	0.16	1.09	-0.18	0.15	0.84
Health insurance		-0.05	0.09	0.95	0.05	0.08	1.05
Secondary Appraisal							
Personal Resources							
Objective financial knowledge		-0.02	0.02	0.98			
	5	-----	-----	-----	-0.03	0.02	0.97
	4	-----	-----	-----	0.03	0.02	1.03
	3	-----	-----	-----	0.10***	0.02	1.11
	2	-----	-----	-----	0.01	0.03	1.01
Subjective financial knowledge					-0.05**	0.02	0.95
	5	0.07*	0.03	1.07	-----	-----	-----
	4	0.05	0.03	1.05	-----	-----	-----
	3	-0.01	0.03	0.99	-----	-----	-----
	2	-0.09**	0.03	0.92	-----	-----	-----
Financial self-efficacy					-0.26***	0.04	0.77
	5	-0.30***	0.05	0.74			
	4	-0.21***	0.05	0.81			
	3	-0.22***	0.05	0.80			
	2	-0.30***	0.05	0.74			
Financial mastery		-0.42***	0.02	0.66			
	5	-----	-----	-----	-0.44***	0.02	0.64
	4	-----	-----	-----	-0.40***	0.02	0.67
	3	-----	-----	-----	-0.36***	0.02	0.70
	2	-----	-----	-----	-0.43***	0.02	0.65

(continued)

		Males (N = 6,278)			Females (N = 7,641)		
Variable		*B*	*SE B*	*OR*	*B*	*SE B*	*OR*
Secondary Appraisal							
Coping Strategies							
Retire savings calculation (RSC)					-0.36***	0.08	-----
	5	-0.06	0.13	-----			
	4	-0.30**	0.10	-----			
	3	-0.10	0.09	-----			
	2	-0.35**	0.09	-----			
Forego medical care (FMC)		0.19**	0.06	-----	0.26***	0.05	-----
Moderated Effects							
RSC×Financial Strain					0.14***	0.02	-----
	5	0.07*	0.03	-----			
	4	0.16***	0.03	-----			
	3	0.16***	0.03	-----			
	2	0.17***	0.04	-----			
FMC×Financial Strain		0.01	0.01	-----	-0.03**	0.01	-----
McFadden's R^2		0.1740			0.1403		
Concordance (c statistic)		0.776			0.745		